

Genesis of the Bicycle in the United States, 1865-1893:
A Bibliographic Tool for Researchers

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Master of Arts

by
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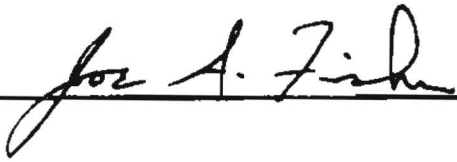
AN ABSTRACT OF THE THESIS OF

Larry Samuel Bonura for the Master of Arts

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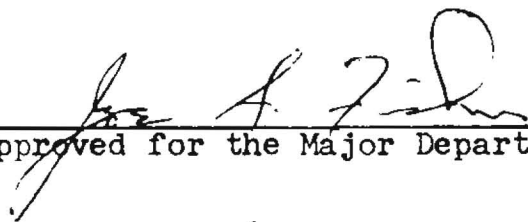
Title: Genesis of the Bicycle in the United States, 1865-


1893: A Bibliographic Tool for Researchers

Abstract approved: 

This study comprises two parts. The first part relies primarily on books for a compressed history of the bicycle in the United States between 1865 and 1893. The second part consists of an annotated bibliography of 254 articles gleaned from 27 American magazines published from 1865 to 1893. The history of the bicycle is segmented into five eras: (1) pre-1865: the origins of the bicycle, (2) 1865-1871: the boneshaker or velocipede epoch, (3) 1871-1876: the development of the ordinary bicycle, (4) 1876-1887: the reign of the ordinary bicycle, and (5) 1887-1893: the demise of the ordinary bicycle and the rise of the safety bicycle. An annotated bibliography of articles relating to each era follows the history of that period. Also included are a

list of magazines consulted with the number of volumes and dates covered as well as the number of citations found, a subject-year occurrence matrix, and a subject-magazine occurrence matrix.


Approved for the Major Department


Approved for the Graduate Council

PREFACE

From the time the bicycle first appeared in the United States in 1865, until 1893 when the economy of the country went into a depression and the safety bicycle gained a footing in America, the bicycle underwent enormous changes and had profound effects on society.

The period from 1865 to 1871, the velocipede era, is important because it was the first time that the population took the bicycle to its heart, creating a mini-craze in 1869 when velocipede fever spread over the country. But the fever was quickly dissipated, leaving an uncertain future for the bicycle.

When the velocipede died, it did not take to its grave the bicycle or the tinkerers and inventors who saw a chance to enhance the two-wheeled, self-propelled machine and make it more acceptable to the public. The major aspect of the 1871 to 1876 era, the period of the growth of the ordinary bicycle, was the continued technological change that altered the velocipede's design into the ordinary, the most popular bicycle of the time period covered in this thesis.

The reign of the ordinary, from 1876 to 1887, saw the bicycle become firmly implanted in the United States. The first manufacturing plants were built, organizations and clubs were instituted to further the cause of the cyclist, legislation was enacted to protect cyclist rights, and technological changes made the ordinary a light, all-metal

machine.

Between 1887 and 1893 the ordinary bicycle began to lose its appeal to the riding public as the safety bicycle took shape and set the stage for the golden era of the bicycle, the years 1894 to 1900. The safety bicycle appealed to a larger population--men, women, and children--thereby creating increased demand and support for it. The safety encouraged social changes, acted as a catalyst in the women's liberation movement, gave structure to the automobile industry that was to follow, created a psychological frame of mind that permitted individual transport as a concept, and drastically altered family life.

During the 28-year period of this study, the bicycle affected many aspects of American life. A perusal of the bibliography after each chapter (except Chapter I, which has no annotations) of the 254 articles gleaned from the research of the 27 magazines in this study provides discernable patterns of thought about the bicycle: women, economics, transportation, organizations, clubs, legislation, literature, poetry, health, medicine, religion, morality, recreation, technology, safety, advertising, military, arts, music, and roads. Almost no part of American life was untouched by the bicycle.

In the period immediately after the Civil War, public affluence and improvements in presses and printing encouraged a boom in magazines. This boom aided the growth of the bicycle, giving the machine a forum for its uses and abuses,

its values and detractions, its whims and purposes. By perusing the magazines of the period 1865 to 1893, one sees them as mirrors of society, personal but representative emotional responses and interpretations of contemporary impulses of the times. As the bicycle grew in use and in demand, the magazines recorded these nuances and added their own interpretations of what the bicycle meant.

The bicycle spans the post-Civil War period and America's interest in the application of technology. When the bicycle was first introduced into the United States in 1865 by Pierre Lallement, there was no bicycle industry. Within 15 years the country had several bicycle manufacturers and hundreds of bicycle clubs, numerous books had been published, and several bicycle magazines started, some to survive, but most to live a short life. Within 28 years the bicycle had undergone three significant changes--from velocipede to ordinary to safety--and each time it created more popular appeal and incited new changes to make it more conducive to use as a means of transport, be it utilitarian or recreational.

During this period the bicycle laid the groundwork for numerous other activities that would emerge much larger and more significant for the American people. The bicycle industry became the model for the manufacture of the automobile, used the first assembly lines for production of vehicles, created agents or dealers to sell machines, and utilized advertising in innovative manners. The bicycle

also gave the public a means of individual transportation, a quick, relatively easy-to-use, and cheap form of moving from place to place, an idea heretofore thought impossible.

The period from 1894 to 1900 has been thoroughly discussed in bicycle literature. Bicycle history immediately following the Civil War and before the bicycle's golden age in the mid- to late-1890s has been neglected in favor of studying the more glamorous mid-1890s era. This thesis is an attempt to bridge this 28-year gap. If one looks at the number of articles written from 1865 to 1893, one sees that the growth of the bicycle was slow at first, picked up somewhat in the 1870s, and increased considerably in the 1880s and early 1890s. By 1894 bicycle literature began to flourish.

The quiet bicycle revolution built steadily from 1865 to 1893, culminating in the craze of the 1890s. In order to have an appreciation of what happened to bicycling in the 1890s, it is imperative for one to have a sound understanding of what took place in the 28 years prior to that golden era. This work is a little light shed on those years.

In my travels to various libraries and museums, in talks with numerous individuals, and through research, I discovered that there was no one place a person could go to study the bicycle. This led me in 1978 to found the bikelibrary, a research library on bicycles and bicycling, to provide a place where individuals can find information about any aspect of the bicycle.

In trying to make the bikelibrary the best possible research center, I have talked with historians, librarians, teachers, writers, governmental agency heads, bicyclists, and others interested in bicycles and bicycling, and one idea comes across repeatedly: there is no tool to help find information on bicycles in its infancy in the United States, 1865 to 1893. This thesis is an aid to those seeking information during this developmental stage of bicycling.

The scope of this initial effort is limited. I went through 27 American magazines (see Appendix A) housed at the Emporia State University library that were not on microfilm. Those 27 magazines were held in 495 volumes and included more than 300,000 pages. I scanned every page looking for key words and artwork relating to bicycles and bicycling. I noted the date of each find and logged the subject content in a subject-magazine matrix (see Appendix B) and a subject-year matrix (see Appendix C), which allows the researcher to scan quickly a particular year or magazine to see what subjects were covered.

I chose magazines to scan for two reasons: (1) my undergraduate degree is in journalism with an emphasis in magazines and I wanted to study this area in greater depth, and (2) magazines hold up a mirror to society and present representative responses and interpretations of contemporary impulses of the times in which they were written. Magazines furnish an invaluable historical source of the times and record the nuances of popular taste. Historians and other

researchers must look to the old weekly, monthly, and quarterly magazines to discover what men and women were doing, thinking, and feeling about the bicycle.

There are many people who have given me comfort, aid, encouragement, and guidance throughout the duration of this study. They include, but are not limited to: my family, for their caring; Dr. Joe Fisher, whose thoughtful advice and approach to teaching has given me much inspiration; Andy Kuhn, whose friendship and support have meant much to me in my personal and professional endeavors; Steve Hanschu, whose diligent and tireless work at the E.S.U. library made my task that much easier; and Heather Korb, to whom this is dedicated, my comrade in the worst as well as the best of times.

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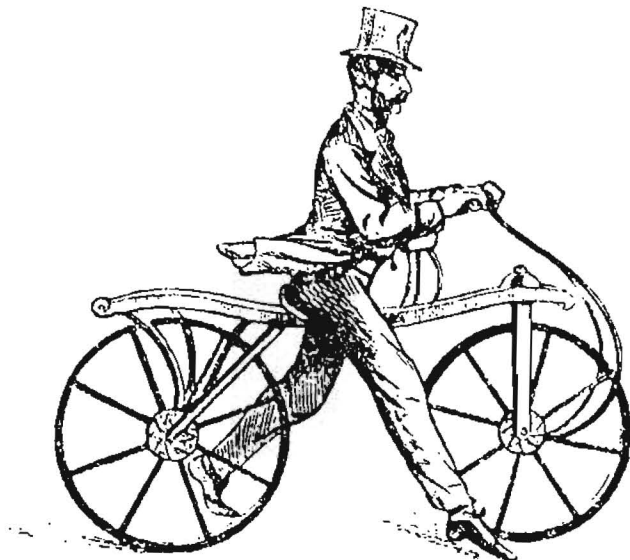
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Introduction

1493-1865: In The Beginning

Crude as the Draisienne now appears it enjoyed widespread popularity among the wealthy in Germany, Great Britain and the USA.

--Frederick Alderson in
Bicycling, A History



Astride a Draisienne, 1819

Leonardo da Vinci was one of the first engineers who tried to find quantitative equivalents for available forms of energy. He compared the human body with a mechanical system, as a reflection and an extension of each other. His interest in maximum efficiency of muscle power is understandable: it was the only motor he could use in his flying machine and his bicycle.

Pompei Leoni, in the 1500s, glued many loose pages of da Vinci's works onto the large pages of an album that has come to be known as the Codex Atlanticus. Leoni, a sculptor, paid no attention to the drawing of the bicycle that represented not a physically existing object but an idea still gestating. The idea was so impressively ingenious that Leoni could not grasp it. But to him goes the credit for preserving this sheet from destruction.¹

The restoration of da Vinci's Codex Atlanticus in the early 1970s revealed for the first time the reverse side of numerous pages that had been pasted to mountings for the past 400 years. On page 133 in the upper right-hand corner is a drawing of what can only be defined as a bicycle. The drawing, dated 1493, shows a far more advanced bicycle than the early draisienues or hobby horses of the beginning of

¹Augusto Marinoni, "The Bicycle," in The Unknown Leonardo, edited by Ladislao Reti (New York: McGraw-Hill Book Co., 1974), p. 288; Larry Bonura, "Leonardo's Bicycle," Bicycling News Canada #13 (Winter 1981), p. 14; Robert Wilkinson-Latham, Cycles in Colour (Dorset, England: Blandford Press, 1978), p. 9; Paul Dempsey, The Bicyclist's Bible (Blue Ridge Summit, Pa.: Tab Books, 1977), pp. 9-10.

the nineteenth century.

The two wheels were drawn with a compass which opened slightly while completing its rotation. The rims of the wheels with eight spokes are colored red and brown to imitate wood. The chassis is entirely horizontal with two gears to hold a chain, but only one gear is well defined. Against the back hub are propped the braces supporting a large saddle that has a third point of support at the center of the chassis. The handlebar is in a "T" shape and is connected to the front hub by two arched and probably flexible rods. To prevent these parts from rubbing it, the wheel is provided with a guard. To the center of the chassis is fixed a gear wheel with large wooden teeth, of cubic rather than pointed shape. It is not clear from the drawing how the front wheel can be steered. And the draftsman drew the machine with disproportionate pedal lengths and the transparency of the wooden-toothed wheel makes the rim appear to be without supporting spokes.²

This drawing of a bicycle, not dissimilar in design to the safety bicycle of the 1890s, probably was executed by Salai, da Vinci's pupil, model, and servant. There are drawings elsewhere on the page that indicate that the artist was Salai, who probably copied his master's drawing. It is doubtful that a boy of 12 or 13 years of age had the formidable foresight to anticipate today's bicycle by 400

²Marinoni, "The Bicycle," p. 288.

years. The extraordinary vision displayed by the creation of a vehicle that must be balanced on two wheels while in motion, and the advanced mechanical concepts primitively rendered, force the viewer to conclude that the drawing in Codex Atlanticus is actually a copy of someone else's work, presumably da Vinci's. The model used for da Vinci's original drawings might have resembled the modern safety bicycle still more than the drawing of the youthful Salai.³

Da Vinci's bicycle design was not just a general approach. Besides his basic idea of two wheels in tandem with a chain drive, da Vinci generated specific solutions in later works. In his drawings he developed roller- and ball-bearings for use in the power transmission unit, articulated chain-links for the drive machinery, and designed a variable speed gearing device, an ingenious forerunner of the modern automobile transmission and its relative, the derailleur.⁴

It was almost 300 years before the first actual models of the bicycle were produced. The early bicycle-like machines lacked pedals, chains, and handlebars, all of which da Vinci had incorporated in his model drawing. Some bicycle historians give credit to Chevalier de Sivrac for the first known bicycle.⁵ He was said to have ridden his

³Bonura, "Leonardo's Bicycle," p. 14.

⁴Ibid.; Marinoni, "The Bicycle," p. 288.

⁵Those giving credence to de Sivrac's claim include: James Wagenvoord, Paul Dempsey, Donald Berkebile and Smith Hempstone Oliver, Frederick Alderson, C. F. Caunter, Bruce L. Balshone, John Wilcockson, Seamus McGonagle, Baudry de

celerifere in the Palais Royal gardens in Paris in 1791. His two-wheeled "wooden horse" consisted of a rough wooden bar supported on two sizeable wheels and carrying a padded saddle. The rider propelled it by thrusting his feet alternately against the ground. The major drawback to the celerifere was its rider's very limited control of direction, the front wheel being rigidly attached to the frame and its having no swivelling action.⁶

In 1978 Russell Mamone declared that de Sivrac's celerifere was unrideable and outlined his investigation that disproves that de Sivrac invented the first bicycle. Mamone found that none of the leading bicycle museums have celeriferes in their collections. In a review of the literature, he finds that most people accept the view of

Saunier, Stephen and Sybil Leek, and Robert A. Smith. Arthur J. Palmer accepts the de Sivrac claim but subordinates it to Karl von Drais's claim. Russell Mamone, Frank Schwinn, and Jacques Seray support the idea that von Drais, not de Sivrac, invented the bicycle.

⁶Wilkinson-Latham, Cycles in Colour, pp. 11-12; Dempsey, The Bicycler's Bible, p. 10; Frederick Alderson, Bicycling: A History (New York: Praeger Publishers, 1972), p. 12; Donald H. Berkebile and Smith Hempstone Oliver, Wheels and Wheeling: The Smithsonian Cycle Collection (Washington, D. C.: Smithsonian Institution Press, 1974), p. 1; James Wagenvoord, Bikes and Riders (New York: Van Nostrand Reinhold Co., 1972), p. 35; John Wilcockson, Bicycle: The Total Illustrated Guide to Bicycles and Bicycling (New York: Butterick Publishing, 1980), p. 20; Bruce L. Balshone, Paul L. Deering, and Brian D. McCarl, Bicycle Transit: Its Planning and Design (New York: Praeger Publishers, 1975), p. 3; Robert A. Smith, A Social History of the Bicycle (New York: American Heritage Press, 1972), p. 3; Sybil and Stephen Leek, The Bicycle: That Curious Invention (Nashville, Tenn.: Thomas Nelson, Inc., 1973), p. 25; and Seamus McGonagle, The Bicycle in Life, Love, War and Literature (New York: A. S. Barnes and Co., 1969), pp. 2-4.

Baudry de Saunier's Histoire de la Locomotion de Terristre that asserts de Sivrac's invention. But Mamone claims that recent investigations prove that the celerifere did not exist and would have been unrideable, and therefore expresses doubts as to the validity of de Sivrac's claim.⁷

Baron Karl von Drais of Mannheim, Germany is generally credited with the invention of the true predecessor of the bicycle. In 1817 he invented a machine of practical use. The Baron, besides being an engineer, was the chief forester for the Grand Duke of Baden. Von Drais found his machine to be useful in traversing the forest land under his supervision. The machine, called the draisienne, had a triangulated wood frame, a front wheel that could be steered by the rider, a padded saddle to make the experience more comfortable, and an arm rest that allowed the rider to push his feet against the ground with considerable power. The draisienne had no pedals.⁸

Von Drais was granted a German patent for his draisienne in 1818. In 1819 he took his machine to Paris, where he obtained a French patent and the machine acquired

⁷Russell Mamone, "French Investigation Disproves de Sivrac Invented Bicycle; 'The Boneshaker' and an Experiment Establish Karl von Drais as Bicycle Inventor," The Wheelmen #13 (December 1978), pp. 17-19; Russell Mamone, "Footnotes to the Story of the Celerifere," The Wheelmen #14 (May 1979), p. 24.

⁸McGonagle, The Bicycle in Life, p. 47; Smith, A Social History, p. 4; Wilcockson, Bicycle, p. 20; Wagenvoord, Bikes and Riders, p. 35.

the name velocipede, a term that continued in use until about 1870 when the word bicycle came into use. Although the draisienne had been mentioned in German newspapers in 1817, it was first demonstrated in public in Paris where it attracted some attention. A contemporary newspaper wrote that the draisienne "can never be of any real utility because it could only be used in a garden or on a well kept road." The Baron was not to be deterred. He gave other demonstrations of his machine, the most convincing being in Germany, where newspapers reported that he cut two hour journeys on foot to a single hour when riding.⁹

Von Drais's performance on the pathways showed that the machine could, by standards of the day, be easily propelled and controlled, and it indicated that an individual could probably make long journeys astride the draisienne at a better speed than could be gained by walking. Improving on walking was the measure of success and potential, for at the time the only alternative to walking was riding on a horse or behind a horse in a carriage or wagon. One source claims that the "swiftness with which a person well practised can travel is almost beyond belief, 8, 9, and even 10 miles may be passed over" in an hour.¹⁰

Crude as the draisienne now appears, it gained rapid

⁹Wilkinson-Latham, Cycles in Colour, pp. 12-13; Berkebile, Wheels and Wheeling, p. 1.

¹⁰Archibald Sharp, Bicycles and Tricycles: An Elementary Treatise on Their Design and Construction (1896; reprinted ed., Cambridge, Mass.: The MIT Press, 1977), p. 147.

popularity in France and England, where it was known variously as a draisiienne, swiftwalker, hobby horse, or dandy horse. Denis Johnson, a London coach maker, copied the machine and patented it in 1819 in England as the pedestrian curricule.¹¹

Johnson's machines featured adjustable seats, improved steering, and dropped frames for lady riders. But the draisiienne was viewed solely as a pastime rather than as a practical means of transport for ladies, and distance and endurance efforts remained exclusively for men. Within months there was a report of a draisiienne rider-pusher making the 23-mile trip from Beaune to Dijon in less than two and one-half hours, an average speed of more than nine miles an hour. The first accessory, an odometer, was fitted to a draisiienne's rear wheel in 1825.¹²

Johnson also opened riding schools for training draisiienne riders. Not content with manufacturing and selling draisiennes and teaching the new owners, Johnson also hired out machines to those who could not afford to buy them. The riding academies, which were opened in France and Germany as well, were established to teach the fine points of balance and management, and soon many riders were seen in the streets and parks about London; yet the pastime declined

¹¹Berkebile, Wheels and Wheeling, p. 3; Wilkinson-Latham, Cycles in Colour, p. 13.

¹²Dempsey, The Bicycler's Bible, p. 11; Wilkinson-Latham, Cycles in Colour, p. 13; Wagenvoord, Bikes and Riders, p. 36; Alderson, Bicycling, p. 13.

almost as rapidly as it had arisen, and after the early 1820s draisienues were rarely seen.¹³

The draisienne also spread to the United States. W. K. Clarkson, Jr., of New York, was granted a patent for a velocipede on June 26, 1819, but it is no longer known what this patent covered for the records were destroyed in the Patent Office fire of 1836. There is no evidence that the sport gained much popularity in the United States, yet it is known that 78-year-old Charles Willson Peale, the noted American portrait painter, was an enthusiastic rider of one in 1819.¹⁴

Interest in the draisienne and foot-propelled machines dwindled and by the late 1820s and early 1830s there were exceptionally few in use and even less interest in developing the idea of two-wheeled travel. Most of the inventors of this period were channelling their ideas into three- and four-wheeled horseless carriages. In 1839, however, Kirkpatrick Macmillan, a Scottish blacksmith, produced the first pedal-driven bicycle in a forge at Courthill in Dumfriesshire.¹⁵

¹³Wilkinson-Latham, Cycles in Colour, pp. 13-14; Wagenvoord, Bikes and Riders, p. 38.

¹⁴Oliver Jensen, "The Peales," American Heritage 6 (April 1955), p. 98; Alderson, Bicycling, p. 14; Berkebile, Wheels and Wheeling, p. 3; Wilkinson-Latham, Cycles in Colour, p. 14.

¹⁵Sharp, Bicycles and Tricycles, p. 148; Dempsey, The Bicycler's Bible, p. 11; Alderson, Bicycling, p. 20; Berkebile, Wheels and Wheeling, p. 4; Wilkinson-Latham, Cycles in Colour, p. 15.

Macmillan was a 29-year-old working for the Duke of Buccleuch when he first had a close look at a draisienne. It belonged to a local wood turner named Charteris. Macmillan and fellow smith John Freeman decided to make copies of the cycle for themselves so they could ride them on the Duke's estate. He sketched Charteris's machine and, rather than make an identical copy, Macmillan decided on some refinements and on one great improvement.¹⁶

The refinements included a better designed frame of a single piece of wood shaped high at the front, then sweeping down and then slightly up again where the frame forked to take the rear wheel. A saddle was fitted on the downward curve and behind it, because of the larger size of the rear wheel, a protector to stop the wheel from touching the driver. The wheels were of wood and shod with iron tires and had no brakes. The great step forward was the fitting of pedals, or more correctly, treadles. Bars were fitted to each side of the top of the frame beneath the handlebars and descended to a suitable level and a footrest was fitted to the bottom of the bars. These bars at the front were connected with rods to cranks on the back axle. The backward and forward movement of the treadles was transmitted to the rear wheel and turned it.¹⁷

¹⁶Smith, A Social History, p. 5; McGonagle, The Bicycle in Life, p. 11; Leek, The Bicycle, pp. 26-27; Wagenvoord, Bikes and Riders, p. 40.

¹⁷Wilkinson-Latham, Cycles in Colour, p. 16; Alderson, Bicycling, p. 20.

The Macmillan pedal cycle, in spite of its cranks and swinging levers, was probably set in motion by the draisienne method. Once reasonable speed was obtained, the feet were lifted from the ground, placed on the treadles, and worked back and forth. Although the machine had steering it must have been very slight. Any major movement would have entangled the wheel with the treadle rods. But the pedal cycle could be easily balanced and continuously pedalled by treadle action, and had the refinement of both front and rear axle running in brass bearings.¹⁸

Macmillan thought nothing of riding 14 miles from Courthill to Dumfries and, on June 6, 1842 he set out on a monumental journey, for those days, from Courthill to Glasgow, some 40 miles. Upon arriving in Glasgow he immediately attracted large crowds. In the Gorbals, because of the number of people who had turned out, he accidentally knocked down a small child. Fortunately, the child was not injured but Macmillan was summoned to the local police court. His defense was that the crowd mobbed him, but the judge was unsympathetic and fined him for reckless driving. While Macmillan was the first cyclist to officially run afoul of the law, his niece, Mary Marchbank, is given credit for being the first lady cyclist.¹⁹

¹⁸Wilkinson-Latham, Cycles in Colour, p. 17; Alderson, Bicycling, p. 21.

¹⁹Dempsey, The Bicycler's Bible, p. 17; Wagenvoord, Bikes and Riders, p. 40; Wilkinson-Latham, Cycles in Colour, p. 17.

Like so many men who were to become involved in the development of the bicycle, Macmillan had ability as a mechanic, engineer, and designer, and it took him only a few weeks to make his improvements. He was the first to discover that two wheels in tandem could be balanced and propelled without touching the ground with the feet. His unpatented original 1839 model, more akin to the rotary-shaft drive system of locomotive engines than to today's chain-drive bicycle, was constructed with the materials he had on hand. And being a blacksmith, he used heavy materials; the end product was a machine weighing 67 pounds. Yet, Macmillan anticipated the front wheel-drive velocipede by about 20 years and the rear-drive safety bicycle by almost 40 years.²⁰

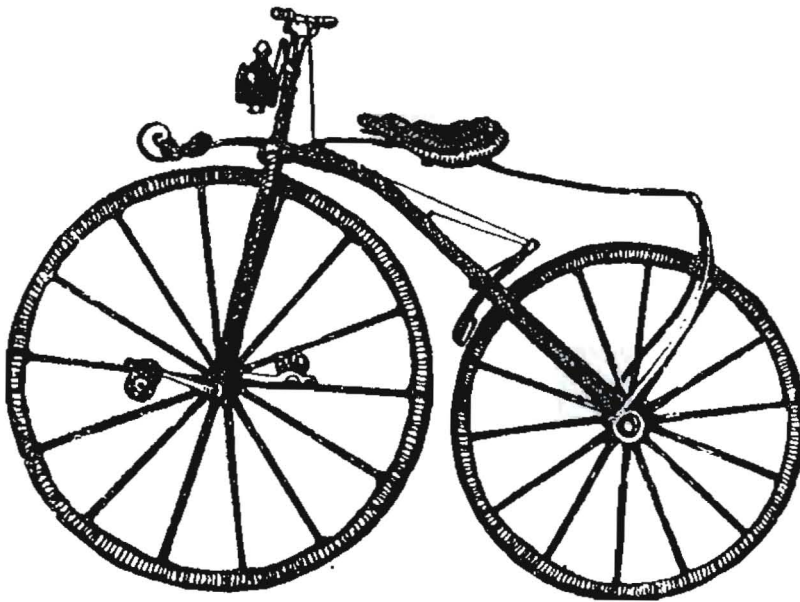
²⁰Wagenvoord, Bikes and Riders, p. 40.

Chapter I

1865-1871: The Velocipede Epoch

"Velocipedomania--Every student and every other man seems to have velocipede on the brain."

--Yale Courant, Feb. 21, 1869



A velocipede

1865-1871: History

The velocipede or "boneshaker" was the first machine to be called a bicycle. As the first commercially produced bicycle, the velocipede's lifespan was about six years. During that period, the velocipede set the foundation for the coming ordinary or "high-wheeler" bicycle, the first machine popularly designated the bicycle.¹

Robert Wilkinson-Latham describes a typical velocipede made by bicycle manufacturers and local wheelwrights, blacksmiths and coachbuilders: the front wheel was larger than the rear and made from wood with an iron frame and forks to both wheels and a saddle on a lighter back connected to the rear hub that provided a small, if somewhat inadequate, amount of suspension. A shoe-type brake was fitted to the rear wheel and, like coach brakes, was a block of wood mounted on an iron bed and pivoted at the center. This was connected to the handlebar by a piece of thin rope or cord and the handlebars made to twist. When the handlebars were gripped by the rider and twisted towards him, this motion shortened the cord and pulled the wooden brake block on the iron tire of the rear wheel. Propulsion was direct by means of pedals fitted to the hub of the front wheel. The large front wheel was designed so that a rider could gain greater velocity without increasing his pedaling

¹Smith, A Social History, p. 7.

speed.²

Robert A. Smith describes the velocipede as consisting of two iron-tired wooden wheels mounted one behind the other, a front fork and handlebars to permit steering, pedals on the axle of the front wheel, and a saddle fastened to the wooden frame with a steel spring. The spring was not very effective in absorbing the bumps, and the machine deserved its popular name of boneshaker.³

Velocipedes differed slightly, according to Wilkinson-Latham. Some had adjustable pedals that could be moved up and down on the crank to suit the length of the rider's legs. Others were equipped with foot rests to let the rider raise his feet from the quickly revolving pedals as he sped downhill. Many did not have front brakes.⁴

The velocipede was a series of inventions and ideas that culminated in 1861. Wilkinson-Latham claims that the first two-wheeled pedal-driven bicycle produced commercially was made in Paris by Pierre and Ernest Michaux, father and son. They conceived their prototype in 1861 from a draisienne they were repairing for a Parisian hatter. After several attempts, they arrived at the simple expedient of fitting two cranks, one on each side of the hub of the front wheel, and attaching wood pedal blocks to them to provide

²Wilkinson-Latham, Cycles in Colour, p. 170.

³Smith, A Social History, pp. 5-6.

⁴Wilkinson-Latham, Cycles in Colour, pp. 171-172.

for propulsion.⁵

There is dispute as to who deserves credit for the idea of putting pedals on the front wheels. Some writers contend that the Michaux family was the first to put the cranks on the front wheels and pedals on the cranks. Other writers maintain that the cranks were invented by Pierre Lallement, who saw an early model near Nancy, France and perfected the crank-pedal arrangement later when he went to Paris to work for Michaux.⁶

Lallement, a mechanic in the Michaux firm, left the firm in 1863 in great dissatisfaction at the general lack of recognition for his part in the invention of the velocipede. Pierre Michaux refused to recognize Lallement's part in the design modifications, John Wilcockson claims. Following

⁵Ibid., p. 19.

⁶Robert Wilkinson-Latham gives credit to the Michaux firm for commercially producing the front pedal-driven velocipede but claims that Lallement probably beat them to inventing the pedal-driven bicycle. John Woodforde gives Michaux the edge to being the first to put pedals on a bicycle's front wheel. John Wilcockson gives Pierre and Ernest Michaux credit for the attachment of the pedals but insists that Lallement played a considerable part in improving the basic design. Robert A. Smith takes a middle line. Archibald Sharp by-passes the issue by giving honors to Kirkpatrick Macmillan, though prior to 1892 Gavin Dalzell was the reputed inventor. Paul Dempsey claims that the Michaux family thought of the idea and that Lallement installed the pedals. Seamus McGonagle writes that Lallement fitted pedals to the front wheel of a draisienne and that the idea may have been his but gives Henry and Pierre Michaux an edge by virtue of developing the idea into a commercial product. S. S. McClure and Charles E. Pratt give the edge to Lallement because Lallement took out a patent on the idea whereas the Michaux firm did not. See thesis bibliography for full references.

further disagreements with the Michaux family, Lallement traveled to America and moved to New Haven, Connecticut in 1865. As a New Haven resident, Lallement, with James Carroll, obtained the first United States patent (#59915) on improvements in velocipedes on November 20, 1866.⁷

When Lallement arrived in Connecticut he brought with him the parts of two disassembled velocipedes. That fall he cycled down shady streets and across the bridge leading to the nearby town of Birmingham. Lallement was not deterred by a fall he took or by being arrested twice for frightening horses. Lallement and his partner, Carroll, could not sell the design commercially in the United States. Lack of capital drove Lallement back to Paris where he set up his own velocipede works in competition with Michaux. However, he was too late to pose a real threat to his former employer's enterprise. But Lallement left behind a mounting fever that has come to be called the velocipede craze. When Lallement departed, he took with him the only company producing bicycles in the United States. Manufacturing stopped and did not begin again until 1878 when the Chicago-based St. Nicholas Toy Company and the Pope Manufacturing Company, Hartford, Connecticut, started making bicycles.⁸

⁷Wilcockson, Bicycle, p. 21; Wilkinson-Latham, Cycles in Colour, p. 19; Charles E. Pratt, "Pierre Lallement and His Bicycle," Outing and the Wheelman 3 (October 1883), p. 8.

⁸Smith, A Social History, p. 6; Pratt, "Pierre Lallement," p. 8.

It was at this time that people began to realize the potential of the commercial exploitation of the new machine. Seamus McGonagle writes that "if not bare-faced avarice, then one of the milder forms of that side of human nature began to assert itself." McGonagle continues:

But the Michaux's [sic] of Paris blazed away! No time for argument and bad-tempered mechanics. No time for petty squabbles. No time for internicine [sic] strife. There was money to be made. This was the time of the steam engine, the railways, and the great flush of mechanical inventions in other fields. Today's dream could become tomorrow's fortune. This was the time of the nouveau riche. And the nouveau riche contributed to the popularity of the new bicycle, the boneshaker.⁹

The Michaux family put the production of velocipedes into a commercial adventure and by 1863 was producing 142 bicycles annually. By 1865 annual production was 400 velocipedes. In 1867 Michaux revealed the velocipede to the public at the Paris International Exhibition, the showplace for French industry. A year after the exhibition, in 1868, and a year prior to the velocipede's re-introduction to the United States, the Michaux factory near the Arc de Triomphe saw 300 workers turn out 50 machines a day.¹⁰

Even while Michaux seemed to have a monopoly, other

⁹McGonagle, The Bicycle in Life, pp. 13, 14.

