Cycle History 27



Proceedings of the 27th International Cycling History Conference North Haven, Connecticut, USA, 2016

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Pierre Lallement riding his velocipede around Ansonia in Connecticut in 1867 - this is the first time a velocipede was ridden in America. (from "Pierre Lallement and His Velocipede" by Charles E. Pratt, Outing and The Wheelman, Vol. III, p. 9 (1884).

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Edited by Gary W. Sanderson Design and Layout by Greg Siple

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FRONT COVER ILLUSTRATION:

An artist's conception of Pierre Lallement ca. July 1863, riding around Paris on his first bicycle prototype. Published in the October 1883 issue of The Wheelman to illustrate a biographical sketch of Pierre Lallement by Charles E. Pratt, then the patent lawyer of Albert A. Pope, who had purchased the Lallement patent. See paper by Herlihy in this publication (Cycle History 27).

BACK COVER ILLUSTRATION:

Group photo of participants in the 27th International Cycle History Conference that took place in the Best Western Motel in North Haven, Connecticut (USA), on June 25-29, 2016.

Comments on the Publication of the Proceedings of the International Cycling History Conference by the ICHC Publications Committee

The 27th ICHC was held in 2016, and this Conference marks the 27th consecutive year of these conferences. The ICHC has been fortunate throughout these years to have one organization or another step forward to publish the proceedings of each Conference until this year, and collectively these volumes of published proceedings cover virtually all aspects of cycling history thereby providing a valuable source of information for researchers of cycling history and related subjects. Until 2015 (the 15th ICHC) commercial publishers were used to publish the ICHC Proceedings, but the limited market for these volumes resulted in these publishers dropping their relationship with the ICHC after a few years' experience.

The Fédération Française de Cyclotourisme (the FFCT) headquartered in Paris, France, stepped in to do the design and publication of the 26th ICHC Proceedings for which we are very thankful. However, there was no publisher for the 27th ICHC so it was necessary to devise a new system for publishing the proceedings of our Conferences.

This new system requires the ICHC Publications Committee to act as publishers, and in the absence of a cash reserve, the publication of the proceedings of each ICHC Conference will be limited to a digital PDF format that will be distributed free of further charge to all who register for a Conference, and for payment of an appropriate fee to others who may wish to have a copy. The advantages of this system are (a) lower cost, (b) ease of distribution, and (c) flexibility for producing 'printed' copies for archival purposes and for those persons who want a printed copy for their library. The limited amount of money needed to publish these proceedings in PDF format and to produce printed copies for selected major libraries will be generated by a small amount added to the Registration Fee of persons attending the ICHC Conferences and all actual printing of copies for individuals will be done on a pre-paid cost basis.

We hope that the new way of publishing the proceedings of ICHC Conferences will serve those who are interested in the ICHC and its valuable proceedings.

Thank you for your support of the International Cycling History Conference.

Gary W. Sanderson Robert Van Der Plas

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Notes from the Editor

s Nicholas Clayton, the founder of the International Cycling History Conference (ICHC), has often said, "It is amazing that this Conference has continued unabated, and without interruption, for 27 years." This phenomenal ongoing show of interest by historians (some professional, but including many amateurs) is marked by enthusiasm and hours of dedicated research into old newspapers, magazines, catalogs, other ephemera, and equally old bicycles themselves; work which is capped off by making an illustrated presentation to a roomful of likewise dedicated cycle historians at our annual Conferences. The intense interest shown by persons involved in the ICHC and its activities may seem odd to outsiders, but in fact, it is widely appreciated that an understanding of cycling history since the beginning of the 19th Century is critical to understanding the how, and the why, of the development of our modern means of transportation, and the world's social customs. Certainly, the 27th ICHC contributed much to the significance of the ICHC with its array of 22 papers given, and the variety of activities and visits to many venues of historical importance that were included in the Program.

Most significant is the fact that Pierre Lallement, the author of the world's first patent for a bicycle (US Patent No. 59915; Nov. 20, 1866), lived, worked, and rode his velocipede in and around Ansonia (his home at the time) and New Haven in Connecticut (USA) in 1866-1868, and participants in the 27th ICHC had an opportunity to retrace these first ever velocipede rides in America. Further, in addition to the Conference itself, a day-long bus tour to significant places of historical interest to bicycle historians (still standing 19th Century bicycle factories, bicycle museums, etc.) provided additional information about this area and its importance to the beginnings of the bicycle industry in America.