¹⁰Ibid., pp. 14-15; Wilcockson, Bicycle, p. 21.

manufacturers sprang up all over France and elsewhere. In France there were firms such as Oliver Frères, Tribout and Mayer, all of Paris, Truffault in Tours, and Rousseau in Marseilles. Also in Paris was Michaux's arch-rival, Lallement, who had formed, on his return from America, the Ancienne Compagnie Vélocipédienne, implying in the name that he was the first and oldest manufacturer.

Michaux's machine was not only popular in France, but it was copied in Munich in 1862. Wilkinson-Latham suggests that had Lallement stayed longer in the United States, he may well have made his fortune, for what was termed by the press as "velocipedmania" seized New York and Boston in 1869. Manufacturers sprang up, riding schools were established, and the patent office in Washington, D.C. was besieged with inventions. In 1869 there were 400 machines awaiting examination for patents, and each week more than 80 applications were received for either new machines or for improvements to existing patents.¹¹

Rowley Turner, an agent for his father's firm, the Coventry Sewing Machine Company, attended the Paris exhibition and was so impressed with the velocipede that he persuaded two Frenchmen to back him in starting his own velocipede riding school, stores, and workshops. Turner returned to Coventry in late 1868 and persuaded his father and the two other directors of the sewing machine firm to go

¹¹Wilkinson-Latham, Cycles in Colour, p. 21.

into velocipede production. James Starley, recognized as the father of the English cycle industry, was the firm's manager and saw the potential of the velocipede. In February 1869 the firm changed its name to the Coventry Machinists Company and started manufacturing velocipedes. The firm had intended to export its products to France, but the onset of the Franco-Prussian War in 1870 destroyed interest in, and ruined, the French velocipede market.¹²

Turner had been in Paris when it was besieged by the Prussians, but he succeeded in making his escape on his velocipede after the last train had departed. When he left, he took several ideas back with him to Coventry--wire spokes, tubular frames, and contracting hand brakes. The English velocipede industry and cycle racing flourished in 1870 while all development in continental Europe had been virtually eliminated by the Franco-Prussian War.¹³

Prior to that war, public enthusiasm for the velocipede had mounted throughout Europe. The first bicycle race was held May 31, 1868 in Parc St. Cloud, Paris. The event, a 1,200-meter sprint, was won by James Moore. The first road race took place November 9, 1869 in France. The 76-mile trip took more than 200 starters, including five women, from Paris to Rouen. Moore, a 20-year-old English-born student

¹²Geoffrey Williamson, Wheels Within Wheels: The Story of the Starleys of Coventry (London: Geoffrey Bles, 1966), pp. 46, 47-48.

¹³Ibid., p. 48; Wilcockson, Bicycle, p. 26.

in Paris, was the favorite to win this race, and he did, in 10 hours, 40 minutes for a 7.357 mph average. Moore's velocipede was built by a Parisian cycle specialist, Jean Suriray, who put steel ball-bearings in both front and rear wheel hubs. Additional aids to Moore, who finished 15 minutes ahead of two French cyclists, were rubber strips mounted on the rims instead of the usual ironclad wheels. When the Paris-Rouen race was over there were 33 registered finishers; finishing 30th was Rowley Turner.¹⁴

The technical advances made by the French were admirably illustrated at the first cycle show, held at the Pre-Catalan, Paris, in November 1869. McGonagle writes that the show probably had the same effect on onlookers as the latest shiny models at the auto shows have on the young and the not-so-young of today. Featured at the show were machines with light all-metal construction, wheels with wire spokes, tubular frames, solid rubber tires, front wheel brakes, spring-mounted front wheels, mudguards, and even primitive forms of freewheel devices and change-speed gears.

These advances would not surprise a child today, but it must be remembered that the

¹⁴Wilcockson, Bicycle, pp. 23-25; Wilkinson-Latham, Cycles in Colour, p. 23; "The Latest Parisian Whim:-- Velocipedes," London Society 14 (1868), pp. 404-414; "A Two-Wheeled Steed," Chambers's Journal 46 (1869), pp. 280-282; S. S. Conant, "Locomotion--Past and Present," Harper's New Monthly Magazine 46 (1873), p. 172; "Our Steel Horse," The Chautauguan 4 (1884), pp. 523-524; and Edward Howland, "A Bicycle Era," Harper's New Monthly Magazine 63 (1881), pp. 281-286.

motor-car had yet to come, and the bicycle, therefore, was the catalyst of technical innovation, both major and minor.¹⁵

Details of the European excitement were carried in abundance in American periodicals. Coachbuilders and wheelwrights in New York and Boston began making velocipedes, and they had a thriving industry by early 1868. One American firm, Pickering and Davis, New York, was even exporting its machines to England. The velocipede craze had started in the United States.

The February 1869 issue of The Gentleman's Magazine, London, writes of the velocipede craze:

From our neighbours across the channel [France] the furore [sic] migrated to our brethren across the Atlantic, passing over us. The go-a-head vehicle is exactly suited to American ideas; walking, say the New York wags, is on its last legs. Schools, with the imposing name of Velocinasiums, for teaching the young how to gyrate, are being established; races are being rolled; men and boys are whizzing here, there, and everywhere at the speed of twelve miles an hour. Inventors are improving the machines, and manufacturers are making them wholesale, the supply at present falling short of the demand. Our turn may come yet. Or have we had it?¹⁶

¹⁵McGonagle, The Bicycle in Life, p. 15.

¹⁶Lyman Hotchkiss Bagg (Karl Kron), Ten Thousand Miles on a Bicycle (Springfield, Mass.: Springfield Printing Co., 1887), p. 403; "Notes and Incidents," The Gentleman's Magazine 226 (February 1869), p. 374.

New York caught the fever in December 1868. Harper's Weekly wrote of the opening of schools for the instruction of velocipede-riding. It continued by writing that

The Rev. Henry Ward Beecher has secured two of the American machines, and other gentlemen, well known in the literary and artistic world, are possessed of their magic circles. Youngsters ride Fifth Avenue with their school-books strapped in front of their velocipedes, and expert riders cause crowds of spectators to visit the public squares, which afford excellent tracks for the light wheels to move swiftly over.¹⁷

The Hanlon Brothers, well known gymnasts, ran the largest hall in New York with 25 machines. At a "velocipede reception and hop" they exhibited many daring feats upon the bicycle, according to Lyman Hotchkiss Bagg. New York was said to have had 5,000 riders, not just "silly faddists," Smith reminds us, but "sober, substantial men" like Charles Dana, publisher of the New York Sun, and Henry Ward Beecher, who predicted that soon a "1,000 velocipedes would bring his congregation to church."¹⁸

Before spring 1869 had arrived, the velocipede had spread to other cities and rinks were opened. In 1869 J. T. Goddard recounted that the two best and largest rinks in the United States were in Cambridge, Massachusetts. One rink had 12,000 square feet of floor space and 25 machines for

¹⁷"The American Velocipede," Harper's Weekly 12 (December 1868), p. 811; Bagg, Ten Thousand Miles, p. 403.

¹⁸Smith, A Social History, p. 7.

rent. The other was built in the form of an amphitheater with an eighth-mile circular course.

At night, this rink is brilliantly lighted, and the scene is at once novel and inspiring. Scores of riders rush madly after each other at break-neck speed, round and round the arena. We have seen an expert wheel over the course in 17 seconds.¹⁹

The Hanlon Brothers introduced the velocipede in Cleveland, Ohio on November 16, 1869 in one of their popular stage extravaganzas.²⁰

About two years after Lallement left New Haven, the velocipede reappeared there, completely capturing the students of Yale University. The February 21, 1869 Yale Courant published this story on the velocipede's arrival:

Velocipedomania--Every student and every other man seems to have velocipede on the brain. Two halls have been opened in the city for beginners, without meeting the great demand; and Hoad [a dealer] promises that a third [in the basement of the music hall] shall be in readiness for the knights of the bicycle by Thursday evening. The proposition for turning Brothers and Linonia [debating society halls] into one commodious velocipede arena has been

¹⁹J. T. Goddard, The Velocipede: Its History, Varieties and Practice (New York: Hurd and Houghton, 1869), pp. 93, 95.

²⁰William G. Rose, Cleveland, The Making of a City (Cleveland: World Publishing Company, 1950), p. 353.

actually agitated about college for some time, since the appearance of the fascinating bicyculars.²¹

Bagg, editor of the Yale Literary Magazine, describes the allure of the velocipede for him as "bewitching." The "charming spectacle" of a velocipedist proudly riding by on his bike "enraptured" Bagg's soul. "I felt that I, too, must be a rider, or die!"²²

Bagg was not doing too well academically in his last semester at Yale, so he determined not to get carried away with the velocipede craze. He avoided lively table talk at the clubs where discussing the "great velocipede furor" had taken sudden possession of the college and New Haven. Bagg writes that the temptation was great and it increased from week to week, as the excitement intensified and drew one classmate after another into the vortex. But, he said to himself, "I will not go; I cannot afford the time."²³

Four weeks after the term opened the temptation was too great and he "casually dropped in, at a riding school on State Street, just to see what the thing was like, anyhow." It was 8:30 p.m. on Thursday, February 4, 1869 that for the first time his eyes "feasted themselves upon the alluring outlines of a bone-shaker." His fancy was captivated at

²¹Bagg, Ten Thousand Miles, pp. 398-399.

²²Ibid., p. 393.

²³Ibid., p. 393.

once, for the scenes at the velocipede rink were the "greatest fun a-going."

Soon after Bagg surrendered to his heart's desire, he notes in his diary for Saturday that he runs one of the machines for an hour, without learning anything. "Horribly hot work. Cool off in time for supper, and at 10 p.m. take another half hour on the veloc., with no better result than before."

Sunday, when the chapel bells summoned him to put on his clothes, Bagg discovered that the seat of his trousers had been completely torn out. For his Monday entry he writes that instead of his usual evening exercise at the gym, he "chase[s] up the veloc. for an hour, and 'learn[s] how' just a little." On Tuesday, February 16, he rushed down to the velocipede hall and rode for an hour, and afterwards writes in his diary, "Eureka! Eureka! I'm really a velocipedist at last!"

The riding schools in New Haven charged one cent a minute for use of velocipedes, of which there were 30 or more at public disposal. Bagg lists eight rinks that came and went in the first month of the velocipede's appearance. The machines in the riding-rooms were mostly poor ones, but "good enough for beginners," and cost between \$50 and \$75. Those rented for outdoor use--Pickering, Wood, Monod, Witty, and others--were less clumsy and were worth between \$75 and

²⁴Ibid., pp. 393, 394.

and \$125. "Every one is waiting for the price to fall before purchasing, and no college man yet boasts a bicycle of his own," Bagg writes.²⁵

According to the Spectator, the sudden popularity of the velocipede was understandable.

It is graceful, or rather there always seems to be in it the possibility of grace, while there is a certainty of attracting attention and fixing it on the performer, which of itself would popularize any amusement with the French, and, perhaps, the English mind. Bicycle riding, like skating, combines the pleasure of personal display with the luxury of swift motion through the air. The pursuit admits, too, of ostentation, as the machine can be adorned with almost any degree of visible luxury; and differences of price, and, so to speak, of caste in the vehicle can be made as apparent as in a carriage. It is not wonderful, therefore, that idle men sprang at the new idea.²⁶

John Woodforde claims that nothing more was wanted than a means of getting swiftly about on common roads without incessant expense. Of all the drawbacks to country life, none had been more severely felt than the increase in the cost of keeping a horse. But, could the bicycle, if unimproved, ever become a useful means of locomotion?²⁷

²⁵Ibid., p. 400.

²⁶"Bicycles and Tricycles," Spectator 42 (May 22, 1869), p. 618.

²⁷John Woodforde, The Story of the Bicycle (New York: Universe Books, 1970), p. 25; "Bicycles and Tricycles," p. 619.

The Spectator answers by suggesting that the velocipede would remain a toy used only by those who liked violent exercise or were wealthy. Many doctors warned the public that the velocipede had not been tested long enough to determine its probability of causing injury. Woodforde writes that everyone who saw one agreed that the velocipede was a wonderful toy and that hundreds were bought for their novelty value.²⁸

The velocipede was more than a passing craze and a popular toy, however. On May 13, 1869 Charles Hambro, member of Parliament for Weymouth, asked the Postmaster General in Parliament if the post office mails in certain parts of Wales were not conveyed on velocipedes instead of horses, and if this charge had been found to add to the efficiency and economy of the service.

The Postmaster General, the Marquis of Hartington, replied that an experiment was underway to ascertain whether in certain rural districts velocipedes could be used by post messengers on roads that are not very hilly, or are otherwise adapted for the purpose. McGonagle surmises that "today's rural postman on his bicycle is, no doubt, the outcome of these experiments."²⁹

²⁸Woodforde, The Story, pp. 25, 26; "Bicycles and Tricycles," p. 619.

²⁹McGonagle, The Bicycle in Life, pp. 20-21.

Response to the velocipede was widespread and vigorous. There were those who sneered at the new carriages and pointed out that similar machines had been tried before and, for practical uses, had been found woefully wanting. These critics predicted sprains, ruptures, dislocations, and death as the penalty of using the velocipede. Some thought velocipedes should be excluded from parks because they endangered life and limb of park users.³⁰

McGonagle claims that calling the bicycle a "popular toy" was misleading. Yet he writes that

In spite of the fact that prices were still steep enough to keep them out of the hands of the toiling masses, they were selling like hot cakes to the wealthier classes.³¹

The Scientific American was all in favor of the velocipede. It states that

the advantages are obvious. It takes men from the bar-rooms into the pure air, into God's light and sunshine and furnishes a means of healthful, invigorating and pleasant exercise.³²

³⁰Ibid., pp. 19, 20.

³¹Ibid., pp. 21-22.

³²Wilkinson-Latham, Cycles in Colour, p. 22.

Many books were written about the velocipede during this period. W. Sawyer wrote one of the earliest books in 1863. It had the intoxicating title of Illustrated Catalogue of Velocipedes, Double-Action Self Locomotives and Hand-Propellers. Alexis-George Favre's Le Vélocipède, sa Structure, ses Accessoires Indispensables, le Moyen d'Apprendre a s'en Servir en Une Heure, was published in 1868; an Italian edition was issued that year also.³³

At least 10 books were written in 1869, the peak year of the velocipede era, only one of which was written by an American, J. T. Goddard, The Velocipede: Its History, Varieties and Practice. Its 107 pages and 13 woodcuts are the only "such memorial which the mania produced" in the United States, according to Bagg. He criticizes the book as hastily flung together and without literary skill, "a mere jumble and hodge-podge of inaccredited gleanings from the newspapers, and from the circulars of manufacturers and inventors."

The book showed well how extensive the craze really was, and to point the contrast between that noisy furor and the quiet advent, a decade later, of the sort of cycling which is destined to flourish forever.³⁴

³³Larry Bonura, "Some Early Bicycle Books," The Mid-America Cyclist #68 (November/December 1979), pp. 15, 16.

³⁴Bagg, Ten Thousand Miles, pp. 400, 402.

six months. Three months after taming the velocipede, Bagg had his final experience with the machine in New Haven. He writes that the enforcement of a municipal law, during the spring vacation, forbidding the use of the velocipede on city sidewalks, explains why the field of his riding was restricted. "It was because of these cramped conditions, and not because of any diminution of my ardor, that I abandoned it altogether," he writes.³⁶

By late 1869 the fever was spent and the heavy velocipede began sinking into the same oblivion that had overtaken the draisienne. Smith's reason for the demise of the velocipede was that it was "urged into darkness by whispers of ruptures induced by cycling over rough roads."³⁷

The May 22, 1869 Yale Literary Magazine records that

as for velocipedes, we can only tell, what we never expected to have to tell, of their dying days. Alas! Poor Yorick! A dire pronouncement of the city fathers--'No person shall use or propel by riding thereon any velocipede along or upon any paved walk in said city formed for the convenience of foot passengers, under penalty of \$25'--has sent you to an untimely grave. Many disciples mourn their loss; but columns full of complaints have availed not for repealing the obnoxious article.³⁸

The best rinks in town lowered prices to 25¢ an hour but

³⁶Bagg, Ten Thousand Miles, pp. 394-395.

³⁷Smith, A Social History, p. 7.

³⁸Bagg, Ten Thousand Miles, p. 402.

could not rescue the "dying enthusiasm for riding the velocipede."

The velocipede had an impetuous beginning in the United States and maybe this had something to do with its sudden demise. In England there was no quick beginning and no abrupt end. Bagg writes that while the American carriage makers dropped the velocipede in a hurry, with a "feeling of contempt for their own folly in having interrupted their proper business in behalf of such a deceptive toy," the English kept pegging away at it, both on the road and in the machine shop, until the modern bicycle was evolved.³⁹

Woodforde writes that the start of serious interest in the bicycle in England, as something that might be useful as well as amusing, came when the newspapers began reporting records of long distance rides. "A machine that enabled a man to ride forty, fifty or even sixty miles in a day must, it was argued, be of some service." And thus was set in motion a thousand wheels to devise an easier-to-ride bicycle, lighter with better constructed frames--a bicycle like the ordinary or "high-wheeler."⁴⁰

According to Smith, most of the subsequent alterations of the velocipede were in the direction of creating the ordinary, which was the first machine popularly designated

³⁹Ibid.

⁴⁰Woodforde, The Story, p. 33.

the bicycle. In May 1869 the English firm of Reynolds and May showed its Phantom model at the Crystal Palace, London. For the first time, Smith claims, the world saw an ordinary bicycle made of iron instead of wood and equipped with rubber tires. "Although awkward-looking today, it was a picture of grace itself when compared with Lallement's machine."⁴¹

Bagg received his degree on July 24, 1869. On the 26th he sent for lists of various velocipede makers. The price of a new Pickering model already had dropped from \$130 to \$80. He bought a second-hand Pickering from the ex-keeper of a rink, paying \$20 for it on August 13. The machine had some mechanical problems. Bagg rode the bike to Springfield, Massachusetts where he urged the dealer to return his money. Instead, the dealer made a few repairs which he declared "caused the wheels to run true" as originally warranted. Bagg denied the dealer's assertion and left with his Pickering, which he immediately sent home in a cart. He took short rides with it every day or two until October. Bagg rode little after that and early in 1870 presented the velocipede to a 12-year-old boy.⁴²

Pierre and Ernest Michaux continued in business until 1869, by which time the velocipede was well established in France. Then they sold their interest in the firm for

⁴¹Smith, A Social History, p. 7.

⁴²Bagg, Ten Thousand Miles, pp. 404-405.

200,000 francs to the Oliver family, who traded as the Compagnie Parisienne. A national monument at Bar-le-Duc, France recognizes that Pierre and Ernest were the "inventeurs et propagateurs du vélocipède a pédale." The Michaux type velocipede continued to be manufactured and used until about 1872.⁴³

In England the bicycle craze stimulated velocipede production also. In 1869, besides the Coventry Machinists Company, there were ten makers in London, ten more in Wolverhampton, and countless blacksmiths and coachbuilders who built velocipedes, according to Wilkinson-Latham.⁴⁴

McGonagle writes that

the future of the bicycle in England was assured. Thus was born the Coventry cycle industry, which not only boosted the commercial life of the city, but eventually made it the centre of the world's cycle industry.⁴⁵

The velocipede era set the groundwork and created the setting for the evolution of the bicycle in the United States. The ordinary bicycle soon built upon that framework and brought the bicycle to respectability.

⁴³McGonagle, The Bicycle in Life, p. 15; Smith, A Social History, p. 5; Woodforde, The Story, p. 19.

⁴⁴Wilkinson-Latham, Cycles in Colour, pp. 27-28.

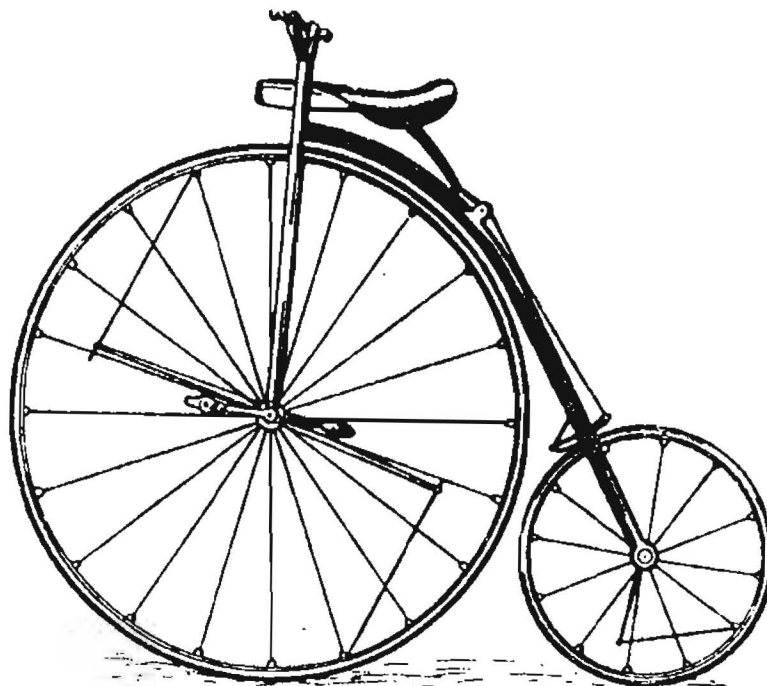
⁴⁵McGonagle, The Bicycle in Life, p. 18.

Chapter II

1871-1876: The Development of the Ordinary Bicycle

"The design of the 'Ordinary' is simplicity itself, and it still remains the embodiment of grace and elegance in cycle construction."

--Archibald Sharp in Bicycles and Tricycles, 1896



The Ariel, an early ordinary

The second stage of the bicycle's evolution in the United States came in 1871 to 1876 with the development of the ordinary bicycle.¹ It is a story of technological improvements in and modifications of the velocipede. It is also the story of English dominance of bicycle industries and promotions. For all practical purposes the velocipede's demise in 1871-1872 in the United States killed all efforts at bicycle production and riding in this country. It was not until the ordinary was introduced at the 1876 Centennial Exposition in Philadelphia that the bicycle again became a focal point of many Americans. The British became the hub of ordinary development by default: America lacked desire and interest in the bicycle and the Franco-Prussian War slowed development of continental Europe's bicycle industry.

The impetus to English production of velocipedes, or "timber trucks" and "treadmills" as they were derogatorily called, and to the industry's early location in Coventry, had been provided by chance and Rowley Turner. The improvements and modifications to these strong but weighty and crude machines were provided by the "fertile brains and mechanical expertise of a number of men and firms in

¹The large front-wheeled bicycle was first called a high-wheeler; some time in the mid-1870s it began to be termed the ordinary; about 1890, when the ordinary began to fade in the safety's shadow, it was labeled a penny-farthing.

Coventry and London," according to Frederick Alderson.²

Draisiennes of 1819 and, at first, velocipedes, had wheels of equal size, although the later improved velocipede might have a rear wheel of 30 inches in diameter and a front wheel of 36 inches. The later velocipede also had a seat more nearly over the pedals to improve thrust and wider handlebars for better steering control.

The great advance over the velocipede which the ordinary incorporated consisted mainly in the use of

indiarubber tyres, thus diminishing vibration and jar, and consequently diminishing the power necessary to propel the machine. As a direct consequence of this, a larger driving-wheel could be driven with the same ease as the comparatively small driving-wheel of the [velocipede]. The design of the 'Ordinary' is simplicity itself, and it still remains the embodiment of grace and elegance in cycle construction, though superseded by its more speedy rival, the rear-driving Safety.³

The mass-center of the rider on the ordinary was nearly directly over the center of the wheel. Any sudden obstruction to the motion of the machine frequently had the effect of sending the rider over the handlebars to take a "header." This element of insecurity soon led to the introduction of other patterns of bicycles and, eventually, to the design of the safety bicycle.

²Alderson, Bicycling, p. 37.

³Sharp, Bicycles and Tricycles, p. 149.

Unlike the draisienne and velocipede, the ordinary was a hit. Although the height of the wheel was a distinct and ceaseless hazard, this very height made it possible to travel farther with each revolution of the pedals. In general, the aim of those who worked on improvements was to reduce weight, ease propulsion, and make it possible to achieve higher speeds by increasing the diameter of the driving wheel. Several intermediate developments contributed to one or another of these aims before reaching the logical conclusion of a radically different form of machine.⁴ The taller models could be ridden at more than 20 mph.⁵

The invention of the ordinary is generally credited to a Frenchman, M. Magee of Paris. In 1869 he made a machine of steel, iron, and rubber with a front fork or driving wheel of 24 inches.⁶ Robert Wilkinson-Latham claims that the development of this design of the machine might have gone on further in France had not the Franco-Prussian War broken out.⁷

English inventors were not without their own ideas, however. The Phantom bicycle, invented by W. F. Reynolds and J. H. Mays of Tower Hill, London, had, instead of all-

⁴Alderson, Bicycling, pp. 37-38; Clifford Graves, "The Romance of Cycling's Golden Age," in The Best of Bicycling!, ed., Harley M. Leete (New York: Trident Press, 1970), p. 306.

⁵Woodforde, The Story, p. 39.

⁶McGonagle, The Bicycle in Life, p. 37; Alderson, Bicycling, p. 37.

⁷Wilkinson-Latham, Cycles in Colour, p. 29.

wood wheels, wire spokes in pairs threaded through an "eye" screwed into the wooden rims and held between two halves of the hub flange. Instead of the old heavy backbone, the frame was a triangulated one, built up from iron rods and hinged between the two wheels which moved independently. Alderson says that this was a novel if "somewhat tricky means of steering which enabled the machine to be turned in a small circle."⁸

McGonagle says that the Phantom was a "truly radical design--not just an improved Michaux type boneshaker."⁹ It was lighter (53 pounds) and had an articulated triangular frame made of light iron rods. It had wooden wheels, but with double wire spokes, probably one of the first practical examples of the suspension wheel with tension spokes, according to McGonagle. Although the suspension wheel, as such, was patented as far back as 1802 by G. F. Bauer, this was the first time it was used on a bicycle.¹⁰

In 1870, a year after McGee made his ordinary prototype and the Phantom made its appearance, James Starley, of the Coventry Machinists Company, patented his ribbon wheel, which was originally spoked with narrow brass ribbons, which were later exchanged for wire spokes. Although individual spokes in the suspension wheel could not be tightened, a

⁸Alderson, Bicycling, p. 38.

⁹McGonagle, The Bicycle in Life, p. 28.

¹⁰Ibid.

cross-bar brazed to the spindle between hub flanges with adjustable tie-rods joining its ends to the wheel's rim made it possible to tighten all spokes at once.¹¹

Starley broke with the Coventry Machinists Company soon after developing his ribbon wheel and, with William Hillman and B. Smith, formed his own company on St. John's Street, Coventry. It was here that he designed the famous Ariel bicycle, his first ordinary.¹² The Ariel was a clear improvement on the velocipedes of the day, and was a forerunner of the ordinary. The size of the front wheel was kept reasonable by fitting a speed gear to the front driving hub, which needed but one turn of the pedals for the wheel to rotate twice. To reduce weight, the Ariel's rear wheel was made smaller. To give it more speed, the front wheel was made larger. The Ariel weighed about 50 pounds and cost \$32 for the basic design and \$48 for the geared model. This was cheaper than most velocipedes, which retailed at between \$40 and \$60.¹³

The first round rubber tires, spongy on the underside and tougher on the tread, were designed by J. L. Hancock for the Ariel. Starley also invented the center steering-head to supersede the old velocipede socket type which tended to

¹¹Williamson, Wheels Within Wheels, p. 54; Wilcockson, Bicycle, p. 28; Alderson, Bicycling, pp. 38-39; McGonagle, The Bicycle in Life, p. 28

¹²McGonagle, The Bicycle in Life, p. 28.

¹³Wilcockson, Bicycle, p. 27; Williamson, Wheels Within Wheels, pp. 54-55.

swing around and trap the rider's leg.¹⁴

Although Starley and Hillman took out a joint patent for the Ariel in 1870, it was not put into production until 1871. Before its introduction to the British public in September 1871, Hillman was very keen on making a spectacular gesture to launch the Ariel with the utmost publicity. He and Starley finally decided that both should attempt the ride from London to Coventry, about 96 miles, in a single day.¹⁵

The two gentlemen took their bicycles by train to Euston Station, spending the night at the Station Hotel. Arranging to be called before daylight, they had a light breakfast and mounted their machines just as the sun was rising. The cobbled roads caused the bicyclists some discomfiture. But, once through London, the country roads were smoother and the two made good progress, reaching St. Albans at about 8:30 a.m., where they stopped to have an ample breakfast.

By one o'clock the riders had covered nearly half the distance and halted at an inn near Bletchley to eat dinner and to rest for an hour. When they remounted, Starley complained of strain to his leg muscles. Only one mishap befell the adventurous bicyclists--Hillman was thrown from his machine when the rubber tire of his front wheel came

¹⁴Alderson, Bicycling, pp. 38, 39.

¹⁵McGonagle, The Bicycle in Life, p. 28.

off, but he escaped with nothing worse than a grazed hand. He was able to bind the tire on again and proceed without further trouble.

Both riders admitted that the last few miles from Daventry to Coventry daunted them. By this time they were both tired and when night fell there was the added difficulty of avoiding stones and holes in the road, and Starley, no longer a young man, admitted that he was near the limit of his endurance before they saw the lights of Coventry. The bicyclists had completed the 96-mile journey within 24 hours and the bicycles had no mechanical trouble, except for the tire mishap. This demonstration of the Ariel developed by Starley and Hillman greatly promoted the ordinary bicycle as a most efficient means of human transport.¹⁶

This grueling ride put the Ariel on the map. The machine sold well, and in 1873 James Moore, the Paris-Rouen race winner in 1869, rode 14½ miles in one hour on one of these models. The front wheel was 50 inches in diameter and the rear wheel was 14 inches--the appearance heralded that of the ordinary--and it weighed 51½ pounds. The cranks were slotted so that the pedals could be adjusted from a five inch radius to a six and one-half inch radius.¹⁷

¹⁶Ibid., pp. 28-30.

¹⁷Ibid., p. 30; Alderson, Bicycling, p. 39.

In 1871, the year the Ariel was introduced, W. H. J. Grout of Stoke Newington, England, designed the Tension bicycle. By nipple adjustment at the rim, the spokes on the Tension could be tightened individually instead of all simultaneously. Grout's machine also included, among other improvements, hollow front forks, hollow rubber tires vulcanized to the rim, a pedal for use with the ball of the foot, and cranks connected directly to the hub. Front wheel dimensions of 48 inches to rear wheel dimensions of 24½ inches were common, but models were available with the driving wheel up to 60 inches in diameter. The Tension weighed 69 pounds, not nearly as light as the Ariel.¹⁸

The Ariel, considered the world's first successful attempt at a light, all-metal bicycle, set off a new burst of manufacturing innovation, much of it based upon the new scale of enlarged front wheel and reduced rear wheel. The ordinary, with its relatively low cost, appealed to a considerably larger market than had been enjoyed by the expensive and heavy velocipede and it was to experience a 10-year run as "the bicycle."

Throughout its years, technical advances came on with a rush. Improved speed gears, hollow forks, tubular frames, brazed joints, hollow rubber tires, ball and roller bearings, all were produced by an expanding cycle industry and eagerly

¹⁸McGonagle, The Bicycle in Life, p. 30; Alderson, Bicycling, pp. 39-40.

purchased by a growing army of riders. Soon, ordinaries of all types were being designed, built, and ridden with enthusiasm. Riders liked them because they not only were a challenge to skill, with their high riding seats, but they also allowed high average road speeds.¹⁹

By the middle of the 1870s, the names of English bicycle makers included Coventry Machinists Company, later to be known as the Swift Cycle Company, by far the largest firm, Thomas Humber of Nottingham, Hydes and Wigfull of Sheffield, an agricultural implement maker that turned its resources to producing high-class polished Stanley bicycles and invented the Stanley head, Ellis and Company of Farringdon Street, John Keen of Surbiton, known for the height and lightness of his machines, Dan Rudge of Wolverhampton, amalgamating in 1880 with the Tangent and Coventry Tricycle Company, formerly Haynes and Jefferies, George Singer of Coventry, who had been a foreman in the Coventry Sewing Machine Company's works and was an early associate of James Starley, and Smith and Starley, in business at the St. John's Works, Coventry. By 1874 some 20 English firms were in the ordinary manufacturing business, the beginnings of the English bicycle industry that was to become famous throughout the world. Henry Sturmey's publication, The Indispensable Bicyclist's Handbook (1879), lists about 300 different

¹⁹James Wagnvoord, Bikes and Riders (New York: Van Nostrand Reinhold Company, 1972), p. 63.

machines that were being made by some 60 firms, most of them⁴⁶ in Coventry, Birmingham, and London, but others in Brighton, Cheltenham, and King's Lynn.²⁰

James Starley was captivated by the challenges of producing a lighter and faster bicycle. From the first moment that the Coventry Machinists Company had started to manufacture velocipedes, Starley's "inventive mind had been stimulated to a remarkable degree." His first action when he saw a velocipede was to lift it and he immediately thought it cumbersome and heavy. Before he ventured upon other suggestions, the 200-pound, nearly 40-year-old Starley learned to ride the machine. After mastering it, he began to think out a series of modifications and improvements in construction and design. Williamson writes that

He was never really satisfied. All the time his eager mind was questing ahead, with exciting new conceptions bubbling up one after the other as he tried to visualise future possibilities.²¹

Among Starley's ideas and inventions are a mounting step to help put the rider in the saddle, an improved brake design, the steering head on the Coventry Machinists Company's leading model, the Gentleman's Bicycle, rubber covered wooden pedals instead of heavy cast brass, made

²⁰Alderson, Bicycling, pp. 40-41; McGonagle, The Bicycle in Life, p. 27.

²¹Williamson, Wheels Within Wheels, p. 48.

triangular so as to present always a pedal face to the foot, the footrests on stays in front of the enlarged driving wheel, the tension-wire spokes, tangent spoked wheels, and the differential gear that was developed with the Royal Salvo Tricycle in 1877.²²

Starley died June 17, 1881 of liver cancer. He was 51 years old and his death cast a gloom over the entire cycle world of Coventry and elsewhere. All the cycle firms closed their works in Coventry as a mark of respect. Immediately after his death old associates and workmen in the local cycle companies started a fund to provide some kind of memorial in recognition of all that he had done for them and for their city. The response was swift and dramatic. A monument was built and dedicated in 1884 in Queen's Grove, Coventry. The grey granite, red granite, Portland stone and marble memorial is 20 feet high and is surrounded with wrought-iron railings, a monument to the "Father of the Cycle Industry in Coventry."²³

By 1875 the ordinary bicycle had caught on and it enjoyed a vogue that triggered the boom of the 1880s and the golden age of bicycling in the 1890s. The classic lines and simplicity of its functional design had great appeal. Also, it raised the rider above the heads of pedestrians to a level with riders on horseback, which seemed to appeal to

²²Alderson, Bicycling, p. 39; Williamson, Wheels Within Wheels, pp. 48-49, 146-147.

²³Williamson, Wheels Within Wheels, pp. 83-87, 153-154.

the young bloods of the day who took to the ordinary.²⁴

The competent rider felt comfortable, even relaxed, sitting high up and upright astride his wheel.

He liked the feel of the pedals almost immediately beneath him and of the short handlebar in his lap. He enjoyed the rolling billowy motion with which the high-wheeler covered the ground. Its progression was silent, too. There might be vibrations from the trailing wheel far below, but the single-backbone structure had no parts to rattle. Did he look ridiculous? People often said so, but he himself knew that he was graceful and, in more senses than one, superior. He was able to reflect, while glimpsing the view over tall hedges and walls, that just to be riding such a bicycle meant that he had acquired a skill not within the reach of all. Few men over middle age attempted to mount and still fewer girls.

The bigger the wheel, the higher rose a young man's self-esteem. In the end, of course, he was limited by the length of his legs; and many young men aspired in vain to a 60-inch machine. By the mid-1870s the usual wheel size was about 54 inches.²⁵

In 1874 Starley produced a special ladies' model of the Ariel. "As was befitting a staunch and true Victorian," Starley designed the machine around women's clothes of the period, instead of suggesting that women's clothes be

²⁴Ken Smith, ed., The Canadian Bicycle Book (Toronto: D. C. Heath Canada Ltd., 1972), p. 7.

²⁵Woodforde, The Story, pp. 39-40, 41.

modified to suit the bicycle. The ladies' model incorporated certain features based on an earlier velocipede design by S. W. Thomas. The rider sat in a side-saddle position, the handlebars being shortened on one side and lengthened on the other. The rear wheel was mounted on an overhung axle and the front wheel was offset from the track of the rear wheel to counteract the bias of the side-saddle. McGonagle writes that "It must have been the very devil to balance and operate, and was one of Starley's few failures." It never did become popular.²⁶

The latter half of the 1800s was the great railway era and little money was extended to road construction or repair. There were tarmacadam surfaces in towns, but most country roads were made from chalk or sandy gravel. Without attention, these roads had become badly rutted, dusty when dry, and slippery or mud-bound when wet. The vibrations caused by the deep holes and bumps on these poorly built and kept roads forced bicycle manufacturers to add sprung frames, sprung front forks and sprung saddles to provide bicyclists with a more comfortable ride.²⁷

Roads were uneven in standards and, at times, came little short of calamitous. They tried and tested the

²⁶McGonagle, The Bicycle in Life, pp. 31-32.

²⁷For an excellent discussion of road development in the United States and the effect of bicyclists on the good roads movement see Philip P. Mason, "The League of American Wheelmen and the Good-Roads Movement, 1880-1905" (Ph.D. dissertation, University of Michigan, 1957).

ordinary wheelman, but did not deter him. McAdam's prescription that no stone ought ever to be cast upon a road for repairs that could not be put in a man's mouth (small stones under pressure of traffic fit each other's angles and soon pack into a hard mass) was probably as often recognized in the breach as in the observance on most roads.²⁸

The major drawback to the ordinary was its instability. Any slight obstacle--a pothole, a loose stone, or a rough road (and there were many of them in those days)--could send the rider sailing through the air. This ungainly departure from the saddle was called "taking a header" or "a cropper." Another hazard was the danger of getting a foot entangled in the spokes. Furthermore, the only brake in existence, except for the odd experimental designs, was a flat spoon-type in front of the handlebars that, on application, clamped directly onto the front tire. Hasty use of this brake often resulted in a header and its effectiveness must have been seriously limited. But nothing daunted the ordinary enthusiast, and they brought an elan to cycling that has not been duplicated since, according to Ken Smith.²⁹

Falls were so much an accepted part of bicycling that manufacturers made a selling point of their machine's ability to withstand them. Thomas Humber, in his first

²⁸Alderson, Bicycling, p. 43.

²⁹Smith, The Canadian Bicycle Book, p. 7.

Humber Bicycle Catalogue in 1873, prints, among others, these alarming testimonials for his English Spider model:

Dear Sir,--I am very pleased, in compliance with your desire, to give my opinion of the bicycle you made for me. Having had it several months in constant requisition, it is quite as firm as when I had it, not withstanding a tremendous shaking and concussion it experienced on the occasion of a spill last September, after which I quite expected to see it fall into fifty pieces.

Dear Sir,--I purchased one of your Spider Bicycles some two years ago, and although it has been ridden on an average of 60 miles per week, and on several occasions been engaged in universal spills and collisions, it is now almost as sound as when first despatched from your works.³⁰

The ordinary was so unstable compared with the safety bicycle that it became a "cult thing to be seen riding a grand old ordinary even when it had passed out of fashion and had been superseded by the" safety. So strong was the cult that a number of cyclists continued to use the ordinary right into the 1890s. But the danger of taking a header was always prevalent. A cycling magazine of the late 1870s ran this article to illustrate the dangers of the ordinary:

When a man is riding a bicycle he looks neither to the right nor to the left, but appears to be gazing about five hundred

³⁰Woodforde, The Story, pp. 46-47.

yards into futurity, as if trying to solve the problems of the hereafterness of the unknowableness of the unknowable hereafter. He is not, however. He is simply wondering, in case of a sudden header, whether his skull would be split open wide, or if he would escape with his nose smashed all over his face.³¹

A large percentage of the public and the police, in America and Europe as well as in Britain, looked upon the flashy new ordinary as a menace, upsetting horses and unsettling the quiet pace of rural life. Laws varied from place to place and many bicyclists were stopped or arrested for offenses they did not know they had committed. There was no universal definition that a bicycle was a vehicle and, as such, that it had a right even to be on the road. These rules were at first a constant source of trouble, since a local authority could impose its own laws for cycling. Some required a bell, others a whistle warning; lamps in some places must be lit at sunset, earlier in others, or it might be an hour later.³²

Charges of "furious riding" were commonplace. In New Jersey a state law limited bicyclists' speed to eight mph. There was also a running battle with coach drivers, many of whom objected to being overtaken by bicyclists and having their horses frightened. By the mid-1870s it is estimated

³¹McGonagle, The Bicycle in Life, pp. 29, 32; Alderson, Bicycling, p. 47.

³²Alderson, Bicycling, p. 47.

that there were nearly 50,000 ordinaries on the roads in England. Despite this large number of bicyclists, the public and police dislike of these "cads on castors" made the cyclist's life dangerous.³³

In August 1876 a group of cyclists were heading along the road at Hendon, England when they were overtaken by the St. Albans coach. The driver and guard had brushed cyclists before who had the habit of racing their coaches. Henry Cracknell, the guard, had provided himself with a large iron ball on the end of a piece of rope. This missile was launched by the guard at the secretary of the Trafalgar Bicycle Club and at the same time, for good measure, the driver lashed out with the whip. The cyclist was overturned with his machine and dragged some distance behind the coach until the rope broke.

The full story was told in court. The secretary of the club had, he admitted, sworn at the driver for not allowing him to pass while the driver, calling on past experiences of cyclists frightening his horses, admitted to taking preventive action. The magistrate, however, refused to accept the driver's story and fined him \$8, and the guard \$20. There was an uproar in the cycling fraternity. The Bicycle Journal thundered that charging \$20 for the "chance of killing a man is holding human life too cheap."³⁴

³³Wilkinson-Latham, Cycles in Colour, p. 31.

³⁴Ibid., pp. 32-33.

The bicycle pioneer of the 1870s faced many perils before his legal rights were defined: boys threw stones at the cyclist, flicked caps, or thrust sticks between the spokes.

Tramps were ever ready to take advantage of a mishap on a lonely road, roughs--known then as 'road hogs'--were wont to molest a single cyclist in the streets, and magistrates, in some of the urban areas, became notorious for their 'anti-cyclist' attitudes.³⁵

In London many summonses were issued to cyclists for "furious cycling," and some outlandish speeds were attributed to them by the constable on the beat who arrested them. Patrols of mounted police made raids on bicyclists frequenting the wood-paved roads of Hammersmith and Kensington. Fines differed greatly and for the same offense one cyclist on one day was fined \$8, the maximum, and another cyclist in front of another magistrate was fined only \$4. Policemen had no training in trying to gauge speed and some riders were accused of riding 40 mph while one officer said he saw a cyclist riding 500 mph.³⁶

Very soon after the velocipede made its appearance in its various forms in the early 1860s, the riders of these machines created bicycle clubs to further their activities.

³⁵Alderson, Bicycling, p. 46.

³⁶Ibid., pp. 33-34.

Clubs were founded throughout the world in camaraderie, nurtured in the desire to defend cyclists' rights on the roads, and sustained because of their accomplishments. Bicycle riding, particularly touring, became a cult among the urban middle class, who, perhaps, could not afford to keep a horse, but now had the opportunity to explore the countryside under their own power. They formed themselves into clubs too, each with its own uniform of tweed riding breeches, jacket, and hat, with its own enamel badge pinned to the hat.³⁷

Louis Delapraz, president of the Geneva Bicycle Club, wrote in February 1880 that it was in 1869 that the Veloce Club de Geneve was founded.

This club, quite numerous at its commencement, had only an ephemeral existence; little by little the fashion passed away and in 1871 there remained no more than a few veritable amateurs who continued to devote themselves to this eminently gymnastic and hygienic exercise.

The club was revived in 1877.³⁸

³⁷Larry Bonura, "Bicycle Clubs from 1867 to 1887," The Wheelmen #20 (May 1982), p. 24; Wilcockson, Bicycle, p. 28. See also Larry Bonura, "Some 100-Year-Old Bicycle Clubs," The Mid-America Cyclist #74 (July 1980), p. 4, and Larry Bonura, "Some 100-Year-Old Bicycle Clubs #2," bicyclio, a bicycle history column #12 (July/August 1981), pp. 1-4.

³⁸Louis Delapraz, "Swiss Velocemen," The Bicycling World 1 (February 1880), p. 118.

The Pickwick Bicycle Club was formed in London on July 22, 1870; the Boston Bicycle Club was formed on February 11, 1878. The first nationwide club was the Bicycle Touring Club--in 1882 it was renamed the Cyclists' Touring Club as it is known today--founded on August 5, 1878 with membership embracing many countries in Europe and the New World. The aims of the Bicycle Touring Club were much like those of many local clubs: to improve facilities for cyclists, to defend cyclists' rights on roads, and to issue gazettes and guidebooks.³⁹

Club runs and record-breaking road rides were among the highlights of a bicyclist's life in this period. For outings and meets there were set rules and observances. The club captain took his place at the head of the rides, members taking up position behind according to seniority. The sub-captain brought up the rear. All members wore the club's uniform, usually a jacket and ribbon or badge and a diminutive cap. Some wore scarfs. Buglars were on hand to convey orders to members and, for the public safety, the captain might compel members to stop and dismount when passing horses.⁴⁰

Outings in the early ordinary days covered considerable distances. Riders had time to visit objects of interest and

³⁹Wilcockson, Bicycle, p. 28; Bonura, "Some 100-Year-Old Bicycle Clubs #2," p. 1. See also Bonura, "Bicycle Clubs," p. 24.

⁴⁰Alderson, Bicycling, pp. 46-47.

to enjoy the scenery despite the vicissitudes of hills and a species of road that in places was no better than a neglected watercourse. In 1872 a rider who called himself "Dauntless" rode from Liverpool to London, 206 miles, in two days. A cycling publication of 1874 offering advice on continental tours, included not only Belgium, Holland, France, and the Rhineland, but also the western and northern cantons of Switzerland, even though "the bicycle does not love mountains, and mountains are, in two senses, the most prominent features of Switzerland."⁴¹

There were many golden rules for bicycle riders on tours in the 1870s: "Never travel a long journey without having your drawers lined smoothly and carefully with chamois leather or buckskin." "Never ride in the early morning fasting; a little rum and milk, with an egg beaten up in it, is an excellent sustenent." "Never place your feet on the rest for a ride down a hill, which you cannot see all the way to the bottom, without having your machine thoroughly in hand, in case an immediate dismount become necessary." "Never ride in the dark, except compelled to do so; unless you know every inch of your road thoroughly." And "Never fail, when resting on a journey, to place your machine beyond the reach of meddlesome hands."⁴²

⁴¹Ibid., pp. 47-48; Bicycling 1874, A Textbook for Early Riders (1874; reprint ed., Dover, England: David and Charles, 1970), pp. 64-66.

⁴²Bicycling 1874, pp. 39-40.

Inter-club matches and races whetted and amply exercised members' keenness. In England an amateur bicycle race over a course of four miles was held annually at the Lillie Bridge track. Between 1871, the first year of the championship race, and 1875, H. P. Whiting was the winner on four occasions, riding a machine built by John Keen, a professional champion who rode 50 miles in 3 hours 5 minutes 45 seconds in 1876, and later manufactured his own brand of bicycle. On the other occasion, Whiting did not compete and after 1875 he relinquished his amateur status. His time for the four mile race improved from 16 minutes 25 seconds to 14 minutes 37 seconds. Another star of the Lillie Bridge track was David Stanton, who, in 1874, rode to the "most extraordinary performance on record of any man, animal or machine--106 miles in 7 hours 58 minutes and 51½ seconds."⁴³

By the early 1870s the enthusiasm for road racing had grown to considerable proportions. To demonstrate the growing possibilities of the new high wheel machines as practical road vehicles, James Sparrow, a London bicycle manufacturer, organized a fantastic bicycle ride. He set up and financed four riders who traveled on Grout Tension bicycles from London to John O'Groats, 800 miles, in 15 days.

The four cyclists left London on June 2, 1873 and in weather that was good, bad, very bad, or merely wet and

⁴³Alderson, Bicycling, p. 48.

windy, and on roads of varying conditions, covered as much as 60 or 70 miles a day, or as little as 20, in the first really long-distance road ride on record. Such feats not only underlined the value of the machines, but stimulated demand for production from a new and rapidly developing trade. As a contemporary saw it,

a bicycle, since the arrangements of springs, brakes and rubber tyres have removed half the terrors of ruts and steep ingredients, is more useful than the cleverest nag man ever bestrode, with the additional advantage that⁴⁴ a bicycle consumes nothing but a little oil.

Crowds of 10,000 and 15,000 were commonplace at track meetings in London and the English Midlands, and one of the most popular performers was James Moore, the Paris-Rouen winner. In 1872 Moore set an unpaced record of 14.16 mph. He was equally successful at racing on road and track, winning international championships at Lyon (1873), London (1874), Paris (1875) and Toulouse (1877). He retired from bike racing in 1877 when he was 28 and moved to Normandy to concentrate on the horse-racing stable he owned. He died in 1940 at age 91, having continued cycle touring into his 80s.⁴⁵

Road racing prospered on the continent with Italy holding its first road race from Florence to Pistoia (22

⁴⁴Ibid., p. 40.

⁴⁵Wilcockson, Bicycle, p. 27.

miles) in 1870. The winner, 17-year-old American Rynner Van Neste, finished three minutes ahead of the runner-up and 30 others. Many place-to-place races were created in the next five years, with the most significant being the 93-mile Milan-Turin classic, first held on May 25, 1876. Only eight started in pouring rain. Four of them were eliminated from the race by appalling roads. Winner Paolo Magretti finished more than an hour before the rest, averaging 9.3 mph.⁴⁶

The French bicycle industry resumed after the war ended in 1871, and was on its feet again by 1874. Racing re-established itself also, with the two most successful riders being the brothers Charles and Jules Terront. They raced at the Wolverhampton track in England in 1876, the first time Frenchmen had competed abroad, and they won, returning home with almost \$1,000.⁴⁷

The bicycle was considered and tested as a possible in the war machine. During the Franco-Prussian War of 1870-1871, an enterprising tactician approached French military officials with the proposition of using bicycles to conduct armed scouting expeditions in enemy territory.

What a surprise it would be! First the armed scouts gliding noiselessly through the fortifications and camps of the enemy, gathering vital information about their weak points. Then, the weaknesses well-recorded, task forces of specially trained soldiers

⁴⁶Ibid., pp. 27-28.

⁴⁷Ibid.

racing deep into the enemy's land--to strike and disappear as silently and as mysteriously as they had come.⁴⁸

Like many ideas, this one looked good on paper, but came up short when confronted with the harsh problems of reality. The bicycles of 1870 were, by today's standards, crude in design, clumsy in use, distressingly heavy, and notoriously unreliable in their ability to survive in rough country.

Soldiers burdened with rifle, pack, and supplies needed acrobatic agility, great strength, and infinite patience simply to wobble their way along the cowpaths that served for roads in those days. More often than not, soldiers on foot, overtaking the 'speedy cyclists,' found them panting in total exhaustion in a ditch by the road. Initial experiments with the bicycle as a swift and silent weapon proved it to have all the bad characteristics of a mule with none of its advantages.⁴⁹

The Italian army, studying the French experiences, decided that the intrinsic advantages of the bicycle could hardly be denied. Without fuel or servicing, it promised far-ranging speed and mobility; all that was needed was some improvement on the clumsy machine. With the French cycles still rusting by the roadside where they had been flung in

⁴⁸Wagenvoord, Bikes and Riders, p. 93; Martin Caidin and Jay Barbree, Bicycles in War (New York: Hawthorn Books, Inc., 1974), p. 12.

⁴⁹Caidin, Bicycles in War, p. 12.

disdain, the Italian army put its theories into practice.

In 1870 they took the best bicycles that could be purchased on the open market and introduced them to their famed bersaglieri, the crack sharpshooters of the army infantry corps. For five years the riflemen wheeled their cycles up and down the roads of Italy, waving to pretty girls and pedalling off to meet those same girls under cover of darkness.⁵⁰

But would the machines that encouraged such clandestine meetings also function under the adversities of an army in the field? In 1875 the Italian army undertook large-scale maneuvers, duplicating battle conditions as closely as possible, and to everyone's surprise, especially that of the French, the bicycle came out a winner. The Italian military cyclists were used to carry dispatches to units isolated in the field. Notwithstanding the fact that even the best machines of that period were clumsy, heavy, and a nightmare of crude gearing, the cyclists averaged a speed of 12 mph across open country. They achieved this feat despite the heavy machines and being outfitted with a brake, lantern, knapsack, rifle in a support, ammunition, and a leather pouch for military orders.⁵¹

Reports of the bicycle's success in the Italian field maneuvers of 1875 sparked a rush by other countries to begin

⁵⁰Ibid., pp. 12-13.

⁵¹Ibid., p. 13.

their own experiments. As inventors and tinkerers were turned loose, the bicycle showed up in a bewildering variety of designs and shapes. It grew in size and complexity as rapidly as the enthusiasm of its supporters could be translated into physical hardware.

Numerous books about the ordinary and some about the velocipede were published in this era. Two were issued in 1872: Alphonse Marchegay's Essai Théorique et Pratique sur le Véhicule Bicycle Vélocipède and L. G. Jacques' Le Tour de Monde en Vélocipède in two volumes. A road guide was issued in 1874 by an anonymous author. It was titled Bicycling: Its Rise and Development, A Text Book for Riders. Bicycling 1874, A Textbook for Early Riders, by an anonymous author, also came out in 1874. In 1875 Alfred Howard's The Bicycle for 1874 was published. Other editions of this work by Howard, secretary to the Surrey Bicycle Club, came out in 1876, 1877 and 1878. Four books were published in 1876: another edition of Bicycling: Its Rise and Development, Singer and Company's Price List of "Safety" Bicycles, and Charles Spencer's The Modern Bicycle.⁵²

The early years of the ordinary overlapped with the development of the chain-driven safety bicycle and the demise of the velocipede. The Franco-Prussian War of 1870 may have served as a springboard for the success of the

⁵²Bonura, "Some Early Bicycle Books," pp. 3-4; Roland C. Geist, Bicycle People (Washington, D.C.: Acropolis Books Ltd., 1978), p. 160

English cycle makers, but it also delayed the introduction of the chain-driven bicycle by taking the life of a French clockmaker, André Guilmet, who had been called into the service. Years after the war, Guilmet's bicycle, a modified velocipede, was found lying in a Parisian loft. The modifications, if Guilmet made them, had to have been completed no later than 1869. They included wire wheels, rubber tires, and a chain-drive mechanism that drove the rear wheel.⁵³

That same year, a chain-driven design by F. W. Shearing was illustrated in the English Mechanic, but Shearing neither applied for patents nor demonstrated a rideable prototype. Making and showing the first rear-driven chain bicycle was up to another of the Coventry crowd, H. J. Lawson, in 1873. Even though Lawson was in Coventry, the center of the bicycle-producing world, it took him six years to finally put a commercial version of his chain design, the Bicyclette, into production.⁵⁴

Before the advent of the modern safety bicycle, some people gave thought to the safety problems connected with the ordinary. In the United States, one gentleman thought of a bright idea to stabilize the machine. He put the big wheel at the back and the little one at the front. The pedals were still connected to the big wheel, but now the

⁵³Wagenvoord, Bikes and Riders, p. 64.

⁵⁴Ibid.

little wheel was the steering wheel. This model, known as the Star, was short-lived. An Irishman, upon seeing the model, exclaimed, "Be God, sir, the big wheel is the little wheel, and the back wheel is in the front."⁵⁵

The ordinary was introduced to the United States by English firms exhibiting at the Centennial Exposition in Philadelphia in 1876. The Americans celebrated their 100th anniversary that summer with a gigantic display. All summer long thousands of people ate ice cream, goggled at the mighty Corliss steam engine, shook their heads in amazement over the monster cannon produced by the Krupp factories in Germany, and stood transfixed by the first ordinary put on display in the United States.⁵⁶

The enthusiastic response to the ordinary began to create a market for the bicycle. A St. Louis man bought the exhibition model that had been demonstrated by John Keen and took it home to put on display as "one of the new wonders of the world." Timms and Lawford of Baltimore began to import English bicycles, too.⁵⁷

As matters turned out, the most important individual who viewed the bicycle at the Philadelphia exhibition was a former Civil War officer from Boston, Albert A. Pope. He

⁵⁵McGonagle, The Bicycle in Life, p. 33.

⁵⁶Smith, A Social History, pp. 7-8; Alderson, Bicycling, p. 41; Fred A. Shannon, The Centennial Years (Garden City, N.Y.: Doubleday, 1967), p. 244.

⁵⁷Smith, A Social History, p. 8.

was fascinated with the ordinary. In 1877 he went to England to inspect the cycle industry there and returned to the United States convinced that the machine had a promising future.⁵⁸

⁵⁸Ibid.; Larry Bonura, "Albert A. Pope: Founder of the American Bicycle Industries," bicyclico, a bicycle history column, #11 (May/June 1981), p. 1.

1871-1876: Bibliography

1. Conant, S.S. "Locomotion--Past and Present." Harper's New Monthly Magazine 46 (1873):172.

A brief, one paragraph presentation of the velocipede's success in creating a short-lived revolution in transportation. Mention is made of elevated velocipede tracks, riding schools, commuting and value of riding a carriage as opposed to riding velocipedes. After fading from fashion, the velocipede was left to the very young in the United States.

2. Hopkins, ?. St. Nicholas 3 (1876):Cover.

Cover artwork.

Chapter III

1876-1887: Reign of the Ordinary

"We feel like encouraging the use of the bicycle. [It] is useful and graceful, when in motion, and the wheelman gets genuine exercise out of turning the wheel."

--Theodore L. Flood, editor,
The Chautauguan, 1884



An ordinary in the 1880's

1876-1887: The History

Between 1876 and 1887, the ordinary bicycle blossomed in the United States. From the time of its first display in 1876 until the first design of the safety bicycle in the mid-1880s, the ordinary became the bicycle, and started the United States on its courtship with the two-wheeled machine that erupted in the mid-1890s into a full-blown love affair.

Several English firms exhibited their ordinaries at the 1876 exposition. At the exposition's closing the unsold machines were taken by Timms and Lawford of Baltimore. Most of them were sold to the newly organized Cunningham, Heath and Company, Bicycle Importers, of Boston, which, in 1877, became the first bicycle importing firm in the United States. In that same year Albert Augustus Pope also began importing bicycles from England. In 1878 the St. Nicholas Toy Company of Chicago built the first ordinary in the United States and Pope manufactured his first bicycle a few months later.¹

Pope, the acknowledged founder of the bicycle industry in the United States, was an entrepreneur in various business adventures before settling into the fledgling field of bicycle manufacturing in 1878. He did his most creative and stimulating as well as enduring work in this area.

¹Berkebile, Wheels and Wheeling, p. 15; "Frank W. Weston; the Man and His Work," The Bicycling World and Motorcycle Review 46 (December 18, 1902), pp. 309-310; St. Nicholas Toy Company, Catalogue of American Wheels (1887?; reprint ed., Baltimore, Md.: Clyde C. Nitz, March 1, 1972), p. 1.

Pope was to the United States' bicycle industry what James Starley, inventor of the Ariel ordinary, was to the British industry. Pope's influence in the field of bicycle manufacturing was comprehensive: besides furnishing capital and credit for the industry when no one else would invest or contribute, he gathered into one substantial holding the patents that were in existence relating to the bicycle's construction, and projected and established the system of independent dealers, or agencies, to sell bicycles, a practice that is exemplified today in automobile dealerships.²

Pope was born May 20, 1843 at Boston and educated in Brookline public schools. His father, a merchant and real estate operator, suffered severe financial setbacks when Albert was in his early teens. Pope quit school at age 15 to go to work to help support his family. When he was 19, Pope enlisted in the Union army where he quickly advanced in rank while participating in the principal Virginia campaigns, serving with Ambrose E. Burnside in Tennessee, Ulysses S. Grant at Vicksburg, and William T. Sherman at Jackson, Mississippi. He was brevetted lieutenant-colonel for "gallant conduct at the battles of Knoxville, Poplar Spring Church and in front of Petersburg, Va." At the conclusion of the war, Pope went into business for himself in Boston as a manufacturer and seller of supplies for shoe

²Bonura, "Albert A. Pope," p. 1.

manufacturers.³

After seeing his first bicycle in Philadelphia, Pope made a commitment to the ordinary that set in motion the American version of the Coventry cycle industry. He announced that although bicycles had yet to go beyond the realm of novelty, he was convinced that he could succeed at creating a solid business. Pope became a rider, mastering the art under the tutelage of the country's premier velocipede and ordinary rider, Will Pitman. Then he booked passage for England, where he studied the bicycle in depth and completed arrangements for importing Coventry ordinaries to his Boston firm, where they arrived in 1877.⁴

That year he converted the Pope Manufacturing Company from shoes and small mechanical parts to an import house for bicycles, and opened a riding school. Pope commissioned William S. Atwell, a mechanic, to build a bicycle using the English models as designs. The result was the 70-pound Columbia ordinary bicycle costing \$313. Pope's order for the Columbia bicycle, the second bicycle to be manufactured in the United States, was placed with the Weed Sewing Machine Company, Hartford, Connecticut in 1878.⁵

³Harold U. Faulkner, "Albert Augustus Pope," Dictionary of American Biography (New York: Scribner's Sons, 1935), pp. 74-75.

⁴Wagenvoord, Bikes and Riders, p. 68.

⁵Smith, A Social History, p. 8; Bonura, "Albert A. Pope," p. 2; "Albert A. Pope: His Place in History," The Bicycling World and Motorcycle Review 46 (December 18, 1902), pp. 313-321.

After Pope began manufacturing ordinaries, he hired his teacher, Pitman, as a company driver. Pitman, the 1867 Maine velocipede champion, was sent to New York City by Pope in October 1878 to introduce the Columbia model. Pope succeeded beyond even his most promotional dreams. In addition to entertaining strollers in Union Square, the whirring ordinary gained the attention of the New York police and Pitman was arrested for creating a disturbance, evidently by intimidating a horse. A promotional bonanza followed. New York's newspaper-reading public became familiar with the ordinary and the rider when William Dana, editor of the New York Sun, took up Pitman's defense in a series of articles.⁶

It was only the beginning of the Columbia's fame. Pope's imagination, power, and influence were felt strongly throughout his lifetime and, as early as 1883, Harper's Weekly was moved to print that "the history of American bicycling without a mention of Col. A. A. Pope would be almost as incomplete as the Book of Genesis without reference to Adam."⁷

Pope and other bicycle makers, both English and American, established stables of demonstration riders whose job was to extend the machines and themselves to the limit. As manufacturing competition grew, cycling records became

⁶Wagenvoord, Bikes and Riders, p. 69.

⁷Ibid.

more significant to riders, manufacturers, and journalists. The winner of the first official ordinary bicycle race, organized by Pope in 1878, was none other than Pitman, who "spun" a mile in 3 minutes 55 seconds. Just five years later, a mile race was won in 1 minute 53 seconds.⁸

Meanwhile, Pope was showing his marked ability as an organizer, promoter, and manager of large business interests. He resolved to stake his future upon the bicycle and made his company the pioneer in the manufacture and introduction of the bicycle into use in the United States.⁹

Samuel S. McClure writes in his 1914 autobiography that

a Frenchman named Pierre Lallemond [sic] had taken out a patent for wheels driven by pedals attached to the axle--the basic patent of the bicycle. Colonel Pope saw the possibilities of this patent, and bought it. Though his patent right was continually being contested, and he had constantly to employ several patent lawyers to protect it, he held it until it expired, and all other bicycle manufacturers had to pay Colonel Pope a tax of ten dollars on every wheel they manufactured.¹⁰

Holders of ancient patents dusted them off and entered the courts as the ordinary was taking hold. These men had acquired their rights back in the days of the velocipedes

⁸ Ibid., pp. 69, 74.

⁹ Bonura, "Albert A. Pope," p. 3.

¹⁰ Samuel S. McClure, My Autobiography (New York: Frederick A. Stokes Co., 1914), p. 146.

and had quietly collected royalties between \$2 and \$30 on every machine constructed. If the ordinary ever became popular, these inventors stood to make a great amount of money without turning their hands. But Pope, and those who followed him, were too shrewd to be held ransom. He bought rights where he could and in other cases went to court. Generally, he was successful in court and this provided an example for the automobile industry, which underwent a similar round of patent suits before it really got into production. Finally, the way was clear for Pope to begin the expanded production of the ordinary bicycle.¹¹

At this point a different question presented itself-- how to get the general public to accept the ordinary. In his 1881 handbook for cyclists, The American Bicycler, Charles E. Pratt, later to become Pope's corporate lawyer, maintained that bicycle riders had no rights on the nation's roads and streets. Pope found it necessary to overcome public prejudice and to fight municipal ordinances restricting the use of the bicycle in its infancy. In meeting this challenge, Pope took the lead, becoming responsible for the cost of test cases between wheelmen and various city governments, with the result that bicycles were soon admitted to parks on the same footing as carriages and other vehicles.¹²

¹¹Smith, A Social History, pp. 8-9.