The 21 papers in this volume of ICHC proceedings constitute a variety of more specific subjects from the broad field of cycle history, and they make a valuable addition to the growing body of scholarly studies on subjects related to cycle history. Each volume of the proceedings of the ICHC Conferences (published as Cycle History 1 – 27) contains papers that are both interesting and worthy of study, but collectively, the 27 volumes of ICHC proceedings are a comprehensive source of information covering virtually the entire spectrum of "cycle history". This is recognized by complete collections of ICHC Proceedings being maintained in important libraries such as the U.S. Library of Congress (Washington, DC, USA), the British Library (London, UK), the Musée d'Art et d'Industrie (Saint-Étienne, France), the Deutsche Sporthochschule (Köln, Germany), the Patent Depository Libraries in the UK, the Joseph P. Healey Library at the University of Massachusetts Boston (Boston, MA, USA), and the Library of Northwestern University (Evanston, IL, USA).

The quality (breadth and depth) of the papers published in the ICHC Proceedings depends entirely on the authors who attend the ICHC Conferences to give presentations based on their research and to interact with other cycle historians. The ICHC has been blessed for 27 years with excellent presentations given at our Conferences, and this Editor is proud to be involved with these cycle history enthusiasts and with the publication of their work. Hopefully, the ICHC will continue to flourish for many more years continuing to increase the interconnectedness of the persons who are most interested in cycle history and to publish the conference proceedings thereby contributing to the rich body of information that is readily available to all persons who might be interested in cycle history.

Thanks to Robert Van Der Plas for the significant assistance given in all parts and stages of the production of these Proceedings. Thanks also to Rick Hyman for help with the editing process, and to Greg Siple for the design and lay-out work required to produce this publication.

Gary W. Sanderson, Editor



The American Bicycle Boom and Bust, or The Completely Modern 125 Year Old Bicycle, or The Importance of Tires

By Paul Rubenson, Baltimore, Maryland, USA



Figure 1. 1893 Featherstone "Road King" pneumatic. (Photo by author)

his was one of a series of informal public talks preceding the North Haven conference. An interesting discussion followed. Please see the Proceedings of the 2004 and 2005 ICHC conferences for a more detailed analysis of American bicycle tires and the early potential for American bicycle transportation.¹

Introduction.

This is our final preliminary talk about the history of bicycles, and ideally it should bring us up to, say, yesterday. The last century has brought important American bicycles and bicycle topics. American youth-focused cycling began with sidewalk and moto-bikes in the twenties, and continued with art-deco fat tire cruisers in the 30s-50s, banana-seat sting rays in the 1970s, and BMX in the 1980s. There were also adult trends: light weight bikes, three speeds, ten speeds, a host of specialized road, track, and touring bikes and, more recently, California's mountain bikes which revolutionized world cycling. Newer styles include urban fixed-gear bikes, retro bikes, and a variety of innovative commuters. There have also been bicycle movements, resurgences, new sports, bicycle cultures, and sub-cultures. The bicycle has helped us get to work and play, and may even help us survive the future.

The Period in Question: 1892-1902

But I'm not going to talk about all that. In a way these important stories are only ancillary to the bicycle's essential development, because the bicycle really achieved its modern form in about 1892--or at least by the turn of the twentieth century. This period was the famous "Bicycle Boom," which in America was followed by an equally infamous "bicycle bust." It is the period when bicycles had their greatest impact on the world, giving rise to all of the following century's critical technologies, to new methods of industrial production and marketing, to women's emancipation and the rise of tourism, and, at least in America, to one of our first recognizable economic "bubbles." I'm going to focus this talk on this period, when the recognizably modern bicycle took shape.

As a case in point, I brought two bicycles, one from the beginning and one from the end of this period. The first is an 1893 Featherstone—one of the first American bicycles to adopt pneumatic (air filled) tires [Figure 1]. The other is from the very early twentieth century. It sports a modern diamond frame made of oversize, thin-wall tubing [Figure 2]. Most significant, it has a "coaster" hub with an integrated brake--a classically American combination coaster-brake.²

What's immediately noticeable about the two bikes is that, well, there isn't much noticeable about them at all. To the untrained eye, either might go almost un-recognized in a crowd of modern cyclists. There are details, of course. The handlebar stems don't project forward of their steering tubes. Both have "spoon"



Figure 2. Ca. 1901 American safety bicycle. (Photo by author)

type front brakes, which went out of fashion in the early 20th century in most places except Continental Europe. But they both ride very well, even by modern standards. Both are light, fast, and strong, and weigh less than 25 pounds.

The Importance of Bicycle Tires

The bicycle, like all complex, technological objects, was not invented by one person or at one time-although I like to give Pierre Lallement the honor. Really, the bicycle is a collection of inventions and developments that happened over time. The previous talks described the precursors to the modern bicycle: the hobby horse, which you pushed with your feet, and the pedaled velocipede, which really was a bicycle but lacked effective performance due to its iron and wood construction. Then there were the graceful high-wheel bicycles, which used advanced materials to achieve performance but still lagged in practicality and safety. Last were the



Figure 3. 1969 Wooden velocipede wheel & iron tire made by Calvin Witty. (Glen Eames collection - Photo by author)

pioneering hard-tire and cushion-tire "safety" bicycles, which almost looked like modern bikes—but rode badly because of their weight, complexity, and relatively small-diameter, hard rubber tires.

This brings up the crucial thing about truly modern bicycles: their tires. Modern bikes have air-filled, pressurized, pneumatic tires. These tires were really the last, final step in the bicycle's development, where the modern bicycle's essential character became complete. After the addition of pneumatic tires, bicycle development has really just been a long story of refinement, materials development, and slight mutations toward specialized uses and



Figure 4. Early pneumatic bicycle tire, ca. 1890. (Photo by author)

applications. And as most bicycle historians know, most supposed "new" bicycle innovations have actually been reintroduced time and again.

So let's talk about bicycle tires. To most cyclists, a bike's tires are among its least interesting components. Being consumable, many riders don't even view them as "permanent" parts of a bike. They get old, wear out, and eventually they all go flat. Tires are dirty even when a bike is clean and, except for during the very earliest and now the very latest years of their use, tires were usually just black. A good bike goes through many sets of tires in its lifetime. How then can the tires, almost alone, define

the whole thing--the modern bicycle?

A bicycle is not actually a complete object in and of itself. To function, it is only one part of a system including both a rider and the terrain over which he or she travels. These three components must interface with each other for a bicycle to work. The beautiful parts of the bicycle handle the interface between it and the rider: its

ergonomic proportions, how it converts the rider's strength into propulsion, how the rider controls its speed and direction. On the other hand, the tires handle the interface between the bicycle and the earth. The earth is generally unfavorable and unpredictable for bicycles—nothing like the smooth rails under trains. Especially during cycling's early days, and now again with off-road cycling, bicycles cannot even assume a discernable road surface. Rocks, obstacles, loose or wet surfaces—all have to be efficiently and competently managed by the tires--for a bicycle to make good on its promise.

The History of Bicycle Tires

Historically, the first consideration for bicycle tires—or wagon tires or any tires was to be long wearing: Wheels were made of light materials, like wood, but tires were sturdy, heavy iron. This idea had served wagons well. Wagon wheels did not need much traction—the wagon simply followed the horse. It was the horse that needed traction! And the un-forgiving character of iron tires on irregular road surfaces was not unmanageable for wagons. Springs could soften the ride, and the inefficiency of forcing the vehicle over obstacles was handled by the horse. [Figure 3]

Not so for a bicycle! Yes, bicycle tires must be durable. But bicycle tires have to do much more. They need traction, both longitudinally to propel and to retard the bicycle, and laterally to control its direction. They must be comfortable, because bicycles cannot afford the cumbersome suspension systems of heavier vehicles (as hard-tired safety bicycle riders discovered). And they must do everything efficiently, because a bicycle's power is limited.