¹²Ibid., p. 8; Bonura, "Albert A. Pope," p. 4.

In 1891 Pratt wrote that

Colonel Pope was the first to secure considerate and responsible legal opinion upon the rights of wheelmen in the roads and parks of the States of this country and to make it available; and his company has seen to it from the spring of 1878, when it procured counsel to appear before a committee of the Boston City Government, until the present, to pay expenses, to supply counsel, to furnish evidence, to defend the cause of the wheelman in the civil and criminal courts, before county boards and city boards and before state legislatures.¹³

Pope at first, and other cycle manufacturers later, gave their patronage to specialized publications such as The Bicycle World and The Wheel. He paid for the distribution of cycling handbooks and gave away thousands of copies of Pratt's The American Bicycler. To promote cycling further, Pope founded The Wheelman in October 1882. He hired Samuel S. McClure, who later earned acclaim in the early 1900s as the originator of the muckraker movement, to edit this monthly magazine for and about bicycles and bicyclists. A year later The Wheelman merged with Outing, A Journal of Recreation, founded five months before The Wheelman.¹⁴

¹³Charles E. Pratt, "A Sketch of American Bicycling and Its Founder," Outing 18 (September 1891), pp. 342-349.

¹⁴Smith, A Social History, p. 9; Bonura, "Albert A. Pope," pp. 4-5; Frank Luther Mott, A History of American Magazines, vol. 4, 1885-1905 (Cambridge, Massachusetts: Harvard University Press, 1957), p. 633.

As part of the publicity campaign to present the best side of the bicycle, Pope carried his message of cycle-induced health and happiness to all who would read or listen. This was done in the face of attacks from physicians who turned on the ordinary as they had once tried to destroy the velocipede. The bicycle was declared to be almost as dangerous as a "fused mortar shell" and the physiological consequences of riding were pointed to with a note of alarm. In response Pope offered prizes to doctors who published the best articles defending bicycle riding as a positive aid to good health.¹⁵

It would do Pope little good to make a bicycle or to create a favorable climate of opinion if the machines were not distributed efficiently. He conceived the idea of a national network of bicycle agencies to retail the Columbia at a fixed price, regardless of whether it was sold in California or in Maine. In creating the idea of independent agencies and a set price regardless of freight costs, Pope became the founder of marketing techniques that saw their grandest flowering in the marketing of automobiles.¹⁶

Pope was instrumental in founding one of the first of many cycling clubs that sprang up throughout the nation in the 1870s and 1880s. It was fitting, too, that Pope and his two brothers, Edward and Arthur, became the first officers

¹⁵Smith, A Social History, p. 9.

¹⁶Ibid., pp. 9-10.

of the Boston Bicycle Club, established February 22, 1878.

Soon other clubs blossomed all over the eastern United States and then spread westward to San Francisco.¹⁷

When a person purchased an ordinary, it was fitted to him, since the diameter of the front wheel had to conform to the length of the cyclist's legs. If the front wheel was too small, the rider crouched over the handlebars like a jockey on a racing horse; if the wheel was too large he could not reach the pedals at all. In spite of the reasonableness of such fittings, the passion for big front wheels seethed in the early days, no doubt because the absence of gearing on the ordinary made some cyclists prefer the larger diameter for the added speed. According to Smith, "the short-legged secretary of one of the early clubs had his shoe soles built thicker so he could reach the pedals of a fifty-inch wheel."¹⁸

Both wheels of the ordinary had steel rims and spokes, and each had a solid rubber tire, the cost of which was sometimes equal to that of the rest of the machine. The tires were shrunk on the rims or sometimes held on by a wire or rope through the center of the tire. These tires were more comfortable than the iron tires of the velocipede, but

¹⁷Ibid., p. 10; Bonura, "Some 100-Year-Old Bicycle Clubs," p. 4; Larry Bonura, "Frank W. Weston: Father of American Bicycling," Bikereport 8 (May/June 1982), pp. 19, 20.

¹⁸Smith, A Social History, pp. 10-11.

they still left much to be desired so far as comfort was concerned.

The larger the diameter of the tire, the greater the ease of riding, but the bigger solid tires had an alarming tendency to twist off the rims when the rider rounded corners, leaving him tangled in the bent tubing and spokes of a machine that had cost him more than \$100. At such times the unfortunate man was likely to forget the arguments advanced by one cyclist that red rubber tires looked best but gray rubber showed the dust less.

The ordinary bicycle was difficult to mount and to control. Charles Spencer, one of those who completed the London to John O'Groats ride, published in 1877 a manual entitled The Modern Bicycle that was the what-to-do and what-not-to-do for the ordinary. After discussing wheel size according to height, Spencer explains the method of mounting an ordinary:

The saddle being nearly as high as your shoulder it is impossible to vault on; but a step is fitted on the backbone frame at a convenient height on the left. It is jagged to afford a firm grip for the toe. There are two ways of mounting. One is to start the machine and run by the left side, and put the toe upon the step while in motion, throwing the right leg over on to the seat; the other is to stand at the back of the machine with the left toe on the step and to hop with the right leg until you have gained a sufficient impetus to raise yourself on the step, and throw your right leg across the seat.

The first plan was best, according to Spencer. In many cases it was the only practicable way, such as for remounting on a slight ascent, where it would be difficult to get up sufficient speed by means of hopping. This, moreover, does not present a very graceful appearance.¹⁹

Spencer's account of how to mount an ordinary bicycle via the pushing then hopping-on method follows:

Hold the handle with the left hand and place the other on the seat. Now take a few running steps, and when the right foot is on the ground give a hop with that foot, and at the same time place the left foot on the step, throwing your right leg over on to the seat. Nothing but a good running hop will give you time to adjust your toe on the step as it is moving. It requires, I need not say, a certain amount of strength and agility.

In alighting by the step all you have to do is reach back your left foot until you feel the step, and, resting upon the handles, raise yourself up and throw the right leg over the seat to the ground. But I consider getting off by the treadle much the preferable way when you can manage it. First see that the left hand crank is at the bottom, then throw your right leg with a swing backwards and continue until you are off the seat and on the ground. As it is, of course, easier to get off the slower you are going, you must come almost to a standstill just keeping way enough to prevent the machine falling over. If you attempt it when going at all quickly, you will have to run by its side after you are off, which is a difficult feat for any but a skillful rider.²⁰

¹⁹Wilkinson-Latham, Cycles in Colour, p. 37.

²⁰Ibid., pp. 37-38.

It made little difference whether the tires were large or small, red rubber or gray, since the streets of the nation were not suitable for extended cycling. For that reason bicyclists turned almost immediately to lobbying for the improvement of city streets and country roads. As might be expected, Pope was in the foreground, raising his voice before those political agencies that supervised the repair and maintenance of streets and highways.

Another obstacle in the infancy of the bicycle in the United States was one of the most serious encountered: the multitude of horses, which until then had endured no real competition in the use of the streets and highways. Horses instinctively recognized the enemy bicycle when they saw it coming down the street and frequently they tried to run away from the machine with its spokes flashing in the sun. As a result, the horse-driving public was in a fury and they lashed back with the law. Most of the suits Pope fought so diligently in the early days were against ordinances restricting cyclists in the name of the horse.²¹

In 1883 Charles E. Pratt suggested what may be considered the first set of road signals ever devised in the United States, primarily aimed at assuaging horse-bicycle tensions. The horse driver's upraised arm indicated that the oncoming cyclist should use caution in passing; the arm raised two or more times in a pumping action meant the horse

²¹Smith, A Social History, p. 11.

had the bit in his teeth and that the cyclist should dismount immediately. But dismounting and mounting from an ordinary was not that easy, and if these rules were satisfactory to Pratt, it is unlikely that most cyclists agreed. Getting on and off an ordinary was not the kind of performance one liked to repeat every hundred yards or so. Consequently, the feud between those who rode bicycles and those who drove horses was not quickly resolved.²²

Many bicyclists thought the horse was passe. In The American Bicycler Pratt quoted an unidentified author who stated that the horse had been a "blindly cherished obstacle" to human progress. Man, faced with the problem of moving the greatest distance in the least time and at the lowest cost, was mistakenly clinging to the horse when something better was at hand.²³

The association between "horse" and "riding" was too strong to break entirely. Pratt described the bicycle in distinctly equine terms:

It runs, leaps, it rears and writhes, and shies and kicks; it is in infinite restless motion, like a bundle of sensitive nerves; it is beneath its rider like a thing of life, without the resistance and uncertainty of an uncontrolled will.

²²Ibid., p. 12.

²³Ibid., pp. 11-12.

On another occasion he wrote that the bicycle was an "always bridled horse" that required no harness and was always ready to do its master's bidding.²⁴

Another American, after extolling the virtues of riding a bicycle, wrote:

No wonder, then that the bicyclist should feel for his machine a tender sense of gratitude for the service it has done him, resembling in kind the sentiments an Arab feels for his horse.²⁵

And The Wheelman printed this poem by J. Eunice O'Brien:

Hurrah! Hurrah! for the merry wheel,
With tire of rubber and spokes of steel;
We seem to fly on the airy steed
With eagle's flight in silent speed.²⁶

If Albert A. Pope is called the "father of the American bicycle industries," then Frank W. Weston richly merits the designation of "father of American bicycling." Five reasons supporting this assertion appeared December 18, 1902 in The Bicycling World and Motorcycle Review. Weston is credited with: (1) establishing Cunningham, Heath and Company,

²⁴Charles E. Pratt, The American Bicycler (Boston: Houghton, Osgood and Company, 1879), p. 30.

²⁵Smith, A Social History, p. 12.

²⁶J. Eunice O'Brien, "At the Banquet," The Wheelman 2 (June 1883), p. 194.

Bicycle Importers, in 1877; (2) issuing the first number of The American Bicycling Journal on December 22, 1877; (3) organizing the Boston Bicycle Club on February 11, 1878; (4) implanting the idea for a national bicycling body; and (5) arranging for a party of American cyclists to visit and ride through England in 1880.

Weston, born July 13, 1843 in London, was educated in private schools until 1859 when he elected to follow his father's occupation and joined the architectural firm of H. J. Rowley, later architect to the city of London. After four years Weston started his own practice and did quite well.²⁷

In mid-April 1866 he embarked on the 900-ton, fully rigged ship, Armstrong, bound for Boston. He arrived June 1 at Constitution Wharf. In 1867, when the velocipede made its appearance, Weston was one of the first to fall under the thrall of this new and marvelous method of locomotion. In November 1869, when he again found himself in London, Weston was amazed to find that same velocipede, which for months had been practically dead in Boston, still as popular as ever in London. The writer of the Weston article states:

It is to this English tenacity of purpose, this unwillingness to drop a thing until its ultimate has been attained, that the world is indebted for the perfected

²⁷Bonura, "Frank W. Weston," p. 19; "Frank W. Weston; The Man and His Work," The Bicycling World and Motorcycle Review 46 (December 18, 1902), pp. 309-310.

bicycle.²⁸

In April 1871 Weston returned to Boston. From this year on it was necessary that he should visit England every year, and it was with keen interest and approval that he watched the evolution of the then modern bicycle from the antiquated velocipede. In 1876, returning from one of his transatlantic trips, Weston landed again in Boston, this time fully convinced that the time had arrived when the bicycle should and must come to the United States. At once he commenced his propaganda to see this idea realized.

Weston gave his friends what they were pleased to call "the bicycle earache," though none of them was willing to risk any money in establishing a bicycle business. Those whom he knew in the importing business were totally unwilling to import bicycles for a market and a demand that they were sure did not and never could exist. "We Americans have got through with this velocipeding[;] we have dropped and we shall never take it up again," is the way Weston said one house expressed its feelings.

Nevertheless, in the summer of 1877 Weston succeeded in imbuing his friend, Arthur Cunningham, with some of his own enthusiasm. Thus reinforced, Weston gathered in Harold Williams and Sidney Heath and soon there followed the establishment of Cunningham, Heath and Company, Bicycle

²⁸"Frank W. Weston," p. 309.

Importers, with Weston becoming a silent partner. Weston recalled 25 years later that the

house of Cunningham, Heath & Co., at 178 Devonshire Street, Boston had an excellent riding school and they were turning out new riders every day. They had not commenced the business of importing bicycles until the previous September, or there would have been more machines for their new riders to purchase. But the head of the firm, poor Arthur Cunningham, was very conservative, the imported bicycles were slow and few in arriving, and more business energy, confidence and pluck were sadly needed. This was furnished, and, as I now freely admit, although I did not realize it at the time, the best thing that could have happened for American cycling, if not for me personally, did happen, when in the spring of 1878 Albert A. Pope embarked in the bicycle business.²⁹

Weston's next work was to provide the new interest with a periodical. On December 22, 1877 The American Bicycling Journal became the second American bicycling periodical. In 1902 Weston recalled that the bi-weekly journals were unique productions and "not the least curious [of the] facts about them was that on the date of their printing there were probably not more than one hundred cyclists" to be found throughout the United States.³⁰

²⁹Ibid., pp. 309-310.

³⁰Frank Luther Mott, A History of American Magazines, vol. 3, 1865-1885 (Cambridge, Massachusetts: Harvard University Press, 1938), p. 213.

The American Bicycling Journal was written largely by Weston. He availed himself of clippings from daily newspapers and concocted advertisements and inserted them without warrant, much to the surprise of the parties advertised. Weston claims that

the paper was months ahead of the time, there were but few riders, no demand for such a paper had been felt, there was no news available in this country, and there were no bicycle happenings save the monotonous round of 'headers' in the riding school.³¹

Weston relied on two friends, Alfred D. Chandler and Joseph G. Dalton, in putting out the journal, but there was need for more capital, more time, and greater editorial ability. In November 1879 Weston sold controlling interest to Edward C. Hodges and the paper became known as The Bicycling World. Hodges provided more capital for the enterprise and Charles E. Pratt, later the first president of the League of American Wheelmen, provided the needed greater editorial ability.³²

Weston was determined that no city would antedate Boston in establishing a bicycle club. In the early issues of his journal, he ran an announcement that "a book for the signatures of those gentlemen who desire to become members

³¹"Frank W. Weston," p. 310.

³²Ibid.

of the Boston Bicycle Club" had been opened in the office of Cunningham, Heath and Company. The items expressed hope that Boston might be able to claim the first organized bicycle club in the United States.³³

Unfortunately, however, the first shipment of ordinary bicycles to Cunningham, Heath and Company had not yet arrived. Except for five English machines that had been exhibited at the Centennial Exposition in Philadelphia and purchased by the company, there were no bicycles on which the would-be club members could ride. Thus, it was not until February 11, 1878, after the first shipment arrived, that the Boston Bicycle Club was founded.³⁴

Weston's ensuing project was to arrange for a national organization, a "governing body for the thousands of local clubs that he firmly believed were soon to come into existence." This quickly enlisted the sympathy of one of the Boston Bicycle Club's earliest members, Charles E. Pratt, to whom the credit of the development of the idea and of the subsequent founding of the League of American Wheelmen are due, although the first words that led up to this result were spoken by Weston. In 1902 Weston said that the League of American Wheelmen, the

greatest of all national clubs, the organization to which, although cyclists

³³Ibid.

³⁴Ibid.

owe more than they can ever repay, they may yet, let us all hope, be afforded opportunity to prove their loyalty.³⁵

Weston's next endeavor was to get together a party of representative American cyclists to visit and ride through England. He did not meet with the success he had hoped. Nonetheless, on May 20, 1880 the "fortunate five" left Boston for New York. On May 22 they sailed on the City of Richmond for Liverpool. The members of this party--Weston, W. J. S. Dean of Boston, W. T. N. Hastings of Boston, W. G. C. Thomas of Philadelphia, and Dr. W. F. Adams of Worcester, Massachusetts--were nearing Queenstown on the day the League of American Wheelmen was holding its organizational meeting at Newport, Rhode Island. Thus it happened that neither Weston, who had originated the idea of a national body, nor Dean, who had done good work in the preliminary meetings, appear in the list of the League's founders.³⁶

The Bicycling World and Motorcycle Review said of the tour of the "fortunate five" that

The anchor had hardly reached bottom in the Mersey when a deputation from the Bicycle (now the Cyclists') Touring Club, came alongside in a special tug to welcome them. The Liverpool Bicycle Club awaited them on landing, escorted them to their hotel, and later accompanied them to Birkenhead, where the Birkenhead Club awaited them, and the

³⁵Ibid., p. 311.

³⁶Ibid.

whole body then mounted for Chester. Half way there the Chester Club met them, and on arriving at the 'Blossoms,' where they spent the night, they found that a banquet had been arranged for the evening. And this, in one form or another, was repeated in every city or town of any importance during their whole tour of thirty-five days and nearly one thousand miles of riding.³⁷

Weston was a bicyclist who planned, wrote, suggested, organized, and devoted much of his time and money to spreading the gospel and laying the foundation of cycling journalism, cycling sport and recreation, and the cycling trade--all those things that gave the bicycle life and purpose. In 1878 an English daily, reviewing the development of cycling in America, stated that "Undoubtedly the father of American bicycling is Mr. Frank W. Weston, of Boston." His club members immediately christened him "Papa Weston," a cognomen that soon spread all over the country wherever the bicycle penetrated, and by which he is known even to this day.³⁸

It would take some kind of organization, as defined by Weston, to bring maximum effort to bear in behalf of cyclists. And this was at hand in the form of one of the most vigorous pressure groups in an era when pressure groups abounded. In 1880, while Pope and those who followed his lead were increasing their production of ordinary bicycles,

³⁷Ibid., p. 310.

³⁸Ibid.

and while Weston was talking up the bicycle in the United States, the League of American Wheelmen was organized to "promote the general interests of wheelmen, to ascertain, defend, and protect the rights of wheelmen, and to encourage and facilitate touring."

Enrollment in the LAW, as the League is called, was limited at first. The basic price of a bicycle--between \$100 and \$150--represented about four months pay for the average factory hand, and it can be assumed that few could afford them. Early members were, for the most part, prominent, white male citizens. This membership bias was a national club policy. The bylaws stated that "any amateur white Wheelman of good character, eighteen years or over with endorsement of two members" was eligible for membership in the LAW.³⁹

If one is to believe a writer named Edward Howland, the quality of membership was high. He told Americans that the bicyclist was a man of exceptional quality and not the blithering idiot so many horsemen accused him of being. With obvious conviction, he wrote in Harper's New Monthly Magazine:

³⁹Philip P. Mason, "The League of American Wheelmen and the Good-Roads Movement, 1880-1905" (Ph.D. dissertation, University of Michigan, 1957), p. 44; L.A.W. Bulletin 1 (July 1885), p. 37; Bruce L. Bashone, Paul L. Deering and Brian D. McCarl, Bicycle Transit, Its Planning and Design (New York: Praeger Publishers, 1975), pp. 10, 13; Smith, A Social History, pp. 12-13.

The wheelman being generally a man of enterprise, as he shows by the fact of becoming a bicycler, he is not a person to whom routine forms are an impassable barrier; and therefore the bicyclers collectively form inevitably a body of persons to whom the public can legitimately look with confidence, for the future, as men ready to examine the claims for consideration of the new, while not contemptuously disregarding the old; that is, a class, who infused with the best spirit of the times, can naturally be counted upon to make themselves felt as a power in the future, to be counted upon the side of the right in the work before us for the further development of the possibilities of life.⁴⁰

Anyone who had the tenacity to wade through such befuddled prose will immediately get the idea that the author thought bicyclists were paragons.

At the second annual LAW conference, held in Boston in 1881, Lewis J. Bates of Michigan urged the League to take an active role in support of the national movement for better roads. Prior to this time, no federal agency existed to build or maintain a national roadway system. The roads that did exist were developed and maintained by private, municipal, or state agencies without benefit of federal standards for road construction. In urban areas such as New York, San Francisco, and Portland, Oregon, roadways were paved either with bricks or cobblestones, while in rural areas they were left as unpaved dirt roads.⁴¹

⁴⁰Edward Howland, "The Era of the Bicycle," Harper's New Monthly Magazine 63 (June 1881), p. 283.

⁴¹Balshone, Bicycle Transit, p. 10.

Operating on national, state, and local levels, with close cooperation among all units, the LAW was qualified to carry out a national crusade to reform the American road system. Although only a minority of eligible wheelmen joined the League, thousands more benefited from its work, and many non-League wheelmen consistently supported its efforts to improve the roads of the United States. The League's various activities, such as its successful program to secure equal rights for the bicycle on the public highways, to compile road books containing information and maps of LAW-established touring districts, to arrange and conduct bicycle tours, and to obtain benefits for wheelmen in general, gave the League strength and influence far greater than its limited membership might suggest. These activities took the LAW into the political arena, acquainted it with the techniques of lobbying and political action, and gave it public recognition, thus paving the way for its successful leadership in the good-roads movement.⁴²

The publication of an official bulletin was an important factor in maintaining unity and interest among the various state divisions and local units of the League. The bulletin provided a medium through which LAW members could exchange ideas and experiences, and it enabled the League to carry out a concerted program to secure equal rights for the

⁴²Wagenvoord, Bikes and Riders, p. 94; Mason, "The League," p. 35.

bicycle and a better system of roads. An official bulletin was maintained from the year of the League's organization in 1880.⁴³

For the first five years of its history, the LAW contracted with various bicycle journals to furnish space for the League's official bulletins and announcements. In 1885 the League began to produce a free weekly publication, The L.A.W. Bulletin, that was sent to all members as well as to hundreds of libraries, bicycle clubs and newspapers. The Bulletin's principal editorial policy was to publicize national bicycle events and rallies sponsored by various local chapters throughout the country, racing information, lists of new members, detailed accounts of business meetings, and other bicycle news. Prior to this publication, the LAW encouraged its members to publish articles about bicycling and the good roads movement in national periodicals of the day.⁴⁴

One year after the LAW was organized (May 31, 1880), its membership numbered 1,600. The organization grew very slowly during the first decade of its history, largely as a result of the difficulty of riding the ordinary, and because of the high cost of a machine. After the introduction of the safety bicycle in the late 1880s and the League's push for better roads, membership rose sharply.

⁴³Mason, "The League," pp. 35, 42-43.

⁴⁴Ibid., p. 43; Balshone, Bicycle Transit, p. 10.

In 1881 New York and Massachusetts contributed 60% of the League's members; only 12% of the members lived in states west of New York. A state-by-state breakdown of 1,662 League members and pending membership applications in May 1881 gave California 19, Connecticut 88, Illinois 36, Indiana 20, Kentucky 22, Maine 19, Maryland 30, Massachusetts 593, Michigan 36, Missouri 2, Nebraska 9, New Hampshire 20, New Jersey 53, New York 335, Ohio 24, Pennsylvania 161, Rhode Island 49, Vermont 13, Virginia 13, Washington, D.C. 26, Wisconsin 55; England contributed 12 members, Canada 27, Japan 1 and Scotland 1.⁴⁵

During the League's early history, good roads were not a primary concern. Up to 1888 the wheelmen fought only for the right to ride upon the public highways, not to improve them. As already noted, soon after the bicycle was introduced into the United States, ordinances were passed in many cities and towns restricting the use of these vehicles. Some ordinances went so far as to prohibit altogether the use of the bicycle on public highways. Other local ordinances restricted cycling to certain streets, often those in the worst condition. Some cities and towns made it compulsory for cyclists to dismount every time a team of horses approached and, if the team appeared frightened, it was the bicyclist's duty to lead the animal by hand until it was out of sight of the bicycle. The League regarded

⁴⁵Mason, "The League," p. 50; The Bicycling World 3 (June 17, 1881), p. 69.

these restrictions as a threat to the future of cycling and directed its efforts toward their repeal.⁴⁶

In the 1880s the LAW was successful in securing the repeal of most of the ordinances restricting bicycle use. The Central Park case, which lasted from 1886 to 1887, was the most celebrated of the League's successes. In 1886 the New York City board of park commissioners were considering an ordinance banning bicycles from Central Park. The New York City Bicycle Club, one of the nation's strongest, worked actively against this measure since Central Park was a favorite cycling area for city wheelmen. At first, club members circulated petitions and appeared at hearings to protest the passage of the ordinance. When this approach failed to deter enactment of the ordinance, the wheelmen launched a full-scale campaign aimed at repealing the measure.⁴⁷

As a part of this campaign, the New York City Bicycle Club interviewed candidates who were running for the Board of Aldermen in 1886. At least one candidate, Henry R. Beekman, the Democratic nominee for president of the Board, pledged himself to support equal rights for horses and bicycles in return for the wheelmen's political support. Although there is no conclusive evidence to demonstrate the

⁴⁶Mason, "The League," p. 51.

⁴⁷Ibid., pp. 51-52; Roger St. Pierre, The Book of the Bicycle (London: Triune Books, 1973), p. 45.

influence of the cyclists in the election, Beekman did win by about 10,000 votes and he later carried out his promise to the club by supporting the wheelmen in their efforts to remove the restrictions on bicycle riding in Central Park.⁴⁸

A New York City Bicycle Club committee appeared before the park commissioners on December 1, 1886 and requested that all restrictions to bicycle use on park roadways be removed. The proposal was defeated. With action thus blocked at the local level, the New York division of the LAW moved into the fray and sought to persuade the state legislature to adopt pro-bicycle legislation. The division sent Isaac B. Potter, chairman of the state's committee on rights and privileges, to Albany to direct the legislative battle.

The bill that the wheelmen presented stipulated that the bicycle was a carriage and, hence, subject to the same rights and restrictions as other carriages, that the bicycle should not be excluded from any roadway where pleasure vehicles were admitted, that the bicycle might be reasonably regulated, as were other carriages, with respect to speed, lamps, bells, and the like, and, finally, that all acts and parts of acts inconsistent with the above should be repealed.⁴⁹

⁴⁸Mason, "The League," p. 53.

⁴⁹Ibid.

A copy of this bill, accompanied by petition blanks for the signatures of supporters, was sent to every League member in New York. Each member was urged to contact his representative and to request support for the measure. The petitions, which contained more than 10,000 signatures, were presented at public hearings on the measure. Potter and more than 100 wheelmen attended these hearings to present the LAW's case. In the spring of 1887, the bill passed both houses of the legislature, unanimously in the Assembly and with only two dissenting votes in the Senate. The bill was then referred to Governor David B. Hill for his signature.⁵⁰

The battle was not won yet, however. A powerful group of New York City residents, led by Mayor Abram S. Hewitt, was opposed to the measure and recommended a gubernatorial veto. Opponents claimed that the bill would take power from local officials and that cyclists, if allowed to ride in Central Park, would injure pedestrians. Prominent League officials on the state and national levels visited the governor and urged him to approve the bill. In order to insure its passage, the chief consul of the New York division of the LAW made a deal with Governor Hill whereby the wheelmen would support the governor in his re-election campaign in return for his approval of the bill. On June 25, 1887 Governor Hill signed the "Liberty Bill," thus opening all public parks in New York state to cyclists. The adoption of

⁵⁰Ibid., p. 54.

this legislation was heralded throughout the country as a signal victory for the LAW and served as a precedent for similar legislation in other states.⁵¹

In other instances, the League turned to the courts rather than the legislatures to secure the same rights for the bicycle on the public highways that were enjoyed by other vehicles. Although the rulings of the various courts differed slightly, the courts agreed that the bicycle was a vehicle, that wheelmen could use the public highways at all times, and that they possessed the same rights and were subject to the same restrictions as the drivers of other vehicles.⁵²

Bicycle touring was one of the most popular activities of the League during its long history; no doubt, many thousands of bicyclists joined the organization solely for the purpose of taking part in the numerous tours that the League sponsored. By 1886 so much interest had been shown in the tours that the League set up a touring board with a status equal to that of the other standing committees. The United States was divided into touring districts with each district having a marshal to aid in arranging trips and to provide information and maps for interested groups and individuals. There is little doubt that the League's advocacy of good roads was related to its interest in

⁵¹Ibid., pp. 54-55.

⁵²Isaac B. Potter, "Laws of Cycling," The L.A.W. Bulletin 2 (April 1886), pp. 360-361.

touring. The LAW tours brought members into contact with the road conditions of various sections of the country.⁵³

Another concomitant of the League's touring activities was the issuance of road books by most of the state divisions. These road books provided cyclists with information on the condition of various roads so that they could plan their tours. The typical state road book contained descriptions of the main roads, maps, mileage tables, lists of League hotels, restaurants, accredited repair shops, and the names of local LAW officials. Local League members provided up-to-date information for these books, which were published yearly by many divisions, given free to in-state LAW members, and sold to all others for about a dollar a copy.⁵⁴

The League was also active in securing benefits for its members. The most important benefit was a system of discounts at hotels and restaurants throughout the country. The names of the cooperating hotels and restaurants were listed in the road books and bulletins and, after 1886, a LAW sign was adopted and hung on the premises of hotels and restaurants that offered discounts to League members. Although inferior accommodations were often provided by hotels and restaurants under the League plan, there is no doubt

⁵³Mason, "The League," p. 59.

⁵⁴Ibid., pp. 59-60; The L.A.W. Bulletin 3 (October 1886), p. 449; Charles K. Melrose and J. F. Hancock, The Cyclists' Road-Book of California, 2nd ed. (San Francisco: Hancock Brothers, 1895).

that the discount induced hundreds to join the LAW.⁵⁵

Other League activities included securing anti-glass and anti-tack laws that provided fines for those maliciously attempting to obstruct cycling, prompting state legislatures to pass laws punishing anyone convicted of stealing a bicycle, arranging free bicycle transportation on trains and boats, and erecting signs describing road conditions.

Prominent men of the 1880s--forerunners of today's jet set--biked around the country on ordinaries. Well-known social figures made headlines by touring from coast-to-coast, from Chicago to New York, and from New York to Boston. British nobility rode bikes around their estates, and even the Prince of Wales attended the bicycle races of the day. Bicycle clubs grew in numbers and in membership as the bicycle improved mechanically.⁵⁶

With the ordinary's rise in the 1880s came an accompanying growth in bicycle songs. Roland Geist lists the following songs that were written from 1880-1887:

*1880: "Bicycle Glide" by W. Diederich

*1882: "Star Bicycle Galop" by Charles W. Nathan

"Bicycle March" by N. R. Graham

*1883: "Bicycle Galop" by William H. Hall

"The Star Rider" and "The Wheelman's Song" by

⁵⁵Mason, "The League," pp. 60-61; Bagg, Ten Thousand Miles, pp. 590-606.

⁵⁶Eugene A. Sloane, The New Complete Book of Bicycling (New York: Simon and Schuster, 1974), pp. 267-268; St. Pierre, Book of the Bicycle, pp. 44-45.

John Ford

"Bicycle Galop" by Mollenhaupt

*1884: "The Song of the Wheel" by Charles E. Pratt

"The Wheelman's Song" by William J. Stabler

*1885: "Bicycle Waltz" by George E. Jackson and J. J. Sawyer

*1886: "The League Waltz" by George F. Brooks

"Its Best To Keep Up With Style" by H. G. and J. W. Wheeler

*1887: "Bicycle Galop" by Ludwig Andre

"Swiftly and Silently" by J. J. Chickering and Hubbard T. Smith

"Wheel on to Glory" by Hubbard T. Smith

Geist claims that these songs were popular with the cycling public.⁵⁷

And, of course, more books were published about the bicycle during the height of the ordinary's years. Charles Spencer wrote The Modern Bicycle in 1877. This was followed in 1878 by three more books: The Bicyclist's Handy Record was written by an unknown author, Bicycling, Its Theory and Practice was a 116 page book by a member of the Dark Bleu Bicycle Club, London, and Wheels and Woes, Or, Words of Warning to Would-Be Velocipedists was written by a Light Dragoon, London.

⁵⁷Geist, Bicycle People, p. 163. Roland C. Geist, "Bicycle Songs of Yesterday and Today," Musigram 2 (March 1965), pp. 100-103. See also Angus S. Hibbard, "The Songs of Bicycling," The Wheelman 1 (December 1882), pp. 187-190.

In 1879 Charles E. Pratt's The American Bicycler, A Manual for the Observer, the Learner and the Expert, was published as was The Indispensable Bicyclist's Handbook and Guide to Bicycling, an annual that described and illustrated more than 400 bicycles and all aspects of improvements in the machines, by Henry Sturmey.

In 1880 Sturmey's The Complete Guide to Bicycling was published as was his Tip Top Tales, Bicycle Ben or the Lion of Lightening Lode. Joseph G. Dalton compiled Lyra Bicyclica, Forty Poets on the Wheel, and published it in 1880. That year also saw Velocipedea, An Original Bicycling Burlesque Extravaganza, a 28-page pamphlet by "Jupiter" from the Rovers Bicycle Club in London and The Bicycle by a "Practical Bicyclist" from London was also published. F. Sinnett wrote La Vélocipedomanie, with 25 cartoons with captions, in 1880 as did Dr. Charles Stables with his Health Upon Wheels.