Fig. 5. 1895 - Cyclists on Riverside Drive. Drawn by W. A. Rogers. (from Granger Collection, New York, NY)

The first advancement of bicycle tires over wagon technology was the use of solid rubber instead of metal. Rubber has obvious advantages. It has more traction and is, to an extent, naturally shock-absorbent. Rubber is reasonably durable, but it was a rare and expensive material when it was introduced. Solid tires used a lot it, so they were heavy and costly. And the material alone, while an improvement, did not entirely alleviate the need for mechanical suspension systems, or help bicycles much diameter of the wheel rim. Pneumatic tires quickly swept the bicycle industry, and many pneumatic designs competed for dominance. Ultimately the Dunlop/Welsh pattern became the enduring pneumatic pattern—not just



Figure 6. 1905 - Commuter bicycle shed. (Bicycling World, 51, May 20, 1905, 225 from U.S. Library of Congress)

to roll over rough surfaces without losing forward momentum—especially with the shift from high wheels to the smaller wheels of safety bicycles.

The ultimate solution, and one that has yet to be bettered, was the pneumatic tire [Figure 4]. With pneumatic tires, bicycles "floated" over the road surface on a cushion of compressed air--contained by a hollow tire. The role of isolating riders from road shocks switched from complex mechanical suspension systems within the bicycle itself, to their very point of origin at the road surface. The benefit was threefold. First, the entire bicycle was insulated from road shocks, not just the frame or rider. Second, irregularities in the road surface no longer impeded the bicycle's forward progress—so the bicycle became much faster. Third, since the pneumatic tire was merely a thin structure to contain the air pressure, it was far lighter than any solid tire-rubber or metal.

The idea of the pneumatic bicycle tire originated with Scottish veterinarian John Boyd Dunlop in 1888, when he devised them for his son's tricycle. He may or may not have been inspired by a prior invention for carriage tires by Robert Thompson, tested a generation earlier in the same city.³ Dunlop enlisted investors and promoted his tires in races and, when Thompson's patents resurfaced and invalidated his own, he quickly bought the rights to a refinement of his idea by countryman Charles Welch and by Americans Bartlett, Brown, and Stillman. It was a tire easily detachable from its wheel, held in place simply by inextensible wires molded into its edge that matched to the inner

for bicycles but for all tire applications, from automobiles to airplanes—and still is to this day.

The Bicycle Boom

The effect of the pneumatic tire was transformative. The idea of the bicycle had always been popular, but its implementation had only disappointed. Twice, with both the hobby-horse and the pedaled velocipede, interest fizzled after only a year or two when the

vehicles' practical limitations sunk in. The high wheel bicycle gained a more lasting but limited success, never winning the favor of a large, diverse public.

Pneumatic tires enabled the bicycle to finally deliver on its promise. The new bicycles were safe, accessible, comfortable, and fast—and adaptable to the needs of all riders. In hindsight, the pneumatic safety bicycle is hailed as one of the greatest developments of the nineteenth century. In its own day it was breathtaking. The modern

bicycle was perceived as a tremendously potent machine. Not in the wholesome way we may now view fast bicycles—like fast athletes—but awesomely fast, in the raw way one might view a 1,000 HP supercar. Departing from the minimalist black and pinstriped aesthetic of high wheel bicycles,

pneumatic safeties

Federal Government to improve roads for cycle use. Upward of 3,000 manufacturing companies took up the building of bicycles or related products, and fanciful images of bicycles dominated a new commercial aesthetic. At its peak in 1897 the American bicycle industry produced as many as 2.5 million new bicycles—one for every 20 citizens. [Figure 6]

The result was enduring, even as the Boom itself was short-lived. As a single, technological artifact, few things changed the world more than the bicycle did during the Boom—except maybe the wheel itself. Of course, like the railroads before it and the motor age after it, the bicycle reduced the scale of geography and changed people's personal worlds. [Figure 7]

The bicycle's effect was even stronger in the social, industrial, and economic realms. Bicycles helped break down barriers between the social classes, between races, and between genders. Although a bicycle was expensive at the beginning of the Boom—the equivalent of thousands of dollars today—prices came down quickly. And unlike horses, bicycles brought relatively few upkeep costs—making the initial price a reasonable investment.

Something about safety bicycles brought people together. Modern cyclists recognize an inherently social aspect to cycling, but Victorians especially noticed how bicycles



Figure. 7. Cycle Rest. (from Minnesota Historical Society)

became colorful, flashy, and ostentatious. They even threatened the social order. People loved them—and they bought them, literally, by the millions. **[Figure 5]**

During the bicycle boom, the ranks of formerly athletic and militaristic cycling organizations swelled with new riders from all walks of life. Fashionable road houses sprang up along cycling routes, and cities laid out cycle ways and side paths. The League of American Wheelmen submitted a petition with 150,000 names calling on the brought diverse people together on public roads. In fact, one term for the bicycle during the Boom was "the Great Leveler." Although Victorian mores initially pushed back against women joining cycling, in fact more male cyclists than not seemed to enjoy sharing the formerly macho sport with new female counterparts. Fashion and industry bent to the movement as bicycle makers built parallel lines of cycles for women, and women redesigned their formerly restrictive wardrobes around the



Figure 8: Major Taylor won the 1 mile sprint race at the World Championship Bicycle Racing Meet in Montreal in 1899, but he had to go to Europe to continue his racing career due to severe racial prejudice and restrictive rules for African Americans at that time. This photo was taken from the cover of a French Journal published in 1902.

bicycle. And even as Southern Wheelmen managed to ban African Americans from the country's largest cycling organization, they could not prevent Major Taylor, an African American racer from Indianapolis, from becoming the era's greatest cycling star. [Figure 8]

On the technological side, bicycles



Figure 9. A typical 1898 American Safety Bicycle designed

for racing.

posed new challenges to industry—and the answers were the basis of all the technologies that followed. Light weight metal alloys, seamless cold-drawn structural tubing, precision metal joining, ball bearings, and the efficiencies of large scale production: all became essential to the twentieth century's innumerable technological systems and products.

The American Bicycle Bust, and the Single Tube Tire

Coming back to tires, this last chapter will show how bicycles' tires also managed to be a detriment to cycling's potential long-term success in America.

Even as the aftershocks of the great Bicycle Boom are with us to this day, the Boom itself did end. This was true around the world, as the bicycle transitioned smoothly from a trendy pastime to commonplace transportation. In most countries however, bicycle use continued to grow even as passion for it waned. But in America, the end of the Bicycle Boom was a total collapse that never fully recovered—known as the Bicycle Bust.

It was not, as many Americans assume, that twentieth century cyclists simply traded in their bikes for automobiles. Average Americans gave up cycling almost a generation before they bought cars.⁴ The dawning motor age did draw the elites away, leaving the industry without creative leadership or lucrative consumers.⁵ And bicycles also faced competition as transportation from electric streetcars. But the full explanations of American cycling's precipitous fall and lack of a recovery are more numerous.

On the economic side, public enthusiasm for cycling had belied an artificial bubble of overinvestment and overproduction. The industry could not rectify the glut, although it tried through consolidations and exports. As quickly as factories had been set up, prices dropped and

fortunes were lost. Suddenly there was no more money for shows, advertising, or research toward improved products.

In America there were problems, too, with the bicycle itself. In fact American bicycles were different from bicycles elsewhere. The American bicycle was a peculiar ensemble of technical specifications: wood-rims, minimal brakes,

hard saddles, high gears, light construction, the notable lack of amenities such as fenders, stands, or luggage racks, and the use of fast, single-tube tires. In short, it was a sports machine, or at least pretended to be so. [Figure 9] This was understood at the time. Maria Ward, a popular cycling author, advised her readers that American bicycles had "evolved on the race-track and for the conditions determined thereon." ⁶ This stood in contrast to the sturdy touring roadsters that became ubiquitous elsewhere. **[Figure 10]**

Of all the American differences, the



Figure 10. English Roadster, 1921. (W. F. Grew, The Cycle Industry: Its Origin, History and Latest Developments, London: Sir Isaac Pitman & Sons, Ltd., 1921, 51. From the U.S. Library of Congress)

single-tube tire was the most profound. As we discussed, tires are critical to bicycle performance. But on the negative side, and perhaps foremost in the minds of most cyclists, they also account for bicycles' most costly and troublesome routine main-



Figure 11. Advertisement: Goodyear Tire and Rubber Company. (The Bicycle World and Motorcycle Review, 60 (October 2, 1902), 39. From the U.S. Library of Congress)

tenance.⁷ On this point single-tube tires proved disastrous for American cycling.