Wheels and Whims, written by Florine T. McCray and illustrated by Esther L. Smith, was published in 1884. In 1885 Joseph and Elizabeth Robins Pennell wrote A Canterbury Pilgrimage. Also in 1885 Dalton released a second, enlarged and improved edition of Lyra Bicyclica that included 60 poets on cycling. In 1887 the Pennells' An Italian Pilgrimage was published as was volume one of two of Around the World on a Bicycle by Thomas Stevens. Viscount Bury, a pseudonym for William Coutts Keppel, 7th Earl of Albemarle, and G. Lacy Hillier had their book entitled

Cycling published in 1887 also.⁵⁸

Velocipedists saw one publication issued in the United States during the height of that craze. It was called, appropriately, Velocipedist, and was published in New York. The monthly flourished for a few brief months and died a quick death as did the machine it covered. With the coming of the ordinary bicycle, publications devoted to bicycling again surfaced, this time in larger numbers and of longer duration, to feed the hungry public more and more information about the rebirth of the bicycle.⁵⁹

In 1877 the Boston firm of Cunningham, Heath and Company published its trade organ that was founded and edited by Frank W. Weston, The American Bicycling Journal. Charles E. Pratt, one of the founders of the LAW and a prolific writer of bicycle books and articles in the early years of the bicycle, brought out the first United States bicycle magazine of importance, The Bicycling World, in Boston in 1879. Edward C. Hodges and Company soon got control of The Bicycling World and The American Bicycling Journal and published them under the name of the former. The publication had many editors including Abbot Basset, head of the LAW, of which The Bicycling World became the official organ. Its chief competitor, from New York, was

⁵⁸Bonura, "Some Early Bicycle Books," pp. 15, 16; Geist, Bicycle People, pp. 39, 66, 70, 160; C. E. Hawley, "Uses of the Bicycle," The Wheelman 1 (October 1882), p. 28.

⁵⁹Mott, A History of American Magazines, vol. 3, p. 211.

The Wheel, first published in 1880, a 12-page weekly in quarto that sold for \$1 a year. The Wheelman's Gazette was begun in Springfield, Massachusetts in 1883 but moved to Indianapolis, Indiana in 1886 and was conducted there by L. B. Darrow. There were a few short-lived bicycle papers, one of which was The Wheelman, issued by Albert A. Pope in Boston in 1882.⁶⁰

The general aim of The Wheelman was to

build up an intelligent public appreciation of the uses of bicycles and tricycles, secure appropriate legislation in regard to the many interests of the wheel, encourage healthy competition and emulation among manufacturers and users, discourage gambling at races, and everything that would tend to degrade the use of the bicycle to the level of horse-racing and professional pedestrianism.⁶¹

Samuel S. McClure was the first editor of The Wheelman. Traveling to Boston after finishing Knox College, where he wrote A History of College Journalism, McClure made his first job application to the Pope Manufacturing Company, maker of the Columbia ordinary bicycle. Pope had placed an advertisement in McClure's work on journalism and McClure hoped this might give him an entrée.⁶²

⁶⁰ Ibid., pp. 211-213; Larry Bonura, "The Wheelman Magazine," bicyclicio, a bicycle history column #8 (December 1980), p. 1

⁶¹ The Wheelman 1 (October 1882), p. 1

⁶² McClure, My Autobiography, pp. 145-146.

McClure talked himself into a job teaching beginners how to ride the ordinaries at Pope's bicycle rink in downtown Boston, and McClure had never even been on an ordinary in his life. Pope remarked that he had thought of starting a magazine as an advertising medium for his bicycles. Pope later asked McClure if he could edit a magazine. Sensing greater opportunities, McClure encouraged the plan by going to Knox College for a complete file of the Knox Student, of which he was an editor while a student.

Pope was impressed and hired McClure as editor for \$10 a week, a salary equal to an apprentice newspaper reporter. Pope felt the whole project might be placed on a profitable basis. There were hundreds of bicycle clubs that would be an enthusiastic market for such a publication, but the real bicycle market did not manifest itself until the decade following The Wheelman's introduction.⁶³

The Wheelman, which cost \$2 a year or 20¢ an issue, called itself the "high class American organ of bicyclical and tricyclical operation and sentiment." The first issue

⁶³In 1878 Pope sold 92 bicycles. In 1882, while appearing before the Tariff Commission, Pope estimated the total number of bicycles in the United States at 20,000. "A Plea for Fair Trade," The Wheelman 3 (October 1882), p. 60. By 1895 the yearly sales were at 500,000 and Scribner's estimated that there were 10,000,000 bicycles on the road. Scribner's Magazine 17 (June 1895), p. 696. The census reported more than 1,000,000 bicycle sales in 1900 alone. United States Census Office. Census Report, Twelfth Census of the United States, Taken in the Year 1900, vol. 10, part 4, Manufactures (Washington, D.C.: United States Government Printing Office, 1902), pp. 327-328. See also The Chautauguan 33 (June 1901), p. 207.

contained a well-illustrated article, "A Wheel Around the Hub," first published two years earlier in The Century. Pope gave McClure \$300 to go to New York to buy the plates of that story about a bicycle ride around Boston, "certainly entitled to be called the hub of the bicycle, as it is the center of the sport in the country."⁶⁴

The Wheelman's contents comprise short fiction, factual articles, book reviews, poetry, and club and race notices and was profusely illustrated with woodcuts. Reviews of The Wheelman were flattering. The Nation called it "among the most attractive of the monthly magazines," while the London World thought "both the letter press and illustrations of this magazine are equal to the costliest and most elaborate got-up art magazines in England," and Puck insisted that "no conscientious bicyclist should neglect subscribing for it."⁶⁵

The 25-year-old McClure, probably on a bicycle, fled the office routine to push circulation and to acquire material. He was acquainted with many New England writers-- Charles Eliot Norton, Harriet Prescott Spofford, Oliver Wendell Holmes and Charles E. Pratt--from whom he solicited material to fill The Wheelman's pages. Pratt, a Bostonian who had edited the defunct Bicycling World, became The Wheelman's contributing editor and, after McClure, editor.

Pope's hope of financial success seemed impossible to

⁶⁴ McClure, My Autobiography, pp. 149-150; Outing 2 (May 1883), p. 23.

⁶⁵ Bonura, "The Wheelman Magazine," p. 3.

realize. He wrote that "it seems that The Wheelman can never pay." William B. Howland, publisher of Outing, was feeling the pinch of bankruptcy too. The Outing, which published its last issue in 1923, was a gentleman's outdoor magazine, one of the best at the turn of the century, according to Mott. Pope's losses on The Wheelman were reported at \$20,000 a year. He bought the Outing, no more successful than The Wheelman, in the fall of 1883, consolidated it with The Wheelman and promptly installed Howland as business manager of the new magazine, Outing and The Wheelman. McClure resigned, started the first feature syndicate, and eventually founded McClure's magazine, one of the best all-around magazines of the 1890s. Through it he was instrumental in the "muckraking" movement in the early years of this century.⁶⁶

In 1885 the Outing began running Thomas Stevens's long serial--it ran for three years--entitled "Around the World on a Bicycle." Stevens, a young reporter from Massachusetts, set off on a Columbia model ordinary with a 50-inch front wheel from San Francisco on April 22, 1884. Encouraged by Pope to attempt this round-the-world-by-bicycle ride, Stevens crossed America, Europe, and Asia by road, track, camel trail, and water course

⁶⁶Mott, A History of American Magazines, vol. 4, pp. 633-634; McClure, My Autobiography, pp. 159-160.

not merely perched on a lofty wheel, as if riding on a soap bubble, but also a perpetual object lesson in what Oliver Wendell Holmes⁶⁷ calls 'genuine, solid, old Teutonic pluck.'

Stevens calculated that he had traveled about 3,700 miles across the American continent, walking, pushing, dragging or carrying his heavy ordinary bicycle about 1/3 of the distance. He journeyed across the California Sierras, the Nevada desert, through the forbidding emptiness of Utah, over the Great Divide, and across the prairie. There were almost no roads and few people in this part of the west. In Carson, Nevada Stevens was obliged to perform for a group of cowboys in the local saloon. Prodded by their pistols he managed a few laps around the pool table, "almost braining myself on the chandelier," he recounted later. He continued through Omaha, across the Missouri River, and deep into the Iowa farm belt. For days he was lost among the sand dunes and scrub grass on the banks of Lake Michigan. The police jailed him in Cleveland for riding on the sidewalk. One hundred and three days after leaving San Francisco he ended his journey in Boston at 2 p.m., August 4, 1884.⁶⁸

⁶⁷Alderson, Bicycling, p. 58.

⁶⁸Irving A. Leonard, "First Across America by Bicycle," in The Best of Bicycling!, ed. Harley M. Leete (New York: Trident Press, 1970), pp. 324-329; Dempsey, The Bicycler's Bible, p. 26. The first part of Stevens' journey is described in Thomas Stevens, Around the World on a Bicycle, vol. 1, From San Francisco to Teheran (New York: Charles Scribner's Sons, 1887).

Stevens fitted his Columbia, which weighed about 36 pounds and sold for about \$135, with a Butcher spoke cyclometer and carried spare spokes, a cake of fire cement for his red rubber tires, an extra tire for the rear wheel that was wrapped around the front axle along with 20 yards of small rope, a bottle of sewing machine oil, a suite of "gossamer rubber," and his sundries in a Lamson carrier. A bicycle camera and paper negatives were sent out to him via Calcutta.⁶⁹

By July 1885 Stevens was in Istanbul, Turkey where he spent six months. At the end of March 1886, he had pushed on to Afghanistan where he was arrested and returned to Persia. In the heat he found that his machine turned upside down and adorned with his gossamer suit made a marvelous tent. By the beginning of August he was in India, and within three months he was in Canton, China. Passing through Japan, he took a Pacific mail steamer from Yokohama bound for San Francisco, where he arrived in January 1887.⁷⁰

Stevens's outing inspired others to undertake similar endurance trips. His excursion was noted in most of the major magazines and newspapers of the world. It was great

⁶⁹Alderson, Bicycling, p. 58; Wilkinson-Latham, Cycles in Colour, pp. 40-41.

⁷⁰Alderson, Bicycling, pp. 58-59; Wilkinson-Latham, Cycles in Colour, pp. 40-41. The second part of Stevens' journey is described in Thomas Stevens, Around the World on a Bicycle, vol. 2, Teheran to Yokohama (New York: Charles Scribner's Sons, 1888).

publicity for him and the ordinary bicycle. After his return to America, Stevens quietly settled down to his editorial duties as manager of the bicycling department of Outing, which had financed his round-the-world trip. He also became a shareholder and one of the directors of the company that owned the publication.⁷¹

By 1885 the popularity of cycling was at an all-time high. The ordinary, which had been refined and lightened since its inception in the 1870s, was now equipped with solid rubber tires, cyclometers to record mileage, special lamps to fit inside the front wheel and hang on the hub, a choice of handlebars, gearing devices, mounting steps, spring saddles, and warning devices such as multiple bells and horns. The list was endless; there were even special cyclists' shotguns and pistols. But the days of the ordinary were numbered, for a challenging newcomer--the safety bicycle, prototype of today's bicycle--was ready to take over.

The safety bicycle first appeared in 1884, although some experimental models appeared earlier. The safety was more reminiscent of Baron von Drais de Sauerbrun's hobby horse (1819) and the velocipede (1865) than of the ordinary. Comments about the safety were disparaging: it was ugly, it was too low on the road, the rider would get covered with mud and dust from horse-drawn vehicles, it was too

⁷¹The Publishers' Weekly 31 (March 19, 1887), p. 398.

complicated, and it was a fad that would soon lose its appeal and thus leave the field clear for the ordinary. There were, however, some qualities of the safety bicycle that could not be denied: it was easier to mount and dismount, a header, which was much less likely to occur, was comparatively mild after the catapulting descent from an ordinary, and it could be ridden by women.⁷²

Nevertheless, neither technology nor public response had yet advanced to the point where they could bring about the widespread acceptance of the bicycle. Even though the ordinary was now developed to perfection, it was still limited to those brave enough to run the gauntlet of public opinion and to face the constant risk of falling. Manufacturers started looking for a safer bicycle design, one that would bring the rider nearer to the ground and lower the center of the bike's gravity.⁷³

The key to eliminating the huge front wheel of the ordinary bicycle was the chain which could gear a smaller wheel to the equivalent of a large one by linking a forward drive wheel to a smaller one on the rear hub. Chains had been in use for clock-making purposes for more than a century. Indeed, sketches of a chain driving a toothed wheel had been drawn in the 1490s by Leonardo da Vinci, who has also been credited with drawing a recognizable, chain-

⁷²Smith, The Canadian Bicycle Book, pp. 8-9; Wilcockson, Bicycle, p. 30.

⁷³Smith, A Social History, p. 13.

driven bicycle during his studies.⁷⁴

Early chains were made on the pattern known today as the pin chain. There were no rollers between the pins and the sprocket teeth. About the time of the American Civil War, James Slater fitted rollers to the pins, a design that reduced friction by converting sliding motion to rolling motion. Slater's roller chain was less than ideal, however, since the wear was concentrated on the side plates. Hans Reynold solved the problem with the roller bush chain, which had a bushing superimposed upon the roller. The contact area is thus enlarged and rubbing speeds are lower. The ends of the bushing bear against the side plate, distributing thrust loads over a larger surface. Reynold's chain was perfected in 1880, just in time to be used in the development of the safety bicycle.⁷⁵

While bicycle makers lightened and perfected their ordinaries, others were tinkering with new designs for improved performance and stability. In 1869 Thomas Wiseman sent details of his new design to the English Mechanic which published an engraving of the machine. It possessed a front wheel larger than the back wheel, was lower to the ground than the ordinary, and had front wheel propulsion and

⁷⁴Wilcockson, Bicycle, p. 30; McGonagle, The Bicycle in Life, p. 51; Larry Bonura, "Leonardo's Bicycle," Bicycling News Canada #13 (Winter 1981), p. 14.

⁷⁵Dempsey, The Bicycler's Bible, pp. 19-20.

rear wheel steering. The seat was strategically placed to enable the rider to mount before moving off and, as the magazine reported, the rider could, "without dismounting, stop and shake hands with a friend."⁷⁶

Enthusiastic amateurs had produced versions of a chain-driven safety bicycle as early as 1876, but the first patented machine was not made until 1879. This was the Bicyclette, exhibited by Henry Lawson, manager of the Tangent and Coventry Tricycle Company, at a Paris exhibition in late 1879 and in London at the beginning of 1880. Although its strange shape was ridiculed in France, the Bicyclette was better received in England.⁷⁷

The Bicyclette's front wheel was still about twice the size of the rear one, but it did have the rudiments of the modern safety bike: a tubular frame with the saddle positioned between the two wheels, the pedals and chainwheel fitted to the frame directly below the saddle, and a chain driving a sprocket on the rear hub.

Lawson's machine, which was a success, and the first safeties to be sold in any numbers, were direct modifications of the ordinary. Both the Facile, built by Ellis and Company of London, and the Kangaroo, made by William Hillman, a former associate of James Starley, utilized smaller front wheels than the ordinary, gearing it up by means of levers

⁷⁶Wilkinson-Latham, Cycles in Colour, p. 41.

⁷⁷Williamson, Wheels Within Wheels, p. 116; Wilcockson, Bicycle, p. 30.

and treadles on the Facile, or by chain and pedals mounted just below the front hub on the Kangaroo.⁷⁸

Other inventors and designers left the ordinary as it was, but contrived by various means to move the saddle farther back to make the machine safer. One of the most serious rivals to the ordinary was the Xtraordinary made by Singer and Company. This machine, together with the Facile, was patented in 1878 and posed serious commercial threats to the ordinary. The Xtraordinary placed the saddle slightly farther back than usual to enable the rider to reach the pedals that employed levers and links. The crank-pin was jointed to a lever, one end of which, suspended by a short link from near the top of the fork, vibrated in a circular arc. The other end was extended downwards and backwards, and supported the pedal. Thus, a smaller wheel could be used. One main criticism was that the pedal described an oval rather than a circle, which some riders found disconcerting.⁷⁹

The Facile went further by reducing the front wheel to a mere 42 inches and moving the mass center of the rider further back behind the center of the driving wheel by moving the saddle back. The motion of the pedal relative to the machine was one of up-and-down oscillation in a circular

⁷⁸Wilcockson, Bicycle, p. 30; Wilkinson-Latham, Cycles in Colour, p. 41; Sharp, Bicycles and Tricycles, pp. 151, 152.

⁷⁹Wilkinson-Latham, Cycles in Colour, p. 42; Sharp, Bicycles and Tricycles, p. 150.

arc, and was quite different from that of the uniform circular motion in the ordinary. From the position of the mass center of the rider relative to the center of the driving wheel, it is evident that this bicycle possessed a much greater margin of safety than the ordinary. Moreover, the Facile and its rider offered less surface to wind resistance thereby making the machine easier to propel under certain circumstances. The machine, although it did not appear until late 1878, had been patented by John Beale in 1869.⁸⁰

The Facile was manufactured by Ellis and Company of Fleet Street, London, and, like the other manufacturers and agents, set about establishing their machine by endurance tests. One of their advertisements of 1884 showed the steady whittling down of a 13-day record, established in 1880, for a journey between Land's End and John O'Groats recorded on one of their machines in 1884 when J. H. Adams, riding a 46-inch diameter front wheel Facile, completed the journey of 924 miles in 6 days, 23 hours, 45 minutes, an average of 132 miles a day.⁸¹

Ellis and Company also organized other feats of endurance and reliability. In 1882 they organized a 24-hour road race and the winner, W. Snook, rode 221½ miles. Adams,

⁸⁰Sharp, Bicycles and Tricycles, pp. 151-152; Wilkinson-Latham, Cycles in Colour, p. 42.

⁸¹Wilkinson-Latham, Cycles in Colour, pp. 42-43; Sharp, Bicycles and Tricycles, p. 152.

winner of the 1884 Land's End to John O'Groats road race, was employed as a "work's driver" by Ellis and Company and, that year, he beat a number of records, culminating in a 24-hour record of 266½ miles.⁸²

One type of transition bicycle between the ordinary and the safety was called the geared dwarf ordinary, essentially a smaller ordinary with gears. It was superior to the ordinary in two important respects: first, the rider being placed lower, the total surface exposed by the machine and rider was less, the air resistance was therefore less, this advantage being greatest at high speeds; second, since the speeds of the driving-wheel and crank axle could be arranged in any desired ratio, the speed of pedalling and length of crank could be chosen to suit the rider's convenience, irrespective of the size of the driving-wheel.⁸³

While manufacturers advertised their victories and were selling ordinary bicycles at record high levels, it was obvious that the ordinary and the dwarf ordinary had reached their zenith and little improvement could be made upon the existing design. A new approach was needed to produce a safety bicycle, a new method of harnessing and using human leg power to propel a machine more efficiently. It was

⁸²Wilkinson-Latham, Cycles in Colour, p. 43.

⁸³Ibid.; Sharp, Bicycles and Tricycles, p. 153.

obvious, too, that gearing was to play an important part, but an improved method of transmitting the power from pedals to wheel had to be found. Just as James Starley had played a large part in the bicycle's early development, a similar role was now taken by his nephew, John Kemp Starley, in the design of a safety bicycle, one that would, literally, be safer to ride.⁸⁴

As with other inventions, the safety bicycle did not just happen. It evolved over a number of years with various manufacturers and designers contributing to its advancement. The dwarf ordinary was a step in the direction of the safety bicycle, but it was designed with propulsion coming from action on the front wheel. The first machine using the rear wheel drive for transmission of power from the pedals was developed in 1869 by Frederick Shearing who used a strap instead of a chain. Rousseau of Marseille, France designed the first bicycle that had a front wheel driven by a chain in 1877. In 1878 Thomas Shergold of Gloucester produced a chain drive machine with drive to the rear wheel.⁸⁵

The Shergold machine, now in the Science Museum in London, was a crude affair when compared with the factory produced ordinaries, but it did employ features that would find their place in the safety bicycle. Although the

⁸⁴Wilkinson-Latham, Cycles in Colour, pp. 61-62; Wilcockson, Bicycle, p. 30; Williamson, Wheels Within Wheels, p. 147.

⁸⁵Wilkinson-Latham, Cycles in Colour, p. 57.

steering was rather complex, both wheels were of the same size, the saddle was placed over the center of the rear wheel, and two forks from the frame held a cogged wheel to which were attached cranks and pedals. This larger cogged wheel was connected to a smaller cogged wheel that was the center of the rear wheel. By pedalling, the power was transmitted and geared up to the rear wheel.⁸⁶

Another chain-driven machine reached the market in 1878. This was the Kangaroo, a joint venture of William Hillman, W. H. Herbert and G. B. Cooper. The machine was essentially a dwarf ordinary, but instead of the levers that had been used on the other machines of this type, chains were used. To obtain the necessary drive, the pedals and cranks were attached to small cogged wheels fitted to the fork extensions. These were connected by chain to a smaller cogged wheel in the center of the wheel. Because there were two pedals, there were two sets of gears and chains.⁸⁷

While the Kangaroo was safer than the ordinary, it had two serious defects. A narrow tread must be kept between pedals, and the consequent narrow width of bearing of the crank axle gave a bad design mechanically. The two chains, after a time, became slack. In pressing the pedals downwards, the front side of the chain tightens, but when the pedal is ascending, since it cannot be lifted directly

⁸⁶Ibid., pp. 57-58.

⁸⁷Ibid., p. 58; Sharp, Bicycles and Tricycles, p. 153.

by the rider, it is pulled up by the chain and the rear side of the chain tightens. This reversal, taking place twice every revolution, puts a serious jar on the gear.⁸⁸

The rear-wheel driven safety bicycle that attained popularity in the mid-1890s was invented by John Kemp Starley and his partner William Sutton in 1885. Starley's first model, in 1884, resembled the ordinary. The following year, at the suggestion of Stephen Golder, a Coventry pressman and experienced cyclist, Starley employed direct steering, but the machine was still basically an ordinary. Still not entirely satisfied with his efforts, Starley produced yet another model, the Rover, in 1885, and this time the safety was born.⁸⁹

The Rover had a front wheel of 35.5 inches in diameter and a rear wheel of 27.5 inches in diameter. The tubular frame was in the diamond shape in use today and had two sets of forks, front and rear, to embrace the wheels. The Rover weighed 33 pounds. Its cranks and pedals were placed on a separate axle, and the energy applied was transmitted by a single driving chain to the rear wheel. It was safe in regard to being thrown over the handlebars. The driving chain was kept taut continuously. The steering head was sloped and steering was direct. The Rover is the prototype

⁸⁸Sharp, Bicycles and Tricycles, p. 153.

⁸⁹Ibid.; Wilcockson, Bicycle, p. 32; Wilkinson-Latham, Cycles in Colour, p. 61.

of the modern rear-wheel driven bicycle.⁹⁰

The Rover made its public debut in 1885 at the Stanley Show, a yearly exhibition held in a large marquee near Blackfriars Bridge, London. All cycle manufacturers of note made a point of sending their latest models for display, and members of the trade came from all parts of the country to see what was new and to place orders for the coming season. The Rover, because of its shape, was promptly dubbed the "Beetle" and "Crawler."⁹¹

Publicity for the Rover was obtained by poster and magazine advertising. But to gain public acceptance and to firmly establish the Rover, Starley needed a record-breaking feat to give the machine a boost. In September 1885 Starley succeeded in his quest when one of his riders, George Smith, rode 100 miles in 7 hours, 6 minutes and 16 seconds, setting a world record. The number of safety bicycles manufactured yearly began to increase rapidly in 1886, paving the way for the eventual downfall of the ordinary. It would be some years, however, before the safety bicycle was finally embraced by the public. The period 1876-1887 can be regarded as the decade of the ordinary bicycle.⁹²

⁹⁰Wilcockson, Bicycle, p. 32; Sharp, Bicycles and Tricycles, pp. 153-154.

⁹¹Williamson, Wheels Within Wheels, p. 147.

⁹²Wilcockson, Bicycle, p. 32; Wilkinson-Latham, Cycles in Colour, pp. 61-62; Sharp, Bicycles and Tricycles, p. 155.

1877-1887: Bibliography

1. Davis, Andrew M. F. "College Athletics." The Atlantic Monthly 51 (1883):681.

Bicycle clubs were a college phenomena and a source of exercise and pleasure but the bicycle had limited appeal.

2. "The Champs Elysees." The Atlantic Monthly 53 (1884): 545.

Mentions bicycles skimming by on this Paris thoroughfare.

3. Pennell, Elizabeth Robins. "From Coventry to Chester on Wheels." The Century Magazine 6 (1884):643-655.

One of many articles by the Pennells on bicycle touring in Europe. Elizabeth wrote about tricycle riding in England in the early 1880's, giving bits of information on bicycle history, women, tricycles, and biking activities in England. Joseph, her husband, did the drawings.

4. Cornwell, Henry S. "The Hobby-Horse." The Century Magazine 8 (1885):496.

A poem about the "gallant steed."

5. Kemble, E.W. "The First Bicycle in Remusville." The Century Magazine 9 (1885):158.

A drawing by Kemble for the Uncle Remus series.

6. Pennell, Elizabeth Robins. "Italy From a Tricycle." The Century Magazine 9 (1886):643-664.

Part 1 of 2 about the Pennells' tricycle trip in

Italy. Describes Italy of the 1880's with illustration of natives.

7. Pennell, Elizabeth Robins. "Italy, From a Tricycle." The Century Magazine 9 (1886):839-859.

Part 2 of the Pennells' tricycle ride in Italy.

8. Pennell, Joseph. "The Western End of Cheyne Walk." The Century Magazine 11 (1886):225.

Illustration of a couple on a tricycle in Old Chelsea, England.

9. Flood, Theodore L. "Editor's Note-Book." The Chautauguan 4 (1884):369.

A short paragraph on the King County (N.Y.) Wheelmen's Club annual reception that included drills and exhibitions. Editor encouraged use of the bicycle.

10. "Our Steel Horse." The Chautauguan 4 (1884):523-524.

A concise history of the bicycle to 1884, touching on the number of cyclists and clubs (30,000 in 400 clubs in 1884), its healthfulness, road conditions, speed, use in commuting, as a "cure-all" for ailments, purchasing prices, and some predictions about its future.

11. Flood, Theodore L. "Editor's Note-Book." The Chautauguan 6 (1886):543.

Flood reflected on Thomas Stevens' bicycle ride around the world and made two comments: a) the bicycle was a means of independence from transportation companies and b) that all the world is open and safe for bicycle travelers. A brief review of Stevens' progress in Asia is given.

12. Chapman, Louise A. "Proper Work and Recreation for Our Children." The Cosmopolitan 1 (1886):262.

A short paragraph that claims that the bicycle is more disastrous and fatal to health than labor.

13. Norton, H. B. "Professional Enthusiasm." Education 6 (1886):313.

Humorous definition of a bicycle is mentioned.

14. "Current Literature." Education 7 (1886):294.

A book review of the Pennells' three-week tricycle ride from Florence to Rome, Two Pilgrims' Progress.

15. Hume, John F. "The Heart of Speculation." The Forum 2 (1886):132.

Bicycle mentioned as a poor investment for smart speculators.

16. "It's a Long Lane That Takes Plenty of Turning." Harper's New Monthly Magazine 62 (1881):640.

Illustration of cyclist on an ordinary with a pack and umbrella on his back.

17. Howland, Edward. "A Bicycle Era." Harper's New Monthly Magazine 63 (1881):281-286.

A history of the bicycle from 1816 to 1881, with illustrations of early machines. Velocipede and ordinary eras are discussed in detail with comments about riding techniques and manufacturing. Much attention is given to the League of American Wheelmen, road conditions, and practical uses of the bicycle.

18. Fitler, ?. "Main Street, Looking East From East

College." Harper's New Monthly Magazine 63 (1881):549.

Illustration of two ordinary riders.

19. "Wheel-ocipede." Harper's New Monthly Magazine 64 (1882):798.

A poem about the "Philosopede."

20. "Editor's Easy Chair." Harper's New Monthly Magazine 67 (1883):146-147.

A comment about a legal suit brought against P.T. Barnum for using children to ride bicycles. The court said that children riding is not harmful; the editor said that employers who use children will be watched by society.

21. Brewtnall, E. F. "At the Pond." Harper's New Monthly Magazine 67 (1883):169.

Drawing of two ordinaries being ridden around a pond near Hampstead, England.

22. "Editor's Drawer." Harper's New Monthly Magazine 67 (1883):807.

First grade teachers seeking re-certification in Illinois had to pass an exam; one replied that he thought a bicycle was a musical instrument.

23. Brunner, H. C. "City Athletics." Harper's New Monthly Magazine 68 (1884):297, 304-305.

The bicycle is mentioned twice in this article about city athletics, and a longer section covers riding inside and outside of Central Park in New York City and area bike clubs.

24. "Editor's Easy Chair." Harper's New Monthly Magazine

74 (1886):155-156.

Comments about cyclists' rights to the road and general intolerance and patronage of public.

25. Du Maurier, George. "Nemesis." Harper's New Monthly Magazine 75 (1887):810.

Illustrator shows ordinary bicycle rider along waterfront.

26. "Other Publications Received." Kansas City Review of Science and Industry 6 (1883):599.

Mentions receipt of The Wheelman, v. 1 # 4, Jan. 1883, edited by S.S. McClure.

27. "Cataloging and Classification." The Library Journal 6 (1881):31.

Annotation of H. Blackwell's bibliography of bicycling in The Wheel World for 1880.

28. "Anonyms and Pseudonyms." The Library Journal 7 (1882):114.

Spells out full name of Lyra Bicyclica author, Joseph Grinnell Dalton.

29. Cutter, C. A. "Classification of the Recreative and Athletic Arts." The Library Journal 10 (1885):7.

Wheeling (SJ), broken down into velocipede (SJV), bicycle (SJB), and tricycle (SJT) in this scheme, is preceded by land-locomotive sports walking and followed by horse locomotion.

30. Advertisement. The Library Journal 12 (1887):535.

Charles Scribner's Sons lists Thomas Stevens'

Around the World on a Bicycle.

31. Advertisement. Library Notes 1 (1886):67.

Pope Manufacturing Co. advertised the "Librarian's Horse," the Columbia bicycle.

32. Advertisement. Library Notes 1 (1886):165.

Same ad described in #31.

33. Advertisement. Library Notes 1 (1886):239.

Same ad described in #31.

34. Advertisement. Library Notes 1 (1887):251.

Same ad described in #31.

35. Advertisement. Library Notes 2 (1887):77.

Same ad described in #31.

36. "A Great Bicycle Achievement." The North American Review 145 (1887):468-469.

Book review of Around the World on a Bicycle, vol. 1, From San Francisco to Teheran.

37. Spencer, Herbert. "Principle in Small Things." The Popular Science Monthly 22 (1882):273-276.

A discussion of bicycle riding on sidewalks in Stockbridge, Mass., and Spencer's analysis of Americans' reactions to the issue.

38. Obtritus, Vermiculus, pseud. "The Bicycle Controversy in Stockbridge." The Popular Science Monthly 22 (1883): 550-553.

A New Yorker presents more information about the bicycle sidewalk controversy in Stockbridge.

39. "Bicycles and Civilization." The Popular Science

Monthly 22 (1883):556-559.

A final comment by the editor on the Stockbridge controversy.

40. Hall, Lucy M. "Physical Training of Girls." The Popular Science Monthly 26 (1885):497.

If a boy be given a bicycle, a girl should be given a tricycle and allowed to seek recreation in the open air.

41. "Around the World on a Bicycle." Public Opinion 1 (1886):92.

A discussion of the hospitality of the nations on the last leg of Stevens's trip, from Teheran to Yokohama. Summarized from the New York Sun.

42. "A Novel Expedition." Public Opinion 1 (1886):211.

Outing magazine, who sent Stevens on his trip around the world, dispatches James Ricalton to the Arctic Ocean to bicycle from Archangel to the Crimea.

43. "Timeing [sic] Bicycle Races by Electricity." Public Opinion 1 (1886):277.

A proposal from E. H. Foote of the Massachusetts Bicycle Club for obtaining correct timing of races, taken from the Electrical Review.

44. "Notes." Public Opinion 1 (1886):279.

An update on Stevens' trip: he was held prisoner in Afghanistan for 19 days, released, then headed for India.

45. Burdette, ?. "What Lack We Yet?" Public Opinion 1 (1886):300.

The bicycle is mentioned in this poem about what technology the United States has, but what a lack of presidential leadership there is.