The single-tube tire dominated the American bicycle market for forty years, from the bicycle boom until the Great Depression in the 1930s. This tire type was relatively unknown in other countries. It was of unique and simple construction, having its outer casing and inner tube vulcanized together as an inseparable unit, and was usually glued to an extremely light, wooden-rimmed wheel.

On the plus side, single tube tires were inexpensive, lightweight, and performed well. But they were nearly un-maintainable. Because the inner tube and outer tire could not be separated, neither could be effectively repaired. The costly result had not dissuaded wealthy recreational cyclists in the 1890s, but it was absolutely prohibitive to working cyclists of the following century.

The single tube tire was the brainchild of Col. Albert Pope, president of America's largest bicycle producer and effective leader of the industry. Pope pushed the unusual tire, not because of its technical superiority, but because he entered the pneumatic game late, and it was the only one available without paying royalties to a competitor. When Pope himself bowed out of cycle and tire production around the turn of the century, subsequent industry leaders continued the tire's stranglehold on American cycling, using the cheap tire as a "loss leader" ⁸ while profiting from the tires' predictable need for frequent replacement. [Figure 11]

In the end the single tube tire caused its own downfall, but with it also the failure of American cycling to transition successfully into the twentieth century. In 1933 an exasperated Frank Schwinn finally reintroduced detachable tires to the American market.⁹ Within a year the single tube tire disappeared.¹⁰ Even now, long after the bicycle bust and with the Boom only a romantic memory, one wonders if, but for the single tube tire, cycling would be a more natural and integrated part of America's transportation scheme today. ●

- ¹ Paul Rubesnson, Patents, Profits, & Persceptions", *Cycle History 15*, p. 87-97 (2004); Missing Link: The Case for Bicycle Transportation in the United States in the Early 20th Century, *Cycle History 16*, p. 72-84 (2005) (San Francisico: Van Der Plas Publications)
- 2 Editor's Note: For more information on the development of coaster brake hubs, see Gary W. Sanderson (2011), The Rockwell Bros. and the New Departure Co., *Cycle History 22*, p. 148 and Table 1 (Cycle History (Publishing) Ltd, Birmingham).
- ³ Alistair Dodds, "Dunlop and the Pneumatic Bicycle Tyre – the Edinburgh Connection" in *Cycle History* 11, Proceedings: 11th International Cycle History Confer-

ence (San Francisco: Van der Plas Publications, 2001), 104-110.

- ⁴ Karl Hodges, "Did the Emergence of the Automobile End the Bicycle Boom?" in *Cycle History 4*: Proceedings of the 4th International Cycle History Conference (San Francisco: Bicycle Books, Inc., 1994), 39-42.
- ⁵ Forrester, John, *Bicycle Transportation* (Cambridge, Massachusetts: MIT Press, 1983), 183.
- ⁶ Maria E. Ward, *Bicycling for Ladies: The Common Sense of Bicycling* (New York: Brentano's, 1896), 78-79.
- 7 "The Tire Repairs that Come in the Spring-tra la!" The Bicycling World 51 (April 29, 1905), 130.
- 8 In 1900 tire choice influenced bicycle prices by 34 percent, and in 1908 by a whopping 42 percent. Calculations based on prices published by Sears, Roebuck, & Co, 1896-1908.
- Prank Schwinn, successor to Ignaz Schwinn of the prominent Arnold-Schwinn bicycle company, designed the first American balloon-tire cruiser, the 1933 Schwinn B 10-E, to use German detachable 26" x 2.125" utility tires. It ushered in a school of bicycle design that ultimately provided a basis for modern mountain bikes.
- ¹⁰ By 1934, bicycles from national mail-order houses were equipped with detachable balloon tires, and single-tubes were offered at a reduction. *Montgomery Ward & Co., Catalog no. 120 for Spring/Summer 1934* (Chicago: 1929), 352-353. Sears, Roebuck and Company, Catalogue for Fall and Winter 1934-1935 (Chicago: 1934), 495-497



Lorne Shields and David Herlilhy consult during a break in the conference.