46. "Literary." Public Opinion 1 (1886):419.

A summary of offerings in the latest issue of Outing received, including a desire of the writer to take an "outing" on a bicycle.

47. "Literary." Public Opinion 1 (1886):439.

Mentions publication in Springfield, Massachusetts of a paper entitled The Bicycle and Evangelist.

48. "Lost in Russia." Public Opinion 1 (1886):459.

Ricalton is reported missing and is thought to be imprisoned in Russia because he carried a camera.

49. "The Science of Locomotion." Public Opinion 1 (1886):513.

While bicycling grows in public favor, most riders are athletic persons. Inventors had yet to develop a machine for "lazy men" of the community. Digested from the Springfield, Massachusetts Republican.

50. "Publications Received." Public Opinion 2 (1886):19.

Acknowledgement of receipt of Railroad Velocipedes by the Sheffield Velocipede Car Co., Three Rivers, Michigan.

51. Root, James P. "Parallels Between Horses and Men." Public Opinion 2 (1886):92.

Mention is made of a bicycle in this article abstracted from The Current.

52. "Literary." Public Opinion 2 (1886):140.

The December issue of The Pansy runs a story by Faye Huntington called "Only a Bicycle."

53. "Literary." Public Opinion 2 (1886):160.

Outing for December has a story about Stevens' trip around the world and James B. Kenyon's article, "On the Wheel."

54. "Medical." Public Opinion 2 (1886):178.

A doctor recommends cycling as a "health-stimulating exercise."

55. "Literary." Public Opinion 2 (1887):248.

Stevens contributes another installment of his trip to the January Outing.

56. "Literary." Public Opinion 2 (1887):344.

Stevens' series continues in the February Outing.

57. "The English Woman." Public Opinion 2 (1887):428.

Mentions tricycling as a form of exercise for middle class English women.

58. "Literary." Public Opinion 2 (1887):462.

The March Outing continues Stevens' narrative with illustrations by J. and C. Temple.

59. "Literary." Public Opinion 2 (1887):485.

Stevens becomes manager of the Outing's bicycling department and a shareholder and one of the directors of the company that owns Outing.

60. "Scientific." Public Opinion 3 (1887):138.

Bicycle corps are being organized by France and Germany for service in the field in place of cavalry.

61. "Literary." Public Opinion 3 (1887):227.

Thomas Stevens will shortly begin a series of articles called "Bicycling in Wild Countries" in Harper's Young People. Also, in another item, John Ruskin objects to bicycles because they "supersede human feet on God's ground."

62. "Books of the Week." Public Opinion 3 (1887):287.

Karl Kron's Ten Thousand Miles on a Bicycle is commended as a "curiosity" in this book review.

63. "Literary." Public Opinion 3 (1887):452.

James Ricalton concludes his bicycle trip across Russia. The details of cost, dieting, and photography are discussed in a series in Outing, with book publication being considered.

64. "Finance and Commerce." Public Opinion 4 (1887):112.

German bicycle manufacturing, spurred by the popularity of the bicycle in Germany, is competing with the strong English industry.

65. "Juvenile Sports." Public Opinion 4 (1887):164.

A strong body makes a strong nation and the bicycle is mentioned as a form of exercise in this thesis.

66. D., B. "John and His Velocipede." St. Nicholas 5 (1878):650.

A three-panel cartoon showing John riding his velocipede, running downhill on it, and coming to a stop against a tree.

67. D., R. V. "The Letter-Box." St. Nicholas 5 (1878):

765.

A young boy from Albany, New York, writes about Goliath, the "largest human being ever known," and how he might boom along on a velocipede.

68. D., R. V. "The Largest Man." St. Nicholas 5 (1878): 826.

Letter in #67 is reprinted in the "Jack-in-the-Pulpit" section.

69. Barnard, Charles. "A Talk About the Bicycle." St. Nicholas 7 (1880):887.

An article written for youngsters covering the history of the velocipede and ordinary, the sense of freedom when riding, speed, how to ride an ordinary, and some comments on safety and health.

70. "Young Contributors' Department." St. Nicholas 7 (1880):916.

A one-page story, "The Bicycle Boys," about a collision with a pedestrian on a road, how these boys organized a bicycle club, made one run, confronted a panicky horse, and disbanded.

71. "The Letter-Box." St. Nicholas 7 (1880):996.

An editorial comment on Charles Barnard's "A Talk About the Bicycle."

72. "The Riddle-Box." St. Nicholas 7 (1880):999.

Drawing of ordinaries used in a "pictorial numerical enigma."

73. Blake, H. W. "How Bobby's Velocipede Ran Away." St.

Nicholas 8 (1881):657-659.

Little Bobby was sent outside to play while his mother baked a cake. He set off on his velocipede to find his father at work. He found a train and, leaving his bike behind, climbed aboard, thinking he had found his father's train, which it was not. Later, the engineer finds the boy and arranges to have him returned to his parents, who were worried and upset at finding Bobby missing.

74. Macallum, Fred W. "The Letter-Box." St. Nicholas 8 (1881):893.

A comment about how a bicycle will ride on just about any kind of road.

75. Frances, J. G. St. Nicholas 9 (1881):47.

A drawing of a cat upon an ordinary pulling his three kittens on roller skates.

76. Tangye, Elsie G. "The Letter-Box." St. Nicholas 9 (1882):418-419.

An English girl relates in a letter how her dog was returned to her by a cyclist who had chased it down on his bike.

77. B., L. A. "The Whirligig Club." St. Nicholas 9 (1882):607-612.

A story about members of a bicycle club who made a midnight excursion that included riding over planks placed over railroad ties. The riders discovered that rocks had tumbled onto the tracks and they flagged down a train that would have been derailed if it had continued.

78. "A Two-Legged Steed." St. Nicholas 9 (1882):819.

The author claims that riding an ostrich is not any more "out of the way" than riding a bicycle.

79. "The Riddle-Box." St. Nicholas 9 (1882):906.

A drawing of an ordinary as a clue in an "illustrated hour-glass puzzle."

80. "A Tricycle Journey." St. Nicholas 9 (1883):980.

A short piece on the Pennells' tricycle journey in Italy.

81. "The Riddle-Box." St. Nicholas 9 (1882):986.

Answer to illustrated hour-glass puzzle using a bicycle as a clue.

82. "How Times Have Changed!" St. Nicholas 10 (1882):154.

Bicycle is mentioned as an essential Christmas gift for a boy.

83. Shields, S. A. "Fairy Wishes, Nowadays." St. Nicholas 10 (1883):170.

Tinkey falls asleep under a tree. In his dreams a fairy grants his wishes; one was for "the best bicycle in the world."

84. Wheeler, E. J. "Bob's Wonderful Bicycle." St. Nicholas 10 (1883):424-427.

A poem describing Bob's mechanical genius, his building of a bicycle, his wild and fast riding, and the header that tossed him through his schoolhouse window and demolished his machine.

85. C., Sadie. "The Letter-Box." St. Nicholas 10 (1883):

636.

A 14-year-old girl's comments on "Bob's Wonderful Bicycle."

86. J., C. "A Railway Velocipede." St. Nicholas 10 (1883):875.

A letter about and a drawing of a railway velocipede.

87. "The Little Boy We Call 'H'y.'" St. Nicholas 11 (1884):574-575.

H'y is 1½ years old and calls out the word 'bicycle' when he sees one. A drawing of H'y watching Teddie ride his bicycle is included.

88. Stacy, Joel. "The Bicycle Boys." St. Nicholas 12 (1884):49.

A poem.

89. Alcott, Louisa M. "The Hare and the Tortoise." St. Nicholas 12 (1884):109-111.

A story of two brothers, one bicycling and the other walking-running to an event in a town 20 miles away.

90. Alcott, Louisa M. "The Hare and the Tortoise. II." St. Nicholas 12 (1885):177-181.

Part 2 concludes the story: the bicycle rider stops and dallies, has a header, and comes into town after his runner-walker brother, who displays pluck and persistence in his endeavor and is rewarded by being allowed to pick a bicycle of his choosing as a gift.

91. Stockton, Frank R. "The Tricycle of the Future." St.

Nicholas 12 (1885):481-486.

A story about a very large tricycle of the future.

92. Cox, Palmer. "The Brownies and the Bicycles." St.

Nicholas 13 (1885):69-71.

A poem that is delightfully written and illustrated. It is about the Brownies, elf-like folks, and their encounters with making and riding an ordinary.

93. Pennell, Elizabeth Robins. "School-Life at Rugby."

St. Nicholas 13 (1885):114.

Bicycling is mentioned.

94. "Jack-in-the-Pulpit." St. Nicholas 13 (1886):312.

A poem about the month of February that mentions bicycles.

95. Blake, E. Vinton. "The Girls' Tricycle Club and Its Run Down the Cape." St. Nicholas 13 (1886):494-500.

The pleasures and vicissitudes of a tricycle ride. Illustrated.

96. Francis, J. G. "The 'Go-As-You-Please' Race, As Seen Through a Magnifying Glass." St. Nicholas 13 (1886):533.

A drawing of the smallest circus in the world, with fleas using all forms of transportation, including a bicycle, in this race.

97. Tabb, John B. "Inverted." St. Nicholas 13 (1886):828.

A poem about riding a "try cycle" first, then a "buy cycle."

98. Pratt, Charles E. "A Wheel Around the Hub."

Scribner's Monthly 19 (1880):481-499.

A finely illustrated and entertaining description of a two-day bicycle ride around Boston that took place in September 1879. Pratt, one of the leaders of the United States bicycle movement in its early years, writes about the places visited and the terrain covered. Six different artists contributed to this profusely illustrated article.

99. Hopkins, L. "Design for a Bicycler's Handkerchief." Scribner's Monthly 19 (1880):640.

Various bicycle scenes outlined by musical scores comprise this piece of apparel.

100. Vanderhoof, Charles A. "The Most Ancient Part of Holborn." Scribner's Monthly 21 (1881):649.

Vanderhoof draws an ordinary cruising the streets of London.

101. Muhrman, H. "Children's Play-Ground on the Roof." Scribner's Monthly 21 (1881):883.

A child is shown riding a bicycle on a roof.

102. Luce, Robert. "Words, Words, Words." The Writer 1 (1887):25.

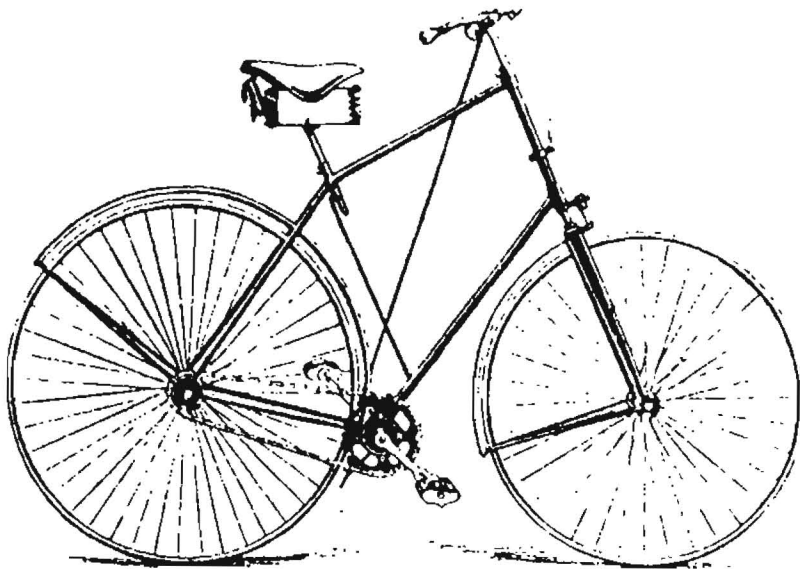
Bicycling is mentioned.

Chapter IV

1887-1893: Demise of the Ordinary and Rise of the Safety Bicycle

The line is man
the circle woman.
Bisexual bicycle
carry us on the diamond frame
on the sounds of the wheels
by the silent work
of cable chain and gear
to deeper distances.
Link us to our double selves.

--Peter Cummings, "Going
Bicycle," 1979



Raleigh safety, 1888

1887-1893: History

The period between 1887 and 1893 saw the demise of the ordinary bicycle and the rise of the safety bicycle. Cycle manufacturing plants became leaders in mechanization and research, the movement for good roads shifted from the LAW to the federal and state governments, United States military units began experimenting in earnest with cycles, racing took off with a streak, touring became a popular pastime, and numerous songs and books recorded all of these events. During the safety bicycle's ascension in the United States, the first experimentations with putting engines on carriages, tricycles, and bicycles began.

The safety bicycle, as it was produced and used in increasing numbers in the late 1880s, was a thoroughly serviceable vehicle that avoided the vices of instability and heaviness that accompanied the ordinary. Members of the old school of bicyclists thought that the new models were lacking in comfort because they had small wheels, about 28 to 30 inches in diameter, and narrow, solid tires. Getting the rider closer to the ground minimized some of the consequences of sailing over the handlebars, but it did not eliminate the jarring caused as much by bad roads as by the designs of the bicycles. The solid tires of the ordinary had provoked incessant cries for some improvement that would eliminate the constant pounding cyclists got when riding. Some of this vibration could be reduced by placing saddles

well back on the frame and by using springs of various kinds. The solution was the air-filled, or pneumatic, tire.¹

The pneumatic tire was patented in 1845 by R. W. Thomson who had intended it for horse-drawn carriages to make riding more comfortable. Thomson did not commercialize his new product, and it was soon forgotten until rediscovered by John Boyd Dunlop in 1888. Dunlop, a name still known and respected in the tire industry, was a veterinary surgeon from Belfast, Northern Ireland. Dunlop gave a hard-tired tricycle to his son, Johnny, who reported that his new present was quite uncomfortable and very hard to pedal. Dunlop liked to tinker in his spare time, and one of his hobbies was fabricating his own gloves out of canvas and rubber. From these he devised a set of "gloves" that could be filled with air for his son's tricycle. From rubber sheeting and strips of linen from one of his wife's old dresses, Dunlop made his first pneumatic tires.²

Dunlop continued to make improvements on his tire until a friend, William Hume, president of the Belfast Cruiser's Cycling Club, persuaded him to make a pair of tires for Hume's racing bike. With his new tires Hume easily beat the crack cyclists of the area in a race on May 18, 1889.

¹Leek, The Bicycle, p. 64; Smith, A Social History, p. 14.

²Leek, The Bicycle, p. 66; Smith, A Social History, p. 14; Geist, Bicycle People, p. 19; Dempsey, The Bicycler's Bible, p. 25; Sloane, The New Complete Book, p. 268; Berkebile, Wheels and Wheeling, p. 20.

Dunlop recognized the value of his invention and took steps to get it into production. He went into business, and soon pneumatic tires were being manufactured by a number of firms in the United States.³

An inflatable hollow tire had been discussed frequently in the cycling press, but was dismissed as impractical. The genius of Dunlop was not in inventing the pneumatic tire but in realizing its potential, then going ahead to put it into production. The first Dunlops were puncture-prone and subject to blowouts. Repairs were difficult since the tire was glued to the rim. Cyclists were, therefore, generally skeptical and tended to shy away from the pneumatic tire in the beginning. Other inventions quickly followed Dunlop's and were aimed at making the pneumatic tire more durable and acceptable to the cyclist. Valves were perfected, Charles Welsh added a wire-reinforced edge, and William Barlett further refined the design with a molded lip or bead.⁴

At first Dunlop's tire added greatly to the cost of a bicycle, but it quickly became popular as cyclists grew aware of the advantages of this more comfortable and easier means of travel. By 1891 the new tires controlled 40% of the market; by 1892 the pneumatic tire was fitted to most bicycles being produced. The sprung frames were gradually

³Dempsey, The Bicycler's Bible, p. 25; Sloane, The New Complete Book, p. 268.

⁴Smith, A Social History, p. 14; Dempsey, The Bicycler's Bible, pp. 225-226.

abandoned, and most makers brought out new models having frames with forks wide enough to take the pneumatic tires. With the new style of tires fitted to the more acceptable diamond frame, we arrive at the more-or-less standard bicycle of today. Naturally, more and more changes continued to be made, but they were largely aimed at improvements in details and the addition of accessories. At the same time better production techniques allowed a less expensive machine to be produced, and rubber technology began to come into its own.⁵

The bicycle craze of the 1890s was directly translated into an industrial boom during the chronic depression years, 1893 to 1898. Farm prices fell and unemployment grew, but the bicycle firms of Pope, Overman, Spaulding, and others were booming. American industry made tremendous advances in the last half of the nineteenth century. However, the great majority of American factories were relatively small operations, and their existence was constantly threatened by entrepreneurs striving to consolidate both production and control in the form of trusts. In 1890, for example, the average American bicycle factory employed 50 people or fewer, an eighth hired more than 500 employees, and only four were giants with 1,000 to 1,500 workers. Soon after the safety bicycle appeared on the market, the larger plants showed the future direction of industrial technology and set

⁵Smith, A Social History, p. 14; Berkebile, Wheels and Wheeling, p. 21; Leek, The Bicycle, p. 66.

the example that would be followed by the automobile industry in the early twentieth century.⁶

The Overman Works in Chicopee, Massachusetts made the Victor bicycle in an environment essentially like that later used in Detroit and Flint, Michigan. In 1891 the Scientific American described the plant as "nothing but a huge machine." There were special rooms for nickel-plating the showy parts of the bicycle. There was another room where bicycles were assembled and where the subdivision of labor already had been introduced. In still another room machines made all of the screws and bolts used to construct a bicycle. The Overman Works had its own steam power system, its own dropforging room, and its own electric light plant for the 1,000 lamps that illuminated the premises, one of the earliest examples of all-electric lighting. The plant also made its own rubber tires and had its own cycle-testing track that duplicated a variety of surfaces so that its bicycles could be checked thoroughly before being shipped.

Not to be outdone by his rival, Pope introduced his own testing techniques. Overman had a dynamometer for measuring the strain on the pedal crank and used the information to design new and better parts. But Pope tested even further than that--he measured frames for stress arising from vibrations, crushed ball bearings to determine the amount of friction they could tolerate, and stretched chains to the

⁶Smith, A Social History, pp. 14, 17.

breaking point. In 1892 Pope set up his own metallurgical laboratory to develop lighter and stronger alloys to reduce weight. At the time the laboratory was the only one of its kind outside of the steel mills, and it was unique in testing for light metals.⁷

Despite the high prices they were charging for the new safety bicycle, American cycle manufacturers were hard at work in 1890 trying to meet the demand. The sports-oriented Outing magazine concluded in April 1891 that at least 100 different models of safeties would be presented to the public that year, and that at least half of those would sell for \$135 or more each. To show how expensive such a bicycle was, any of the nearly 2,000 employees of the cycle plants in 1890 would have had to work nearly six months at the prevailing wage to purchase one of the bicycles he helped assemble. This points up the fact that in its infancy the bicycle--be it the velocipede, the ordinary or the safety--was expensive and certainly not available to the masses. A price cut was a necessity before there could be any "golden era" of bicycling in the 1890s.⁸

Two forces finally did bring about a drop in prices: public pressure and, more importantly, overproduction on the part of manufacturers. In the spring of 1893, complaints

⁷"Victor Bicycles," Scientific American 64 (May 2, 1891), p. 304; Smith, A Social History, p. 18; Bonura, "Albert A. Pope," p. 5.

⁸"Outing Monthly Record," Outing 18 (April 1891), p. 10; Smith, A Social History, pp. 25-26.

about the high price of bicycles were heard throughout the country. Smith writes that the Minneapolis Tribune, which had previously looked upon the entire bicycle hoopla as a fad, switched courses and admitted that cycling was full of promise, and the only thing that prevented it from becoming a success was the high cost of the machines. Not only did this prevent a lot of people from being able to afford them at all, but it drove away a group of potential customers who were too stubborn to lend themselves to what the paper considered "wholesale robbery" on the part of dealers and makers. Many people indicated that they would purchase a new safety when the price got to be fair.⁹

Responding to the charges, "The Prowler," a columnist for Outing, defended the manufacturers in an article in the May 1893 issue. The Prowler, obviously aware of his magazine's old and very close relationship with Pope and Overman, said, with some petulance, that the average bicycle owner had little knowledge of the cost of making and selling a bicycle, and that a lot of nonsensical talk about lowering prices would actually put the price below the makers' costs. He went on to write that most people would be astonished to know how much capital was required to tool up for bicycle production. Salaries for salesmen were another drain on profits, The Prowler wrote. And advertising outlays were an absolute necessity in a sharply competitive industry. The

⁹Smith, A Social History, p. 26.

Prowler ended by flatly denying that cyclists were the victims of "wholesale robbery."¹⁰

The Prowler had his limitations as a prophet, however. Before the summer of 1893 was over, one manufacturer, the respectable Warwick Company, touched off a storm by sharply reducing prices from \$150 to \$85. In August The Prowler denounced the new price as "below all reason," said that it would demoralize the industry, and added that it raised hopes in the minds of cyclists that all of the cycle concerns would lower their prices.¹¹

In 1894 the demand for bicycles grew in spite of the financial panic that had struck the country the previous winter. Prices continued to decline and the bicycle's golden era was on. Many means were conceived to lure the potential bicycle buyer: cycle shows, advertising, posters, and the use of installment plans. The first cycle show in the United States was held in 1883 in Springfield, Massachusetts. A small crowd of fans saw ordinaries exhibited by 18 firms. Three years later the second show was held in Boston in conjunction with the LAW meeting. It was five years later that the next bicycle show was held. In that 1891 exhibit in Philadelphia, the new safeties were demonstrated. From the receipts of admissions from this show, the managers resolved to hold another show the next

¹⁰"Outing Monthly Record," Outing 22 (May 1893), p. 33.

¹¹"Outing Monthly Record," Outing 22 (August 1893), p. 98.

year and they, along with the ensuing craze, became popular events for the makers as well as the public.¹²

Bicycle manufacturers advertised in numerous magazines of the era and used posters to advertise the ordinary and the new safety bicycles. A great deal of advertising was necessary to lure the customer into the dealer's shop and to set him up for the coup de grace in the form of a purchase. But selling a new model was a different business as long as the machines remained above \$100. Therefore, encouragement to purchase had to be given in the form of installment sales. It appears that the downpayment idea began about 1892. The initial amount paid was substantial, frequently 75% to 90%, and the remainder had to be paid off quickly.¹³

Another form of advertising was a bit more indirect. Touring and racing offered the manufacturers an enormous amount of publicity. Thomas Stevens's trip around the world in the mid-1880s inspired two young midwesterners to complete a similar adventure. William L. Sachtleben of Alton, Illinois and Thomas G. Allen, Jr., of Ferguson, Missouri made a trip along the same route as Stevens, starting in New York City in June 1890 and ending there three years later.¹⁴

¹²Smith, A Social History, p. 27.

¹³Ibid., pp. 31, 34; Mott, A History of American Magazines, vol. 4, p. 24.

¹⁴Smith, A Social History, p. 128; Irving A. Leonard, "Trans-Asia Bike Tour in 1890," in The Best of Bicycling!, pp. 335-338.

Fred Lenz left Pittsburgh, Pennsylvania on May 15, 1892 and headed west, reversing the usual route taken to ride around the world. Lenz was about five months overdue in Calcutta, India and cyclists in the United States began to worry about him. Eventually he reappeared and worries ceased. In the spring of 1894, he was in Turkey and vanished again, this time for good. Fragments of information left no doubt that Lenz had been killed in eastern Turkey by some Kurds. Lenz's death put a quietus on round-the-world cycling trips, partly because of the danger of Kurdish hospitality, and partly because Americans found they could ride as many miles as they wanted at home. The American people fell victim to a new mania, riding long distances cross-country.¹⁵

The distance mania appeared early, and by 1889 a few bicycle clubs were awarding special medals to the member who logged the most miles during the previous cycling year. Some clubs tried for collective records as well. In 1889 the Buffalo Ramblers reported that club members had ridden a total of 189,329 miles in one year; one man rode 5,675 miles during that year.¹⁶

Tom Winder, sponsored by the Eclipse Bicycle Company, set out from New Orleans in the early 1890s and rode the border of the United States. He went through Houston, San

¹⁵Smith, A Social History, pp. 128-129, 130.

¹⁶Ibid., p. 130.

Antonio, Los Angeles, San Francisco, Portland, and on to Seattle. From there he rode to Spokane, Grand Forks, St. Paul, Chicago, Buffalo, and Bangor, finally heading south to Boston and New York. After resting for a while, Winder mounted his bicycle and pedalled to Savannah, Mobile, and on home to New Orleans. He rode 21,000 miles in 274 days for an average of more than 75 miles a day.

Of course, not every bicyclist engaged in this type of madness; some opted for riding shorter distances. The Century Riding Club of America was organized to encourage those who wanted to ride 100 miles in one day, a bit less than the cross-country rides or the round-the-world trips. A gold bar was awarded a cyclist each time he rode 100 miles in one day.¹⁷

The idea was the object of a contemptuous indictment by the New York Herald in 1893:

The fellow who is ambitious to ride a century every Sunday belongs in the category with the prize pie eater and the one who enters gorging and guzzling contests. He is moving toward the fool's grave more rapidly than the other fools and we should not throw a tack in his way. Let him ride to death. He never will be missed. He has mistaken the doctrine of the "survival of the fittest" for the "survival of the toughest." Let us hope he will die young and without offspring to help afflict a fool-ridden world.¹⁸

¹⁷Ibid., pp. 130-131.

¹⁸New York Herald (July 21, 1893), p. 7.

Of all the means of advertising, racing generated the most excitement and sales. Much social, technological, and human interest was expressed in and by the bicycle; the same held true for bicycle racing. Organized and spontaneous races were held at fairgrounds, on trotting and dirt tracks, and, occasionally, indoors, where bicycle riders would race on the outside of a roller skating rink.

The first bicycle race in the United States was held at Beacon Park, Boston on May 24, 1878. C. A. Parker of Harvard University won that three-mile race in 12 minutes, 27 seconds. Races in those early years were memorable and, sometimes, dangerous affairs, usually held wherever the particular club could find room. It was natural that for the first few years racing men competed on trotting tracks that were not prepared in advance because the cycle races usually were held after the horse races.

A special board track was constructed in the New England Industrial Fair Building in Boston in 1882. Two years later, H. E. Ducker, the Phineas T. Barnum of cycle racing, sought to put America on the racing map. He conceived the idea of building a special bicycle track inside the Hampden Park trotting track in Springfield, Massachusetts. With the help of the best civil engineers in America and Europe, Ducker helped make track building a science and helped make track racing an exciting spectator sport. During a three-day meet there, all American and European records were wiped

out. The cycling world was astonished.¹⁹

The record for the mile was reduced from 3 minutes, 20 seconds to less than 2½ minutes. The times were so remarkable that the English press refused to print them. Equally important, track racing had seized the imagination of Americans. On the first day the Springfield track was open, 9,000 persons attended. When word got out about the record-shattering performances, 18,000 attended the next day. It was not uncommon for towns such as Hartford and Springfield to close down entirely from noon until sunset on a racing day. A race in Springfield or Peoria, Illinois drew crowds as large as 23,000. So popular was the sport that night racing was started in Philadelphia in June 1884.²⁰

Many people feared that the rider and the racer would put an end to the glorious history of the horse. America was alive with talk about the bicycle and the trotter, according to James McCullagh. The horsemen, in particular, were concerned over the possibility of the "steed of bone and blood" being outdistanced by the steed of steel.²¹

The first person to race against a horse was Lizzie Bayer, in 1880 in Sacramento, California. It was not until October 24, 1894 in Buffalo, New York that the thoroughbred's

¹⁹James C. McCullagh, ed., American Bicycle Racing (Emmaus, Pennsylvania: Rodale Press, 1976), pp. 2, 4, 6.

²⁰Ibid., pp. 6, 13.

²¹Ibid., p. 6.

mile mark was eclipsed by a cyclist. John S. Johnson, the "Western Wonder," took 14 seconds off the bicycle record and surpassed the thoroughbred record by riding a mile in 1 minute, 35 and two-fifth seconds.²²

Society looked upon the bicycle as a replacement for the horse. So it was natural that the early tracks were based on the horseracing circuit. The first riders were content to ride on grass or dirt tracks, but as the bicycle improved, so did the speeds. Accordingly, track managers saw the need for banking to keep riders from flying off the track at the bends. In time many of the old dirt tracks were cemented over and given steeper banking.²³

The first official American champion was George M. Hendee, Springfield, Massachusetts, who won the title in a road race in 1883. Since this was perhaps the first contest of record in the United States, Hendee became a top rider by virtue of winning. Hendee, a tall, graceful man, earned a reputation as one of the finest ordinary racers in the country. Although he was considered an amateur, in truth Hendee marks the beginning of professionalism in bicycle racing; he abandoned everything else in life to devote himself to racing.²⁴

²²Ibid., pp. 6, 8.

²³Ibid., p. 10.

²⁴Ibid., p. 13.

Perhaps the greatest racer of this period, and maybe of all time, was Arthur A. Zimmerman. During the first American World Championships held in 1893, "Zimmy," as he was called, won both the 1- and 10-mile events. His racing feats were phenomenal and known the world over. In 1892, as an amateur, Zimmy won 75 races. While still an amateur in 1893 he won the following prizes: 15 bicycles, 15 finger rings, 15 diamonds, 14 medals, 9 pieces of silverware, 8 watches, 7 studs, 6 clocks, 4 scarfpins, 2 cups, 2 bronzes, 2 wagons, 1 city lot, 1 piano, and numerous other valuable prizes.²⁵

In 1888 Frank Bowden founded the Raleigh Cycle Company on Raleigh Street in Nottingham, England. By 1892 Raleigh led the world in cycle sport successes. In 1891 Raleigh's riders' achievements included the world and the English quarter-mile, the Irish 50-mile, the Italian 100-kilometer, and the United States 3-, 4-, and 5-mile races. If this seems impressive, it bears no comparison with the next year when Raleigh riders won almost everything.

It has been estimated that no less than 2,300 prizes were won on Raleigh machines in 1892. The most spectacular prizes were won by Zimmerman, who became world champion that year. Zimmerman, also known as the "Flying Yankee," first

²⁵Ibid., pp. 13, 16; Dempsey, The Bicycler's Bible, p. 27; Geist, Bicycle People, p. 46; Sloane, The New Complete Book, p. 227.

came to Bowden's notice in 1891 when Jimmy became the United States amateur champion while riding a Star bicycle.²⁶

In 1892 Jimmy went to England and Bowden lost no time in inviting him up to Nottingham to try a Raleigh racer. This machine must have come as a very pleasant surprise to Jimmy; it weighed only 24 and 3/4 pounds, or just one-third of the weight of his Star. Jimmy immediately agreed to enter all the major British races that year on a Raleigh, riding under the colors of the London County Club of which he later became president.²⁷

The combination of rider and bicycle proved to be a perfect one and Jimmy had little trouble winning three of the four events leading to his British national title. These were the 1-, 5-, and 50-mile races. There can be little doubt that he would have won the fourth title also, a 25-mile race, had he not been in a serious multiple crash. By the end of 1892, Jimmy boasted 75 wins, 10 seconds, and 5 thirds. At the end of 1892, he returned to the United States bringing his Raleigh with him, and proceeded to use it to become World Amateur Champion for 1893 at the championship races held at Chicago's Columbian Exposition World's Fair.²⁸

Jimmy violated all the rules and laws of training. He

²⁶Gregory Houston Bowden, The Story of the Raleigh Cycle (London: W. H. Allen, 1976), p. 18.

²⁷Ibid., p. 14.

²⁸Ibid., p. 19.

drank and caroused all night prior to races and still had little problem winning. In one notable instance, he climbed on his safety bicycle after having attended an all-night party, and pedalled a paced mile in 1 minute, 57 and 4/5 seconds at the annual LAW meet in Asbury Park, New Jersey.²⁹

Six-day bicycle races, which had been held first in the United States in Chicago in 1879, became truly bloody and murderous affairs of great popularity in the early 1890s. The six-day races were endurance contests. In the first continuous six-day race held in New York in 1891, each competitor rode as long as he was able. The events drew thousands to Madison Square Garden to view these riders. In that first race, William "Plugger" Martin pedalled 1,466 miles during the six days. In 1893 Zimmy won the last six-day race held at the Garden. Opposition grew to what was considered an inhuman sport. Newspaper accounts of riders hallucinating and using drugs resulted in a law that restricted a rider to 12 hours a day on his bike. The event was discontinued because of the brutality and the Garden did not host another six-day marathon until 1972.³⁰

When the bicycle was introduced into the United States, and throughout the period covered by this thesis, there was

²⁹Sloane, The New Complete Book, p. 278.

³⁰Ibid., p. 277; Dempsey, The Bicycler's Bible, p. 27; Geist, Bicycle People, p. 50; McCullagh, American Bicycle Racing, pp. 40-42.

considerable discussion among physicians and laymen regarding the physical effects of riding a bicycle. Bad riding posture and ill-fitted saddles were accused of producing "irritation" and "congestion," which led, in turn, to "chronic diseases," whatever that meant. A few physicians contended that excessive cycling created a heavy thirst that was relieved by drinking beer, which in turn caused kidney stones. One physician warned that cycling might bring on insanity. Elsewhere, the rumor circulated that to take children cycling would be to risk damage to their nervous system. The cyclist was advised to breathe through the nose lest the cold, dust-laden air be drawn into his lungs, to wear woolen underwear, to avoid drafts, and to be sure to change clothing at the end of a ride.

Not all comments were negative. Dr. Charles Stables published Health Upon Wheels in 1881. It was a tribute to the curative powers of the bicycle. Ten years later, Dr. Harold Clark repeated the message in Hygienic Bicycling: man is an amalgam of mind and body; a healthy mind is the result of a healthy, well-exercised body, and the bicycle is the ideal means of exercise, combining practicality with access to the wonders of nature. By 1893 physicians were lining up to praise the virtues of cycling as a cure for almost any ailment. It was thought to be a panacea for all that ails, including amnesia, headaches, insomnia, neuralgia, asthma, even combating the influence of tuberculosis. The medical debates continued in the medical and nonmedical journals

throughout the 1890s.³¹

The issue of proper cycling wear for women came up very early in the history of the machine, continued to be addressed right up to the height of the 1890s craze, and on pass that through the 1920s and 1970s. Until the appearance of the safety bicycle, women primarily rode tricycles, and there was little change in women's clothing and less agitation about cycling clothes for women. The safety bicycle launched a long assault on dress styles. Even after the bicycle declined in popularity, it left a lasting mark on American women. The most enduring monuments to the bicycle are visible ankles and calves, and uncorseted figures.

In 1891 "The Prowler" described a vision of American loveliness, "a perfect dream on a cycle," that he had seen in Central Park. The soft gray dress, the absence of tight lacing, the white straw hat with a red band, the sailor collar and the tan gloves "completed as pretty an outfit on as pretty a girl as ever I saw on a bicycle."³²

Grace Denison wrote a few columns for women cyclists in Outing in 1892. In addition to discussing how to maintain the cycle properly, Denison gave advice on cycling costumes. She recommended a blouse, lightly boned but without

³¹Smith, A Social History, pp. 63-64; Dempsey, The Bicycler's Bible, p. 28. See also Larry Bonura, "The Bicycle as Catalyst of Social Change," The Mid-America Cyclist #69 (January/February 1980), pp. 11, 13.

³²"Outing Monthly Record," Outing 18 (August 1891), p. 104.

corseting, a serge skirt, low shoes with spats to keep the gravel out, and a walking hat, somewhat like a small Homburg, with a few unobtrusive quills. She warned that the lady cyclist should sew a few small lead weights in the front hem of the skirt, in "case the wind should rise while you are taking your constitutional."³³

By June 1892 Denison was having her cycling skirts shortened by two inches in the rear lest they get tangled in the spokes or caught on the high pedal when the rider was mounted. She also argued that long skirts impeded movement and "pumped cold air against the abdomen."³⁴

Grace Denison's column in Outing did not last the year. An example of her enthusiastic prose might explain why.

Young men and old men, trimly clad, fitly trained, bright-eyed and merry, wait for the coming of the "ladies" and of whom, oh, happy day, I may be one. Hurry for the time is up; see, they are forming into line, place aux dames! In this civilized age we are expected to take the lead, eh, my sisters? How proud they are to have us! How happy we are to do! On to the halfway house, where tea and song await us; back under the very moon. And tomorrow for tired bones to rest.³⁵

³³"Outing Monthly Record," Outing 19 (February 1892), p. 96.

³⁴Ibid., (June 1892), p. 59.

³⁵Ibid.

In 1893 the bicycle was even more popular with women, and dress reformers used that popularity to encourage what came to be called "rational dress." The cyclists' assault on the long dress goes back to the spring of 1893 when Mrs. Meta Boardman of New York first wore knickerbockers. In succeeding years women took to the knickerbocker and bloomer with increasing numbers as more and more women took to riding the safety bicycle.³⁶

While some Americans were debating the pros and cons of the dress question, others were examining the impact of the bicycle on American society. Many praised the machine's utilitarian and sporting contributions, and a few applauded the coming of the bicycle on the grounds that it would effect broad sociological and political changes in American life. Here and there a fan contended that the bicycle would defend and preserve those qualities upon which the nation's well-being depended.³⁷

In 1884, when the ordinary held sway, the editor of Outing extolled the social virtues of the bicycle. He maintained that there was something peculiarly democratic about a conveyance that was comparatively cheap to purchase and maintain, and was, therefore, within the reach of most Americans. Of course, Outing's primary purpose was to encourage bicycling, and the editor, no doubt carried away

³⁶Smith, A Social History, p. 99.

³⁷Bonura, "The Bicycle as Catalyst," pp. 11, 13.

by his job, apparently forgot that \$150 represented almost six months wages for most Americans.

Whatever their motivation, Americans rallied around the bicycle and banded together in hundreds of bicycle clubs. Most clubs formed between 1880 and 1893 were organized on lines laid down by Pratt in The American Bicycler, which included a model constitution. The bylaws and rules provided for the election of officers, including the president, the all-important captain, guides and buglers. The captain laid out the routes for the club runs and was responsible for touring discipline.³⁸

After 1890 bicycle clubs proliferated until every American town and village seemed to have one. As the number of cyclists increased and road conditions improved, the cycling club was generally transformed into a social organization. Captains were no longer important in choosing the best routes for Sunday riding. Anybody could do that, especially if he paid attention to the weekly road reports printed in the newspapers or he read the LAW road maps and guide books. As more cyclists took to the streets, they became more disdainful of the horse and took fewer precautions when passing him.³⁹

³⁸Smith, A Social History, pp. 111, 113; Bonura, "Bicycle Clubs From 1867 to 1887," p. 24.

³⁹Smith, A Social History, p. 115.

Cycling won greater respectability and wider acceptance among the higher strata of society through the activities of an American artist-writer couple, Joseph and Elizabeth Robins Pennell, whose ramblings about Europe charmed the readers of Century, Scribner's, Harper's, and other upper-class English magazines. Her sedately-written articles and his admirably-drawn sketches appeared regularly in these choice journals. The 1880s were the golden years of magazine publishing and illustrating, coming as they did just prior to the widespread acceptance of photoengraving. Magazines like Century and Harper's exuded an aura of unruffled peace and impeccable taste, betraying no hint of crudity or vulgarity in either text or illustrative materials. Hence, the advent of cycling narratives in their immaculate pages brought dignity and status to the pastime.

Joseph Pennell, more than any other artist of his time, improved the quality of illustration and raised its level as an art in the United States and in Europe where he lived for 33 years. He was a cycling enthusiast from the time of its introduction in the 1870s, an energetic secretary of the Germantown, Pennsylvania, Bicycle Club for years, and one of the earliest members of the League of American Wheelmen. Cycling remained his keenest joy and the only acceptable form of exercise and distraction. Commissions for sketches took him to England, and there he threw himself into cycling activities as the representative of the LAW, joining groups, including the Pickwick Bicycle Club, writing articles for

British papers, and making speeches in behalf of the sport. At the same time he produced some of his finest drawings illustrating his bicycle tours, and he added much artistic merit to a cycling manual compiled by Viscount Bury. Irving Leonard claims that Pennell was the "artist par excellence of the new vehicle."⁴⁰

His artistic excursions continued through the 1880s and 1890s when the vogue of illustrated travel books, largely established by him, brought steady commissions. Delighted by the relative independence of cycling, the Pennells, laden with portfolio and small luggage, gaily pedalled to their objectives. Their marriage in 1884 had resulted from a collaboration on a series of articles about Philadelphia's historical buildings for Scribner's, for which she wrote the text and he made the drawings. With their mutual love of cycling, they formed a perfect team and

became the most articulate couple alive, for all their reactions to art, life and beauty were given expression in the wife's poised and cultivated prose and the husband's eloquent, graphic illustrations.⁴¹

In 1889 the Pennells made the first serious trial of the newly invented tandem bicycle in Paris, creating a

⁴⁰Irving A. Leonard, "A Cycling Artist Couple," in The Best of Bicycling!, pp. 343-344.

⁴¹Ibid., p. 344.

sensation on the crowded Champs Elysees. By 1891 safety bicycles for women had come into use, and thenceforward, the artist couple cycled on separate machines. The Pennells continued cycling-writing-illustrating their way through Europe throughout the 1890s.⁴²

It is not known when black Americans began to ride bicycles, but the color line was first drawn when it came to membership in the LAW and participation in League-sponsored racing meets. As long as the bicycle was expensive, the question of black membership in the League did not come up; by 1890 it had become an issue that the organization tried to solve by ignoring. However, the problem did not go away.

Some local clubs already had black members. One was the Post Office Cyclers of Newark, New Jersey. The postal riders had been invited to participate in a bicycle run sponsored by another club. When the latter organization discovered that the postal crew had a black member, L. A. Sears, it withdrew its invitation. The Post Office Cyclers in turn unanimously elected Sears as club president. But incidents like these did not stop discrimination; the usual result was that blacks organized their own cycling clubs. To point a moral, a Brunswick, Georgia cycle club for black women ceremoniously excluded white women.⁴³

⁴²Ibid., p. 346; Geist, Bicycle People, p. 145. See bibliographies for Chapters 3 and 4 for articles by the Pennells.

⁴³Smith, A Social History, pp. 162-163.

By 1893 the problem had to be confronted as white members from the South were challenging the inclusion of blacks. The matter came before the League's 1892 national convention when a Kentucky cyclist offered a motion to change the constitution of the League to allow only white people to be members. This motion, which had to be carried by a two-thirds majority, split the convention, 108 votes for and 101 against. In 1894, however, the lily-whites won and blacks were excluded from membership in the LAW.⁴⁴

While the bicycle-horse antagonism had been discussed, little has been said about the difficulties pedestrians had in accommodating themselves to the bicycle. The big problem was that the bicycle was almost noiseless in its approach and bore down on the unwary pedestrian without warning. People on foot eventually realized that they could not monopolize the streets, but sidewalks were a different matter. The man afoot felt he was entitled to primacy there and he fought hard to keep it. For the most part, bicyclists did not insist on pedalling on the walks, but from time to time they did, especially after the sprinkling carts had been out or rain had converted the dirt streets into quagmires. Frequently cyclists took to the walks to avoid potholes, the omnipresent street hazard of the period. It was on the sidewalk issue that the law waited to pounce on

⁴⁴Ibid., p. 163.

the bicyclist.⁴⁵

By 1893 cities and towns from California to Maine were instructing their policemen to keep cyclists off walks. The difficulty of enforcing such ordinances, especially in small towns, made most such laws a dead letter. During the height of the bicycle craze, sidewalk traps, much like speed traps for automobiles later, were set up in many cities to nab sidewalk-riding cyclists.⁴⁶

Besides the horse drivers, mean little boys, and sidewalk traps, the bicyclist had to endure the canine. The moment a man mounted a bicycle, his best friend forgot its role and raced into the streets, yapping and snapping at the heels of a rider. Around 1890 bicyclists came up with a handy device known as a "dog paralyzer," a rubber bulb filled with ammonia, one squirt of which was said to teach dogs their manners. Unfortunately, the device leaked and turned out to be more of a liability than an asset. Throughout the 1890s more such ways were devised by bicyclists to make the dog heel rather than to nip at the heel.

Progress in improving roads and streets during the 1880s was negligible but the LAW did not lose heart. Throughout that decade it hammered at the need, although most of the discussion and debate was confined to the meeting rooms of cycling clubs. At its national meeting in

⁴⁵Ibid., p. 187.

⁴⁶Ibid., pp. 187-188.

1889, the League of American Wheelmen set up its first committee on the improvement of public roads and from then on the publicity barrage intensified.⁴⁷

The opening shot of the LAW's revitalized campaign for good roads was a little handbook, The Gospel of Good Roads, that used photographs to contrast the improved highways of Europe with the hopelessly bad roads of the United States. More than 60,000 copies were passed out and, in addition, some newspapers reprinted the work on their own initiative. The League was so satisfied with their results that, in November 1891, it established the Good Roads Magazine which sold about 1,000,000 copies in the next three years. Pope and Overman partly financed this publicity campaign, although the LAW contributed the major share of funds.⁴⁸

Through Pope's influence and financial backing, the Massachusetts Institute of Technology created an instructorship in highway construction. The instructor's primary task was to teach budding civil engineers the techniques of building better roads, probably the first such course offered in the United States.⁴⁹

The Connecticut and New York divisions of the League of American Wheelmen conducted their own campaigns in 1892 to

⁴⁷Ibid., p. 206; Wagenvoord, Bikes and Riders, p. 94.

⁴⁸Smith, A Social History, pp. 206-207; Wagenvoord, Bikes and Riders, p. 94.

⁴⁹Smith, A Social History, p. 207; Bonura, "Albert A. Pope," p. 5.

dramatize the need for road improvements. They sponsored an amateur photography contest, offering prizes for "stuck-in-the-mud" pictures or, as it was put, "photographs showing the common spectacle of the farmer's team and wagon on rough and muddy roads in their worst condition." For the best collection of three such photographs, the divisions would give a \$50 prize.⁵⁰

It was the problem of financing better roads that forced cyclists to realize that highway improvements were a political matter, because the burden of payment had to be laid upon the taxpayers. The League's efforts, from a purely political standpoint, were a major force in the formation of the first state highway departments and the passage of the initial road construction laws in 16 states between 1891 and 1894.⁵¹

Cyclists moved as an organized group to put pressure on legislatures. In California they talked about electing men who could be counted on to vote for improved roads. As early as 1891, Outing called upon the entire body of cyclists to refuse their votes to candidates who were unwilling to support the good roads programs, and it called upon both political parties to put planks in their platforms advocating such improvements.⁵²

⁵⁰"Outing Monthly Record," Outing 18 (April 1891), p. 12.

⁵¹Wagenvoord, Bikes and Riders, pp. 94-95; Smith, A Social History, p. 209.

⁵²Smith, A Social History, p. 209.

In 1891 a pioneer law was passed in New Jersey for state aid in road building. The formula states that if the owners of two-thirds of the property fronting on any public highway (at least one mile in length) petitioned the state and road building was approved, the state paid 33% of the cost of the work while property holders along the right of way paid 10%, and the county paid the remaining 57%. In Middlesex County, New Jersey on December 27, 1892 officials accepted a check for \$20,661.85, the first payment ever made under law by any state for highway construction.⁵³

Through the aid of the LAW and other organizations and pressure groups, federal aid for highways was started with the passage, on March 3, 1893, of the Agricultural Department Bill. The measure provided for a separate fund of \$10,000 to enable the secretary of agriculture to make inquiries and investigations into the conditions of roads in the United States. To handle this task, the secretary of agriculture established the Office of Road Inquiry within his department in October 1893 and appointed Roy Stone as its head. Stone was not a cyclist but a civil engineer from New York City. As early as 1890, he was corresponding with bicycle groups to push for federal government participation in road building just as it had participated in the development of railroads, canals, and harbors. After 1893 the Office of Road Inquiry replaced the League of American Wheelmen as the

⁵³Ibid., p. 210; Wagenvoord, Bikes and Riders, p. 95.

leader of the good roads movement on the national level, a position the League was eager to relinquish.⁵⁴

That the League was a major force in the good roads movement was a known and accepted fact. The military influence in the agitation, also spearheaded by those in the cycling ranks, surfaced early. The first moves were made by the state militia, not the regular army. During the summer of 1891, as the Connecticut highway department bill was being considered by a bicyclist-dominated legislature, the Connecticut National Guard carried out the nation's first cycle-mounted war games. Many of the cycle-soldiers were League members.⁵⁵

Commander Howard A. Giddings, a signal officer and a League member, had written a manual for the occasion and commissioned the composition of cyclist bugle calls. The equipment, Columbia bicycles, came from Pope, and Colt Firearms, a company closely allied with Pope Manufacturing, provided special bicycle-adapted weapons. The Hartford Post devoted front page space to the battle between the soldier cyclists and an infantry detachment backed by a full cavalry squad:

The wheelmen appeared at the battery in a

⁵⁴Mason, "The League," pp. 147, 150.

⁵⁵Wagenvoord, Bikes and Riders, p. 95; Smith, A Social History, p. 227.

column of twos. Then they came to company front and advanced down the parade ground toward headquarters. About halfway they encountered the infantry, who opened fire upon them. Instantly the command to halt was given[,] the wheels were dropped to the ground, and the line, deploying as skirmishers, fired several volleys, advancing twenty feet each time and lying flat on the ground. The infantry retired and the recall to the wheels was sounded.⁵⁶

But, by the time the cyclists-soldiers reached their machines, the cavalry appeared, advancing at full gallop to support the infantry.

The wheelmen formed a 'zereba' by inverting their machines and, kneeling or lying behind the whirling wheels (it was assumed that a whirling inverted wheel would intimidate horses), received them with their repeating rifles and revolvers. The cavalry used revolvers, and in a few moments, when the wheelmen had exhausted their ammunition, the order was given to retreat at double quick time. In a moment they were all mounted and 'scooting' down the parade ground. They could not keep pace with the horsemen, however, who galloped in among the flying wheelmen and drove them to their tents.⁵⁷

The Connecticut unit was followed shortly by the creation of a bicycle detachment in the Second Company of the District of Columbia National Guard and similar units in Illinois and Colorado. Generally speaking, these troops

⁵⁶Ibid.

⁵⁷Wagenvoord, Bikes and Riders, p. 95.

were composed of men who furnished their own machines and were used only in times of civil disturbances, in most cases strikes.

The District of Columbia unit was put on alert when Washington was invaded in 1894 by Jacob Coxey's army, a band of 500 jobless men who had come to petition Congress for relief. The unit spent its call-up time sitting in the armory waiting for orders, however.⁵⁸

In 1892 General Albert Ordway, who had served in the Civil War, wrote Cycle-Infantry Drill Regulations. It was published by Albert Pope, who seldom missed a chance for publicity. The book outlined drill procedures primarily through the use of diagrams. The 1890s came at the end of an era of upheaval, a 30-year period during which the state militias had been used extensively in labor disputes. Consequently, Ordway included a section entitled "Street Riot Duty:"

Riots may be prevented by breaking up mobs before they can formulate plans of action and organize to carry them into effect. Consequently cycle-infantry could be invaluable in cases of local disturbance of the peace, for the reason that they can be moved to the points of incipient trouble with great rapidity.⁵⁹

⁵⁸Smith, A Social History, p. 228.

⁵⁹Albert Ordway, Cycle-Infantry Drill Regulations (Hartford, Connecticut: Pope Manufacturing Company, 1892), pp. 50-51.

The general went on to say that such troops should always dismount in the presence of the mob and immediately go on the offensive. In those cases where the crowd was too large, the cyclist-soldier should adopt a defensive posture and wait for help:

To assume a defensive position against attack in one direction, form the company into line, facing that direction, and ground, invert, or stack cycles. The cycles will form a troublesome barricade against assault by the mob.⁶⁰

On the last page of the manual, Pope got in a bit of advertising. There, under the caption "The Soldier's Standard Bicycle," was displayed the newest model of the Columbia Light Roadster, complete with dispatch case and a rifle. Pope proudly announced that it was the only cycle used in the regular service in the Army, an inaccurate statement since the regular Army had no such machines.⁶¹

Soon after the Connecticut summer maneuvers in 1891, the regular army at Fort Sheridan, Illinois, under the command of Major General Nelson A. Miles, carried out war games slanted more favorably toward the cyclists, demonstrating that soldier-cyclists, even fully equipped, could cover a five-hour marching distance in one and one-half hours. Shortly after these war games, the general

⁶⁰Ibid.

⁶¹Smith, A Social History, p. 228.

endorsed cycling soldiers in a department memo:

In my opinion the bicycle will be of great value in military operations, not only for the use of couriers, but also for moving large bodies of soldiers swiftly. During the next great war the bicycle will become a most important machine for military purposes.⁶²

On May 31, 1892 General Miles became the first United States military authority to make a public statement in favor of bicycles and better roads. It was the keynote address at the LAW banquet in Chicago and, at Pope's expense, it was reprinted and distributed widely as the wheelmen's most effective testimonial in their fight for better roads. General Miles said that

There are in this country a quarter of a million men who are accustomed to ride the bicycle. If out of that number 50,000 were organized it would make one of the most effective army corps that was ever marshalled in any country or any time.

Having dealt with the obvious uses of the bicycle and the cyclist, he then took on the subject of the "wretched conditions of the American roads."⁶³

⁶²Wagenvoord, Bikes and Riders, p. 96.

⁶³Ibid., pp. 96-97.

On a lighter side, one of the most famous bicycle songs of all time is "Daisy Bell" or "Bicycle Built for Two," written by Harry Dacre, an Englishman. When he visited New York, he brought his bicycle with him and the United States customs officer ruled that he must pay a duty on the bike. A friend heard the story and replied, "You're lucky it wasn't a bicycle built for two." This gave Dacre an idea; he composed his song in 1892:

Daisy, Daisy, give me your answer do
 I'm half crazy
 All for the love of you
 It won't be a stylish marriage
 I can't afford a carriage
 But you'll look sweet on the seat
 Of a bicycle built for two.

Other songs composed between 1888 and 1893 include "The Wheelman's Song" by Dannelly and Speck in 1888, George W. Wallace's "Cycle Polka" in 1890, and, in 1891, "The Maid of Ixion" and "The Cycle Man," which honored the six-day races, both by James Meakins. Two songs were published in 1892, Dacre's "Daisy Bell" and Laurent L. Combs' "Bicycle March." In 1893 Eugene Angel wrote "March Bicyclysto," C. Harris and Clauder wrote "Since Katie Rides a Wheel," and W. W. Wave wrote "Wheeling Away to Glory."⁶⁴

Many touring books were published during this era; they were very broad in coverage and beautifully illustrated.

⁶⁴Geist, Bicycle People, pp. 106, 163; Geist, "Bicycle Songs," pp. 100-101.

William Coutts Keppel, 7th Earl of Albemarle, writing under the pseudonym Viscount Bury, and G. Lacy Hillier had their Cycling published in 1887. It was illustrated by Joseph Pennell. S. Golden's A Tandem Tour in Norway was published in 1888. Reginald Wallbye published Cycle Touring at Home and Abroad in 1890, a year that saw Burston and Stokes write Round the World on Bicycles and Fanny B. and William H. Workman write Algerian Memories or A Bicycle Tour Over the Atlas to the Sahara. And Joseph and Elizabeth Robins Pennell illustrated and wrote Our Sentimental Journey Through France and Italy in 1893.⁶⁵

While this era saw the boom of the bicycle in the United States and the displacement of the horse, it also saw the beginnings of the machine that would eventually put both to rest, the automobile. Hiram Maxim was riding his bicycle home one night in 1892 and was deep in thought about the mode of transportation he was on. Would it not be wonderful if "a little engine were to be devised which would furnish the power to drive a bicycle[?]" A little engine which would do what legs were doing did not appear such a serious problem."⁶⁶

He saw transportation in general as

⁶⁵Geist, Bicycle People, pp. 39, 66, 101.

⁶⁶Hiram Percy Maxim, Horseless Carriage Days (New York: Harper and Brothers Publishers, 1936), p. 1.

emerging from a crude stage in which mankind was limited to the railroad, to the horse, and to shank's mare. The bicycle was just becoming popular and it represented a very significant advance. Here I was covering the distance between Salem and Lynn [Massachusetts] on a bicycle. My bicycle propelled at a respectable speed by a mechanism operated by my muscles.

That bicycle carried Maxim over that lonely country road that night, covering the distance in considerably less than an hour. A horse and carriage would require nearly two hours. A railroad train would require half an hour, but it would only carry him station-to-station and make him conform to its timetables, which were not always convenient.⁶⁷

He continues:

If I could build a little engine and use its power to do the propelling, and if I could use a regular carriage instead of a bicycle, there would be no limit to where I could go. Distances would be halved. Towns would become nearer together. More people would intermingle. It would profoundly influence the course of civilization itself. The idea seemed very worth while, as I pedaled along that lonely road that night.

The main question was why had not such a machine been invented? Maxim answers with:

The reason we did not build mechanical road vehicles before this was because the bicycle

⁶⁷Ibid.

had not yet come in numbers and had not directed men's minds to the possibilities of independent, long-distance travel over the ordinary highway. We thought the railroad was good enough. The bicycle created a new demand which it was beyond the ability of the railroad to supply. Then it came about that the bicycle could not satisfy the demand which it had created. A mechanically propelled vehicle was wanted instead of a foot-propelled one, and we now know that the automobile was the answer.⁶⁸

1877, "Economic
of Africa 5 121"

⁶⁸Ibid., pp. 1-2, 4-5.

1. Smart, William. "Effects of Consumption of Wealth on Distribution." Annals of the American Academy of Political and Social Science 3 (1892):22.

Mentions cycling in the recreation category of consumption.

2. Baxter, Sylvester. "Economic and Social Influences of the Bicycle." The Arena 6 (1892):578-583.

The economic and social influences of the bicycle extend to the creation of 27 manufacturers, new industrial technology and techniques, promotion of scientific road construction and the movement for good roads, encouragement of attractive suburbs and parks, fostering good health and pleasant exercise, providing for utilitarian transportation, applications for military use, influencing mental as well as physical development, quickening perceptive faculties, and freeing women from the slavish conventionality in both dress and conduct.

3. Flower, B. O. "The Next Forward Step for Women; Or Thoughts on the Movement for Rational Dress." The Arena 6 (1892):640.

The bicycle is mentioned as a catalyst in breaking the spell of conventionalism in dress.

4. Flower, B. O., ed. "Parisian Fashionable Folly." The Arena 8 (1893):132, 133, 137, 142, 143.

Different bicycling costumes for women are shown

in photographs.

5. "The Betterment of Our Highways." The Atlantic Monthly 70 (1892):506-507.

The bicycle increased interest in construction of good roads. The author ranks the bicycle next to the railway and the telegraph as the major inventions of the nineteenth century.

6. "Comment on New Books." The Atlantic Monthly 72 (1893):125.

Book review of Our Cycling Tour in England by Reuben Gold Thwaites.

7. "Ideal Transit." The Atlantic Monthly 72 (1893):809-810.

In this discussion of an ideal mode of transit (the author chose the slightly elevated electric trolley road), the bicycle is safe, swift, noiseless, dustless, with enough air and light, but fails in being without fatigue and is in the direct rays of the sun.

8. Shaw, Albert. "London Polytechnics and People's Palaces." The Century Magazine 18 (1890):165, 168, 181.

A drawing of an athletic meeting shows safety bicycles racing against ordinaries; cycling club numbers and excursions are mentioned; and cycling is mentioned as an activity.

9. Camp, Walter. "Track Athletics in America." The Century Magazine 18 (1890):208, 211.

Because of cycling's growth it has a life, rules

and records quite apart from ordinary track athletics. A drawing of an ordinary rider is included.

10. Pennell, Elizabeth Robins. "To Gipsyland." The Century Magazine 23 (1892):109-121.

A fine narrative, with excellent illustrations by Joseph Pennell, about a bicycle trip to Hungary.

11. Pennell, Elizabeth Robins. "To Gipsyland." The Century Magazine 23 (1892):258-271.

Part 2 of the Pennells' trip.

12. Pennell, Elizabeth Robins. "To Gipsyland." The Century Magazine 23 (1893):414-424.

The concluding segment of the journey to Hungary.

13. Camp, Walter. "College Athletics." The Century Magazine 24 (1893):206.

Bicycle racing in college athletics is mentioned.

14. Thompson, Maurice. "Bicycling and Tricycling." The Chautauguan 8 (1888):458-459.

A discourse on the merits of cycling, whether it be bicycling or tricycling. Dismisses bicycle history because there is "no great general interest" in it. Racers and racing are spurned. Thompson claims that cycling should be a pastime, a slow and temperate excursion into the great outdoors.

15. Pennell, Elizabeth Robins. "Outings for Thin Pocket-Books." The Chautauguan 9 (1889):571-574.

A guide to traveling light and cheap. The bicycle is given much attention, including preparing for a trip,

choosing roads, training and how to find lodging and food.

16. Hall, Lucy M. "The Tricycle for Women." The Chautauguan 12 (1890):90-91.

Hall, a medical doctor, advocates bicycling for its "exhilarating exercise."

17. Roberts, Elizabeth. "The London Woman's Outdoor Life." The Chautauguan 14 (1892):474, 475.

Bicycling and bicycle dress are mentioned.

18. Buckley, J. M. "Physical Culture." The Chautauguan 14 (1892):667-668.

This medical doctor recommends cycling in moderation for most persons, including girls and women. Persons with weak chests or inclined to pulmonary disease are discouraged from using a bicycle.

19. Buckley, J. M. "Summer Vacations and Physical Culture." The Chautauguan 15 (1892):447, 448.

Cycling should be considered as a source of pleasure during summer vacations.

20. Pennell, Elizabeth Robins. "Woman's World in London." The Chautauguan 15 (1892):750-751.

Comparatively few women ride bicycles in London yet Pennell encourages women to ride. The Stanley Show is sketched as are women's cycling magazines. Racing for women is considered a mistake.

21. Fearn, Richard L. "Exhibits of the Nations." The Chautauguan 16 (1893):524.

Bicycles from the most famous makers are in the

transportation hall at the Columbia Exposition, Chicago.

22. Speed, Jno. Gilmer. "The Common Road as a Social Factor." The Chautauguan 16 (1893):553.

Mentions the League of American Wheelmen's role in initiating the good roads movement.

23. Fearn, Richard L. "Exhibits of the Nations." The Chautauguan 16 (1893):655.

Bicycles and tricycles are displayed in profusion at the Columbia Exposition.

24. Fleury, J. "Aluminum the Substitute for Iron." The Chautauguan 17 (1893):328.

Mentions use of aluminum in making bicycles.

25. Sheffield, Edith L. "Student Life in the University of Michigan." The Cosmopolitan 7 (1899):115.

The popularity of bicycling as a college sport is mentioned.

26. Farwell, Charles B. "Chicago's Candidacy for the World's Fair of 1892." The Cosmopolitan 8 (1889):56.

Two cyclists are pictured riding their ordinaries in Jackson Park along the drive on Lake Michigan.

27. Carpenter, Frank G. "India Under the Queen." The Cosmopolitan 8 (1889):76.

Picture of an Indian mail-carrier on a velocipede.

28. Oberlander, Adolf. "Mr. Wheelman, the Champion Rider." The Cosmopolitan 9 (1890):603.

A three-panel cartoon showing a bike rider facing a bull. The rider charges the bull and rides over the

bull's head and down his back, to the bull's astonishment.

29. Kurtz, ?. "The Sea Wall." The Cosmopolitan 12 (1891):
37.

Picture of a woman riding a safety along the sea wall in Chicago.

30. "Among the Books." Education 9 (1889):366.

Paragraph describing a desk calendar issued for 1889 by the Pope Manufacturing Company, Boston.

31. "Among the Books." Education 10 (1890):338-339.

Describes Pope's 1890 business calendar as "valuable and unique."

32. "Editorial." Education 11 (1891):314.

In this editorial on education a popular clergyman is quoted as saying that "the state has no more right to teach Latin to a boy than to give him a bicycle."

33. "Among the Books." Education 11 (1891):326.

The Columbia Bicycle Calendar and Stand for 1891 is described.

34. "Editorial." Education 12 (1892):567.

The editor endorses Colonel Albert Pope's idea to secure a comprehensive road exhibit at the Columbian Exposition in Chicago.

35. Sargent, Dudley A. "College Athletics and Heart Disease." Educational Review 2 (1891):457.

Mentions a two-mile bicycle contest.

36. Tolman, William H. "International Student Associations." Educational Review 5 (1893):367.

Mentions students forming cycling clubs.

37. Potter, Isaac B. "The Profit of Good Country Roads." The Forum 12 (1891):385-386.

Notes the "splendid work and substantial success" of the League of American Wheelmen and its roads improvement agitators.

38. "Writers and Subjects in the November Forum." The Forum 12 (1891):422.

Short biography of Potter.

39. "Writers and Subjects in the March Forum." The Forum 13 (1892):144.

Short biography of Colonel Albert A. Pope for his article titled "An Industrial Revolution by Good Roads."

40. Beaver, James A. "Why We Have So Few Good Roads." The Forum 13 (1892):774.

Wheelmen mentioned.

41. Lewal, General ?. "The French Army." Harper's New Monthly Magazine 82 (1891):668, 672.

Bicyclists are used as messengers; drawing of a rider on an ordinary.