Conference Moment

An American Chain-Drive Velocipede Tricycle: 1860s

Lorne Shields, Toronto, Ontario, Canada



his paper describes a chain-driven velocipede tricycle, shown in **Figure 1a** with some details described in **Figure 1b**. The original photograph came into my

possession some time ago, and I have been able to piece together the story behind its origin with help from several friends who are acknowledged in the endnotes to this paper.

The Inventor

The tricycle was built by Mr. Faulkner Isaac Norton [**Figures 2 & 3**]. Norton was born on March 2nd, 1811, in Cambridge, Washington County, N.Y. He left home at 13 years of age and began clerking in Keysville, N.Y. He learned the saddle and harness making trade in Saratoga County, N.Y. At 20 years of age in 1833, Norton moved to Lower Sandusky, Ohio. The area was a rich farming community with a need for suitable tools and implements.

In 1835, at age 22, he traveled to Claremont, New Hampshire, where he married Harrietta M. Willard, and then returned to Lower Sandusky. The Nortons had three children; two sons and a daughter. In 1840 he went into partnership with Cornelius Letcher to manufacture plows in a small foundry. The company was called Norton & Letcher. After two years the company moved to a much larger facility near the river bank at Garrison and River Streets. After Mr. Letcher passed away, Norton carried on as sole proprietor.

On April 25, 1848, at age 37, Norton took out U.S. Patent No. 5,530 for "A new and valuable improvement in Endless

Fig. 1a. Tricycle Velocipede by Faulkner Isaac Norton, a highly unusual combination of hand cranks, chainwheels, endless chain, and foot propelled chainwheels. Accessorized with an umbrella and a hanging candle lamp (Lampion from France). Image is ca. 1869. The Albumen photograph would have been taken by a wet plate camera. Size is 2-7/16" x 4". Unidentified photographer. American.

NOTE: All photographic images are originals from the author's collection.



Fig. 1b. Function and Action of the Com*ponentry. Hand-and-foot-operated—by* the feet with a set of chainwheels mounted to either side of the front hub and having *slotted cranks with adjustable weighted* acorn pedals mounted on cranks. By the hands with chains running from both lower chainwheels upwards vertically to a second set of chainwheels. The top-positioned chainwheels are attached to stud axles that are positioned at the crown of the fork blades. Handles are added to the upper set of the chainwheels and, of note in the photo, are shown at the 6 and 12 o'clock position, this being 90° offset from the lower pedal positions, shown at approximately 3 and 9 o'clock. By positioning the two sets of chainwheels in this manner, all sense of dead top and dead bottom (lost motion or a dead spot) has been

eliminated. This is accomplished by the hand action aiding in the rotating momentum of the lower pedal/crank assembly. As the four chainwheels are identical in size and have the same number of teeth there is no gearing up or down. Both sets turn at the same rate and provide direct drive to the front wheel. All four chainwheels are linked via the two chains, the action being akin to that of a Kangaroo type bicycle. Steering is done by turning the upper and lower chainwheel/ fork assembly together with arm and foot action. There appears to be a set of tabs with drilled holes. The function of these has yet to be determined. One suggestion is that these are attachments for straps that would then fix to the upper handles to further aid in propulsion. The extension acts as a holder for a "Lampion" pattern candle lamp.

Chain Racks and Inclined Rotating Platform". [Figure 5] From the 1848 patent we can readily see his grasp of chainwheels with endless chain technology. In 1853, Norton, then 44, sold out to Messrs. June & Curtis. In 1861, at age 50, Norton began to manufacture (wooden) spokes in the same location. In 1863 he built a brick building on Arch St. between Croghan and Garrison Streets, staying there until 1874, when he sold the building. In the *1869 Sandusky County Directory*, F. I. Norton & Son is listed as a "Hub, spoke, and felloe manf."

Norton died peacefully at his home in Fremont, Ohio, at the age of 67 on Nov. 4th, 1878. His wife and two sons were with him at the time, and his daughter arrived by train from Washington, D.C., the next day. **[Figure 6]**

The Machine

The machine is the tricycle velocipede shown in Figures 1a & 1b. Additional details of this machine are shown in Figure 7 with detailed descriptions given in the respective captions to these figures.