42. "Editor's Study." Harper's New Monthly Magazine 86 (1893):635.

Brief reference to bicycles.

43. "Editor's Drawer." Harper's New Monthly Magazine 87 (1893):482.

Short article about the formation of the "Non-Swearing Bicycle Club."

44. Eng, Joyce. "The Proposed Congressional Library Building." The Library Journal 14 (1889):31.

Rider on an ordinary is shown in the foreground in this artist's rendering.

45. Fletcher, W. I. "Library Classification: Theory and Practice--III." The Library Journal 14 (1889):115.

Cycling is listed under the "Useful Arts."

46. "Cataloging and Classification." The Library Journal 15 (1890):189.

Full name of author of The American Bicycler is given as C. Eadward Pratt. (C. is for Charles.)

47. "Cataloging and Classification." The Library Journal 16 (1891):192.

Cycling for Health and Pleasure author's full name is given as Luther H. Porter. (H. is for Henry.)

48. Advertisement. Library Notes 2 (1888):263.

Pope Manufacturing Company, makers of the Columbia bicycle, uses full-page ad to entice readers to treat themselves as their "common sense advises" and ride a cycle.

49. Advertisement. Library Notes 3 (1888):315.

Same ad described in #48.

50. Advertisement. Library Notes 3 (1893):451.

Quarter-page ad by John P. Lovell Arms Company, Boston, advertising their Diamond cycles.

51. Advertisement. Library Notes 3 (1893):452.

Full-page ad for Columbia claiming that "when all the world's on wheels, there'll be no sorrow here below."

52. "Athletic Sports." The Literary Digest 2 (1890):138.

This excerpt from the Baltimore American says that the popularity of the bicycle has increased and that the ladies are "fast falling in love with it."

53. "Books of the Week." The Literary Digest 2 (1890):420.

A notice that Cycling by Viscount Bury and G. Z. Hillier was published by Longmans. (The Z. in Hillier's name is an error; it should be an L. for Lacy. The G. is for George. Viscount Bury's real name is William Coutts Keppel.)

54. "Index to Periodical Literature." The Literary Digest 2 (1891):615.

Mentions that C. B. Warring had an article titled ["What Keeps the Bicycler Upright?"] in the April 1891 Popular Science Monthly. (See #91.)

55. Warring, Charles B. "What Keeps the Bicycle [r] Upright?" The Literary Digest 2 (1891):657.

A digest of the original. (See #91.)

56. "Index to Periodical Literature." The Literary Digest 3 (1891):83.

The May 1891 Home-Maker ran an article by Josephine Redding about bicycling.

57. "Books of the Week." The Literary Digest 3 (1891):112.

Notice of publication for Luther H. Porter's Cycling for Health and Pleasure, A Complete Guide to the Use of the Wheel.

58. "Index to Periodical Literature." The Literary Digest

3 (1891):671.

Notes Grace E. Denison's column in Outing for October about "How We Ride Our Wheels."

59. Johnson, J. C. "Conquering the North Pole." The Literary Digest 4 (1891):98.

Mentions a "one-rail railroad to be traversed by bicycle."

60. "Index to Periodical Literature." The Literary Digest 4 (1891):223.

Lists an article about winter cycling from the Fortnightly Review, London.

61. "Index to Periodical Literature." The Literary Digest 4 (1892):335.

Cites a piece by Graeme M. Hammond, M.D., about the bicycle in the treatment of nervous diseases from the Journal of Nervous and Mental Disease, New York.

62. Hammond, Graeme M. "The Bicycle in the Treatment of Nervous Diseases." The Literary Digest 4 (1892):348.

A digest of the original that states that if physicians would "intelligently" prescribe the bicycle, they would find results "greatly exceeding their expectations."

63. "Index to Periodical Literature." The Literary Digest 4 (1892):392.

A cycling visit to Tahiti is noted in the February Outing.

64. "Index to Periodical Literature." The Literary Digest 4 (1892):503.

Colonel Albert A. Pope's article about an industrial revolution by good roads in the March Forum is mentioned.

65. "Index to Periodical Literature." The Literary Digest 4 (1892):531.

The March Outing continues the narrative about a bicycle trip in Tahiti.

66. "Index to Periodical Literature." The Literary Digest 5 (1892):27.

Thomas Stevens has an article about bicycling in the May Lippincott's Magazine.

67. "Books of the Week." The Literary Digest 5 (1892):84.

Wheels and Wheeling, an Indispensable Handbook for Cyclists by Luther H. Porter is announced.

68. "The Great Bicycle Ride." The Literary Digest 5 (1892):110.

An excerpt from the Springfield Republican about an experiment of sending a message by bicyclists from Chicago to New York. Wheelmen rode eight to thirty-five miles in relays and completed the trip in less than five days.

69. "An Over-Administered Nation." The Literary Digest 5 (1892):156.

Comments about signs posted by the German government for cyclists' "safety" are carried in this abridged piece about Germany in the London Macmillan's Magazine.

70. Buckley, J. M. "Summer Vacation and Physical Culture." The Literary Digest 5 (1892):241.

See #19.

71. "Index to Periodical Literature." The Literary Digest 5 (1892):335.

Outing carries an article in its July issue about women bicycling in Germany.

72. "Index to Periodical Literature." The Literary Digest 5 (1892):392.

Frank G. Lenz writes about his trip around the world with a bicycle and a camera for the August Outing.

73. "Index to Periodical Literature." The Literary Digest 5 (1892):643.

The October Outing has more about Lenz's trip.

74. "Index to Periodical Literature." The Literary Digest 5 (1892):671.

Mentions Sylvester Baxter's Arena article on the social and economic influences of the bicycle. See #2.

75. "Index to Periodical Literature." The Literary Digest 6 (1892):83.

Fanny B. Workman writes about bicycle riding in Germany in the November Outing.

76. "Index to Periodical Literature." The Literary Digest 6 (1892):139.

More on Frank Lenz's bicycle trip around the world.

77. "Index to Periodical Literature." The Literary Digest

6 (1893):448.

Lenz's world tour awheel continues in the pages of the February Outing.

78. "Index to Periodical Literature." The Literary Digest 6 (1893):475.

The February issue of Fortnightly Review carries a 10-page article about the English cycle trade in "Cycles and Tyres for 1893."

79. "Index to Periodical Literature." The Literary Digest 6 (1893):643.

Grace Denison describes a bicycle tour through Erin in the April Outing.

80. "Index to Periodical Literature." The Literary Digest 7 (1893):28.

The April United Service Magazine, London, has a 10-page report on the progress of military cycling with a narrative on the use of bicycles in the army.

81. "Kyphosis Bicyclistarum." The Literary Digest 7 (1893):237.

This article, abridged from the June 10 issue of the Lancet of London, discusses the "stoop" that has already declared itself in many wheelmen and which threatens to impose "hunchbacked development on the coming generation of cyclists."

82. "Summary of Periodical Literature." The Literary Digest 7 (1893):600.

Bicyclists are mentioned in Leo Claretie's article

in Revue Bleue, Paris, about advertising in the United States.

83. "Book Notices." Magazine of American History 20 (1888):431-432.

Book review of volume two of Thomas Stevens' Around the World on a Bicycle, From Teheran to Yokohama. It is labeled "above the average of ordinary books of travel."

84. Besant, Walter. "The People's Palace." The North American Review 147 (1888):61.

Mentions a bicycling committee at the Palace.

85. "Book Reviews and Notices." The North American Review 147 (1888):710-711.

Volume two of Around the World on a Bicycle, by Thomas Stevens, is "hardly as interesting as the first," claims this review.

86. Trowbridge, J. T. "The American Boy." The North American Review 148 (1889):220.

Giving a boy a bicycle, among other items, may "save him from so many things," according to the author.

87. Roosevelt, Theodore. "'Professionalism' in Sports." The North American Review 151 (1890):189.

Roosevelt writes that colleges contain but a small proportion of men interested in amateur athletics, including bicycling.

88. Wood, Henry T. "Europe at the World's Fair." The North American Review 156 (1893):240.

A large exhibit of bicycles and tricycles is

planned for the world's fair in Chicago, celebrating the 500th anniversary of the discovery of America by Columbus.

89. Flower, Roswell P. "How To Improve Our Roads." The North American Review 157 (1893):630.

Cyclists are mentioned in the efforts to improve the roads of the United States.

90. "Notes." The Popular Science Monthly 33 (1888):720.

A trial race was held recently at Tours, France, to determine the relative speed of different kinds of couriers. The 4,300 meter course was covered in five minutes 35 seconds by pigeons, in nine minutes 15 seconds for a bicyclist, and tricycle riders came in just under 11 minutes.

91. Warring, Charles B. "What Keeps the Bicycler Upright?" The Popular Science Monthly 38 (1891):766-775.

The spinning action of a top, Newton's first law, gravity, gyroscopic action, centrifugal force, balancing of a rider, and rapid motion each are ruled out per se as causes of keeping a bicycler upright. The stability of the bicycle is due to turning the wheel to the right or left, whichever way the leaning is, and thus keeping the point of support under the rider.

92. Fernald, Frederik A. "Righting the Bicycle." The Popular Science Monthly 40 (1891):267.

This LAW member from New York supplements the Warring article by adding that righting a falling bicycle in motion involves two movements: 1) a turn of the machine

toward the side on which it tends to fall, then 2) a return to its original course.

93. Tweedy, Alice B. "Homely Gymnastics." The Popular Science Monthly 40 (1892):527.

Bicycle mentioned.

94. "Literary Notices." The Popular Science Monthly 41 (1892):132.

A short review of a pamphlet on roads improvement published by the League of American Wheelmen.

95. "Intemperance in Cycling." The Popular Science Monthly 42 (1893):571-572.

Noting the recent achievements in fast cycling, the Lancet is quoted as saying that the cost to the rider is "unwarrantable" and may create greater dangers to the rider's "future vigor."

96. "Hygienic Value of the Bicycle." The Popular Science Monthly 43 (1893):714.

Dr. Seneca Egbert says that the relation of the bicycle to the physician is to keep the doctor away from cyclists because of the healthfulness of its exercise. However, excess in "quantity or intensity of bicycle work" must be avoided.

97. Proctor, Richard A. "Man in Mid-Air." Public Opinion 4 (1888):332.

In this digest of an article from the Philadelphia Press, the author mentions bicycle athletes as the ones who are most likely to overcome problems of flight.

98. "About Hobbies." Public Opinion 4 (1888):632.

Learning to ride a bicycle is a great achievement and is used to illustrate how perserverance and dedication can be applied to any hobby. Excerpted from the St. Louis Republican.

99. "Holiday or Holy Day." Public Opinion 5 (1888):228.

The bicycle is mentioned as one of the not-to-do things on Sundays in this article taken from The Congregationalist.

100. "Scientific." Public Opinion 7 (1889):193.

Outing describes a steam driven bicycle engine tested in Portland, Maine, that will propel a bicycle on smooth steel tracks at "150 miles per hour."

101. "Maladies of Modern Civilization." Public Opinion 8 (1889):64.

The London Standard claims that the bent position which bicycling encourages will neutralize any good effects derived from spinning through the fresh country air.

102. "Literary." Public Opinion 8 (1889):75.

Lippincott announces plans to publish R. P. Scott's book, Cycling.

103. "Ballooning as a Pastime." Public Opinion 8 (1890):496.

Bicycles mentioned.

104. Camp, Walter. "[Track] Athletics in America." Public Opinion 9 (1890):175.

See #9.

105. "Religious." Public Opinion 9 (1890):469.

Mention is made of a letter by John Ruskin about his objections to bicycling and "every other contrivance and invention for superseding human feet on God's ground."

106. "The Present Attitude of Women." Public Opinion 10 (1890):81.

Bicycling is mentioned in an article taken from the New York World.

107. "The Man on a Hobby." Public Opinion 10 (1890):222-223.

Mentions that a man on a hobby is to be avoided.

108. "A Promising Invention." Public Opinion 11 (1891):59.

Use of bearings in bicycle systems is mentioned in this adaptation from the Washington Post about pulleys on a railroad car.

109. "Physical Training for Women." Public Opinion 13 (1892):92.

This Boston Advertiser article says that the safety bicycle, the tandem and the tricycle "have won many young women and girls into knowing the delights of a healthy spin along country roads."

110. "Religious." Public Opinion 13 (1892):164.

The New York Sun reports that a missionary in Uganda uses a bicycle to assist in his duties and that the paths in that African country are well adapted to the bicycle.

111. "Educational." Public Opinion 13 (1892):258.

According to this note, the League of American Wheelmen had 23,680 members and the first velocipede used in America was built in Ansonia, Connecticut in 1865.

112. "The Doctor and Good Roads." Public Opinion 13 (1892):308.

The New York Medical Record claims that with good roads the bicycle could be utilized to keep doctors from becoming obese from sitting in a wagon, to sharpen their wits and to enhance their professional work.

113. "Electricity at the World's Fair." Public Opinion 13 (1892):550.

Tricycles and bicycles are mentioned as vehicles that could be electrically powered.

114. "Suggestions for Inventors." Public Opinion 14 (1892):38.

A Scientific American writer suggests that bicycles, "although brought to great perfection," seem to require something neater and better than the endless chain and sprocket wheel for connecting the crank shaft and the drive wheel.

115. "Scientific." Public Opinion 14 (1892):63.

Iron writes that several European manufacturers are using aluminum in the construction of bicycles.

116. "Literary." Public Opinion 14 (1893):389.

A book review of two manuals: Cycle-Infantry Drill Regulations by Albert Ordway, and Cyclists' Drill Regulations, United States Army by William T. May.

117. "Educational." Public Opinion 14 (1893):426.

The Pope Manufacturing Company offered a Columbia Expert bicycle to any teacher who might be the first to inform them of any "misstatements of fact" appearing in any school book studied in the United States.

118. "Our Cycling Tour in England." Public Opinion 14 (1893):484.

A review of Reuben Gold Thwaites's book about his six-week, 700-mile journey from Canterbury to Dartmoor Forest and back by way of Bath, Oxford and the Thames Valley.

119. "Finance and Commerce." Public Opinion 15 (1893):180.

Albert A. Pope offered to donate \$1,000 for a "comprehensive exhibit of roads" at the world's fair if the \$20,000 needed for the exhibit was raised.

120. "Washington, the Paris of America." Public Opinion 15 (1893):368b.

Two pictures: one of a tricycle in McPherson Square and one of a cyclist and his ordinary posing beside the Lincoln Statue.

121. "Miscellaneous." Public Opinion 15 (1893):457.

The Washington Post reported that a Miss Dudley, an English cyclist, holds the record for long distance riding by women: a distance of 100 miles in little more than seven hours.

122. "Scientific." Public Opinion 15 (1893):578.

The London Lancet reported that bicycle "stoop,"

the dorsal curvature posteriorly, is manifesting itself in larger numbers of riders under 14 years of age.

123. "Scientific." Public Opinion 16 (1893):7.

Jonas Schmid of Erie, Pennsylvania, adapted and patented a machine resembling a safety bicycle for use on either ice or snow.

124. "Cross-Saddle Riding for Women." Public Opinion 16 (1893):196.

The popularity of bicycle riding among women has made cross-saddle, as oppose to side-saddle, riding respectable. It is safer to ride cross-saddle, permitting a better and freer use of the limbs and making exercise more effective. However, the New York Medical Record reported, "all this will not make women adopt it."

125. "Our Boys." Public Opinion 16 (1893):251.

Bicycling is mentioned.

126. H?, Fred R. "The Letter-Box." St. Nicholas 15 (1888):318.

The writer mentions bicycle races at the Sioux City, Iowa harvest jubilee.

127. "By Proxy." St. Nicholas 15 (1888):531.

A poem and two illustrations.

128. C?, Lloyd K., Jr. "The Letter-Box." St. Nicholas 15 (1888):796.

This New Orleans, Louisiana lad writes that he owns a bicycle and rides it every day.

129. A?, Eugene. "The Letter-Box." St. Nicholas 16

(1888):78.

Eugene, from Lake Roland, Maryland, writes that he had been exploring the country all summer on his bicycle and that he had enjoyed it, "in spite of some 'headers.'"

130. Partington, Frederick E. "A Race With a Wooden Shoe." St. Nicholas 17 (1889):80-83.

Oswald loses his wooden shoe in the sewers during a heavy rain. A bicyclist, Seth, comes to the rescue by riding to the spot where the sewer empties into the river. He finds the shoe but it goes down stream and Seth must ride another two miles before he finally retrieves the shoe. Triumphantlly, Seth returns the shoe to Oswald.

131. "Jack-in-the-Pulpit." St. Nicholas 17 (1889):84-85.

A letter and comment on a proposed bicycle path from New York to Connecticut.

132. Pennell, Elizabeth Robins. "Cycling." St. Nicholas 17 (1890):732-739.

A general article about bicycling aimed at St. Nicholas' young audience. Includes information about touring, European cycling, Thomas Stevens, the ordinary vs. the safety, mounting and dismounting an ordinary, how to pedal, learning to ride, care of a bike, and the pleasure and healthfulness of outdoor riding. Four illustrations by Joseph Pennell.

133. "Jack-in-the-Pulpit." St. Nicholas 17 (1890):798.

Short paragraph about sails on bicycles.

134. "The Letter-Box." St. Nicholas 17 (1890):804.

Comments on Pennell's article, "Cycling."

135. Austen, Frances V. and E. J. "Elfie's Visit to Cloudland and the Moon." St. Nicholas 18 (1891):348.

A picture of an ordinary in a toy manufactory is included in this poem about a girl and her dream.

136. C?, A? "Hobby-Horses." St. Nicholas 18 (1891):518.

A history of the bicycle that briefly discusses the hobby horse of Baron von Drais and the velocipede of Pierre Lallement. Two illustrations.

137. Johnson, Margaret. "The Monarch of Olla." St. Nicholas 19 (1892):330.

Bicycle mentioned and shown in an illustration.

138. H?, Elliott W., Jr. "The Letter-Box." St. Nicholas 19 (1892):957.

This Georgetown, South Carolina lad wrote that he owned a bicycle.

139. Beard, J. C. "Choose Your Christmas Gift." St. Nicholas 20 (1892):156, 157.

Bicycle mentioned.

140. Burnett, Frances H. "A City of Groves and Bowers." St. Nicholas 20 (1893):563.

A woman riding a bicycle is illustrated.

141. Ballantine, John F. "Chicago." St. Nicholas 20 (1893):669.

An illustration shows a cyclist upon a safety bicycle riding down Michigan Avenue.

142. Oppen, F. "The Grasshopper and the Ant." Scribner's

Magazine 6 (1889):733.

Drawing of a rider with his legs over the handlebars of an ordinary.

143. Root, John W. "The City House in the West."

Scribner's Magazine 8 (1890):423.

Drawing of a bicyclist passing in front of a house in Bellevue Place, Chicago.

144. Grout, Robert. "The Bachelor's Christmas."

Scribner's Magazine 14 (1893):664.

Illustration shows bicycle.

145. "News and Notes." The Writer 2 (1888):20.

Mentions the Pope Manufacturing Company's desk calendar.

146. "News and Notes." The Writer 2 (1888):100.

A notice of publication of volume two of Thomas Stevens' Around the World on a Bicycle.

147. "News and Notes." The Writer 3 (1889):24.

The 1889 Pope Manufacturing Company desk calendar is "unsurpassed for convenience and practical utility."

148. "News and Notes." The Writer 4 (1890):20.

The Pope Manufacturing Company 1890 desk calendar has been issued. The portable stand contains a pen rack and a pencil holder.

149. Swartz, H. B. "Progress in the Dictionary." The Writer 4 (1890):170.

"Bicycle" and "Tricycle" are added to the latest Supplement to Webster's Unabridged Dictionary.

150. Schuler, H. A. "New Words to be Looked Up in the New Webster." The Writer 5 (1891):7.

In the newly revised international edition of Webster's Unabridged Dictionary acceptable words in the bicycling fraternity include "bicyclist," "cycling," "tricyclist," "velocipedist," and "wheelman."

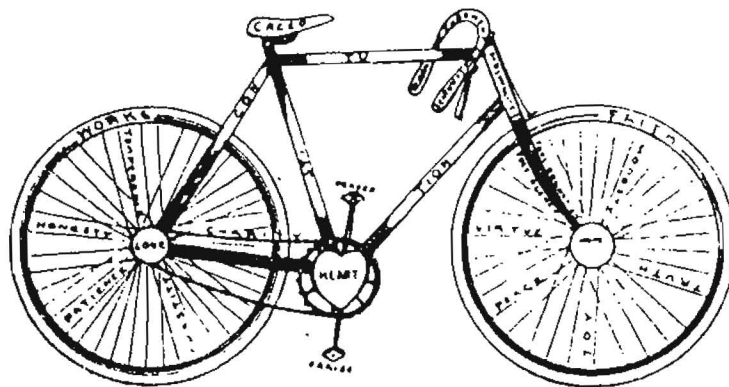
American riders and enthusiasts throughout
the future looked

Bicycle

Chapter V
Conclusion

"To most American riders and entrepreneurs throughout the '90s, the future looked boundless."

--James Wagnvoord, Bikes and Riders, 1972



The safety bicycle in the 1890's

When one looks past the period under discussion in this study into the remainder of the 1890s, one finds that there was a proliferation not only in the numbers of bicycles sold and in the number of riders, but also in the quantity of articles written in magazines and newspapers. The subjects included in this study blossomed into topics that were thoroughly reviewed in the American press.

The public had accepted the safety bicycle and by 1894 women and children rode in greater numbers, doctors discussed the advantages and disadvantages of riding, religious leaders raved at or for the bicycle, and Sunday riding became a prominent pastime, a prelude to the family Sunday automobile drive. Bicycle manufacturing plants became international businesses marketing their products throughout the world and establishing some of the most advanced research and development laboratories then known. While the League of American Wheelmen had a quarter of a million members, led the way in supporting local club rides, and sustained a national voice for cyclists in legislative matters, it became, more than anything else, an elite social club.

Technological and mechanical advances made in the post-1893 era were minor and did little to change the basic diamond frame concept that was invented in 1885 and is still the basic frame constructed today. Women saw in the bicycle a chance to unshackle some long standing restrictions and to assert their individualism. Much discussion filled the

press about the military uses of the bicycle. And, of course, the roads and highways were a major topic of discourse as well as recipients of more and more federal, state, and local funds for developments and improvements.

The number of bicycle related books published in the post-1893 era multiplied as did the number of songs and pieces of artwork on and about the bicycle. Bicycling magazines proliferated, blossoming overnight, some dying as quickly as they matured, others still being published. The bicycle publications arose to fulfill the need of informing American bicyclists about cycling and the new craze, a job they did well then as well as now.

The text of this thesis is based primarily on secondary sources, mainly books. This was done in order to present some background for students of bicycle history. While the history segment could stand alone, it does not present new avenues of thought or challenge the prevailing current of historical persuasion. The annotated bibliographies provided at the end of each chapter are the original link in a chain of understanding. The annotations are to be used to study specific subjects or journals and what they wrote about the bicycle.

For instance, someone interested in children and bicycles could use the bibliographies to locate articles on the subject and then read the chapter history to put the article in some perspective. Or, if a researcher wants information about women and bicycling, he could locate

articles on that subject and use the history as background to a better understanding of the article.

The matrices provided in the appendices give further help in a quick, visual form. Anyone interested in children and how they were treated by the press during the years covered in this thesis could turn to the subject-magazine matrix and find out just how many times this subject occurred (21), and by using the subject-year matrix could find in what years they were printed (in every year but 1865 to 1877, 1888, and 1891). By using the annotated bibliography and the matrices and combining them with the history, one can obtain a better grasp of the history of the bicycle in the United States between 1865 and 1893.

(Karl Kohn). Ten Years
Suffield, Mass.: Spring 19

... Gearing, Paul H.; and McCarty, W.
... Its Planning and Design.
... Design/Environment/Planning Series
...eger Publications

... and Cairns, ...
... Book

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for 1899 to December 1899, 3 volumes,

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APPENDIXES

Appendix A

Titles of Magazines Surveyed, Dates Covered, Number of Volumes Consulted, and Number of Citations

1. American Journal of Psychology, November 1887 to December 1893, 6 volumes, 0 citations.
2. Annals of the American Academy of Political and Social Science, July 1890 to December 1893, 4 volumes, 1 citation.
3. Arena, December 1889 to December 1893, 9 volumes, 3 citations.
4. Atlantic Monthly, January 1865 to December 1893, 58 volumes, 5 citations.
5. Century Magazine, November 1881 to December 1893, 25 volumes, 12 citations.
6. Chautauguan, October 1880 to December 1893, 18 volumes, 14 citations.
7. Cosmopolitan, March 1886 to December 1893, 16 volumes, 6 citations.
8. Education, An International Magazine, September 1880 to December 1893, 14 volumes, 7 citations.
9. Educational Review, January 1891 to December 1893, 6 volumes, 2 citations.
10. Forum, March 1886 to December 1893, 16 volumes, 5 citations.
11. Harper's New Monthly Magazine, January 1865 to December 1893, 59 volumes, 14 citations.
12. Kansas City Review of Science and Industry, February

- 1877 to December 1885, 9 volumes, 1 citation.
13. Kansas Magazine, January 1872 to October 1873, 4 volumes, 0 citations.
 14. Library Journal, September 1876 to December 1893, 18 volumes, 8 citations.
 15. Library Notes, June 1891 to October 1893, 3 volumes, 9 citations.
 16. Literary Digest, March 1890 to December 1893, 8 volumes, 31 citations.
 17. Magazine of American History, January 1877 to December 1893, 30 volumes, 1 citation.
 18. Monist, October 1890 to October 1893, 4 volumes, 0 citations.
 19. National Geographic Magazine, October 1888 to July 1893, 5 volumes, 0 citations.
 20. North American Review, January 1865 to December 1893, 58 volumes, 7 citations.
 21. Popular Science Monthly, May 1872 to December 1893, 44 volumes, 11 citations.
 22. Public Opinion, April 1886 to December 1893, 16 volumes, 54 citations.
 23. St. Nicholas, November 1873 to December 1893, 21 volumes, 49 citations.
 24. Scribner's Magazine, January 1887 to December 1893, 14 volumes, 3 citations.
 25. Scribner's Monthly, November 1870 to October 1881, 22 volumes, 4 citations.

- 26. Sewanee Review, November 1892 to December 1893, 2 volumes, 0 citations. cf. Occurrence Matrix
- 27. Writer, April 1887 to December 1893, 6 volumes, 7 citations.

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Journal of
the American
Medical & Social

Monthly
Magazine
1887
1893
An Issue
and Review
of the
Month
of the

Appendix B

Magazine-Subject Occurrence Matrix

	ADVERTISING	ARTWORK	BOOK REVIEWS	CARTOONS	CHILDREN	CLOTHING	ECONOMICS	EDUCATION	HEALTH
American Journal of Psychology*									
Annals of the American Academy of Political & Social Sci.							1		
Arena					1	2	1	1	1
Atlantic Monthly			1					1	1
Century Magazine		20			1			1	
Chautauguan		1				3	2		7
Cosmopolitan		1		1	1			1	
Education, An International Magazine	3		1						
Educational Review								2	
Forum			1				1		1
Harper's New Monthly Magazine		10		1	1			1	2
Kansas City Review of Science & Industry									
Kansas Magazine*									
Library Journal	1	1							

*No citations found in this journal.

	HISTORY	LEGISLATIVE	LITERATURE	MANUFACTURING	MEDICAL	MILITARY	MUSIC	ORGANIZATIONS	PHOTOGRAPHS
American Journal of Psychology*									
Annals of the American Academy of Political & Social Sci.									
Arena				1		1		1	4
Atlantic Monthly								1	
Century Magazine	1			1				2	
Chautauguan	2			4	2	1		4	
Cosmopolitan									2
Education, An International Magazine				1					
Educational Review								1	
Forum				1				1	
Harper's New Monthly Magazine	1			1	1	1		4	
Kansas City Review of Science & Industry			1						
Kansas Magazine*									
Library Journal			7						

*No citations found in this journal.

	PHYSIOLOGY	POETRY	POLITICS	PSYCHOLOGY	RACING	RECREATION	RELIGION/MORALS	ROADS	SAFETY
American Journal of Psychology*									
Annals of the American Academy of Political & Social Sci.						1			
Arena								1	
Atlantic Monthly								1	
Century Magazine		1			3				
Chautauguan	3			1	3	2	1	5	3
Cosmopolitan						1			1
Education, An International Magazine							1	1	
Educational Review					1				
Forum								1	
Harper's New Monthly Magazine		1						2	1
Kansas City Review of Science & Industry									
Kansas Magazine*									
Library Journal									

*No citations found in this journal.

	SCIENTIFIC	SOCIAL ASPECTS	TECHNOLOGICAL	TOURING	TRANSPORTATION	URBAN COMMUTING	WOMEN		
American Journal of Psychology*									
Annals of the American Academy of Political & Social Sci.									
Arena				1			2		
Atlantic Monthly		1		1					
Century Magazine				5					
Chautauguan		1	1	6	6	2	7		
Cosmopolitan							1		
Education, An International Magazine		2					1		
Educational Review									
Forum									
Harper's New Monthly Magazine		2	1	1	3	2			
Kansas City Review of Science & Industry									
Kansas Magazine*									
Library Journal									

*No citations found in this journal.

	ADVERTISING	ARTWORK	BOOK REVIEWS	CARTOONS	CHILDREN	CLOTHING	ECONOMICS	EDUCATION	HEALTH
Library Notes	9								
Literary Digest			1		1				1
Magazine of American History			1						
Monist*									
National Geographic*									
North American Review			2		1			1	
Popular Science Monthly			1		3		1		2
Public Opinion			3		2	1	2	1	5
St. Nicholas		41		1	19	1		1	1
Scribner's Magazine		3			1				
Scribner's Monthly		22							1
Sewanee Review*									
Writer	3								1

*No citations found in this journal.

	HISTORY	LEGISLATIVE	LITERATURE	MANUFACTURING	MEDICAL	MILITARY	MUSIC	ORGANIZATIONS	PHOTOGRAPHS
Library Notes									
Literary Digest			24		2	1			
Magazine of American History									
Monist*									
National Geographic*									
North American Review				1				3	
Popular Science Monthly		1			1			1	
Public Opinion	1		11	5	4	1		2	1
St. Nicholas	2		14	1	1			5	
Scribner's Magazine									
Scribner's Monthly	1							1	
Sewanee Review*									
Writer			4						

*No citations found in this journal.

	PHYSIOLOGY	POETRY	POLITICS	PSYCHOLOGY	RACING	RECREATION	RELIGION/MORALS	ROADS	SAFETY
Library Notes									
Literary Digest	1					1		2	
Magazine of American History									
Monist*									
National Geographic*									
North American Review								1	
Popular Science Monthly	1		1		1	1	2	3	4
Public Opinion	2	2			3	4	4	2	
St. Nicholas		6			4	3		3	2
Scribner's Magazine									
Scribner's Monthly								1	
Sewanee Review*									
Writer									

*No citations found in this journal.

	SCIENTIFIC	SOCIAL ASPECTS	TECHNOLOGICAL	TOURING	TRANSPORTATION	URBAN COMMUTING	WOMEN		
Library Notes									
Literary Digest	1		1		2		1		
Magazine of American History									
Monist*									
National Geographic*									
North American Review									
Popular Science Monthly	2	2	2			1	2		
Public Opinion			10	13	5		5		
St. Nicholas			4	2	1	1	2		
Scribner's Magazine									
Scribner's Monthly				1					
Sewanee Review*									
Writer									

*No citations found in this journal.

Appendix C

Year-Subject Occurrence Matrix

YEAR	ADVERTISING	ARTWORK	BOOK REVIEWS	CARTOONS	CHILDREN	CLOTHING	ECONOMICS	EDUCATION	HEALTH	HISTORY	LEGISLATIVE	LITERATURE	MANUFACTURING	MEDICAL	MILITARY	MUSIC	ORGANIZATIONS
65*																	
66*																	
67*																	
68*																	
69*																	
70*																	
71*																	
72*																	
73		1															
74*																	
75*																	
76		1															
77*																	
78				1	2												
79*																	

*No citations found in this year.

YEAR	PHOTOGRAPHS	PHYSIOLOGY	POETRY	POLITICS	PSYCHOLOGY	RACING	RECREATION	RELIGION/MORALS	ROADS	SAFETY	SCIENTIFIC	SOCIAL ASPECTS	TECHNOLOGICAL	TOURING	TRANSPORTATION	URBAN COMMUTING	WOMEN
65*																	
66*																	
67*																	
68*																	
69*																	
70*																	
71*																	
72*																	
73															1		
74*																	
75*																	
76																	
77*																	
78																	
79*																	

*No citations found in this year.