Considering Norton's early trade of saddle & harness making, his existing 1848 patent, and the velocipede boom of 1868 and 1869, it is not surprising that he was able to conceive of and then manufacture this unique tricycle. However, Norton was not amongst the several people who took out a velocipede patent, whereas in 1868 he did take out a patent for "Developing a steaming and drying chamber for wagon hubs" (U.S. Patent No. 77,305) and another patent in 1869 for the "Apparatus for drying lumber" (U.S. Patent No. 96,471). This circumstantial evidence suggests that if Norton felt there was a future for his tricycle he would have initiated a patent.

The Back Story

Curious objects are often created within

the worlds of tinkerers, tradesmen, and inventors. Back in the early days of manumotive and pedimotive transport, nonconformity was almost the norm. By 1870 the first Industrial Revolution (1760 – ca. 1840) had long since ended, but there was some overlap with a second Industrial Revolution later in the 19th century. Virtually every American adult had

WILES p. FREMONT Ohio.

Fig. 2. Mr. Faulkner Isaac Norton. An albumen Carte de Yisite sized 2 1/2" x 4" taken with a wet plate camera ca, 1869. Photographer is A. D. Wiles of Fremont, Ohio. American.



Fig. 3. Identification from the original photo album pages. Bottom sections of the pages that held the two relevant photos taken from the Cartes de Visite Album. These photos found together of "F. I. Norton, Sr." and the "Bicycle invented by F. I. Norton. Sr." are highly important as they give both a face to the maker and a provenance to the tricycle.



Fig. 4. Photographer's information. The photographer, A. D. Wiles is properly identified as Alfred Dean Wiles, who operated in Fremont, Ohio, 1851–73. This advertisement was published in "The Fremont", July 19, 1867.

either taken part in, or at least witnessed, changes in urban and rural society which, until then, had been unimaginable. Very few items are created in a total vacuum. To make an item successful, the invention itself represents only one side of a triangle. The other two sides consisted of practicality and marketing. All go hand in hand.

Scrutiny of the USA Patent books during the time that this tricycle must have been created in which the word "chain" appears somewhere within the specifications are:

- Oscillating Seat: 1, in 1869
- Foot & Hand-propelled: 0 (this would have been the category for Norton's tricycle)
- Hand-propelled: 1, in 1869
- Foot-propelled: 5 (between 1869 and 1871)



Fig. 5. The inventive Mr. Faulkner Isaac Norton. On April 25th, 1848, Norton was granted U.S. Patent No. 5,530. It is clear that the idea of propulsion with a system of endless chain and chainwheels was well conceived in Norton's mind when he invented his Velocipede tricycle.

Furthermore, chainwheels with chain propulsion were commonly used in the American farm machinery industry during this time.

There is no known proof as to when this tricycle was produced. As it is in the form of a basic velocipede tricycle built in America, it is almost impossible for it to have been built before 1869. Using the photographer's location, it is improbable that it was after 1873. I

Death of F. I. Norton: Sunday evening as Mr. and Mrs. Norton were preparing for retiring, Mr. Norton having removed his coat and vest and shoes, and sitting on his chair Mrs. N. spoke to him and he did not answer, she spoke again and stepped to him. He did not notice her. She at once saw comething strange was the matter, and stepped to the hall stairs and called a young man boarding with them, who immediately came down, and on looking at Mr. N., went for Dr. Lee who lived close at hand and then for Dr. Rice. Both came, and said that it was paralysis and that there was no hope for him. All night long he lay breathing hard, and at 8 o'clock Monday morning died. A few moments before the attack, Mrs. Norton and he were conversing on family matters, but after the attack he did not speak. His two sons, W. I. and F. I., were with him in a half hour after the attack and remained until he died, His daughter, wife of Capt. George, W. Redway, of Washington, was telegraphed to, and arrived in the city Tnesday morning at 10 o'clock. The funeral was held Wednesday afternoon at his late residence, Rev. R. L. Chittenden officiating. Mr. Norton was among the early citizens of this town, coming here as early as 1833 or 34, and had until the last three or four years, been actively engaged in business.

Fig. 6. Notice of Mr. Faulkner Isaac Norton's passing on November 4, 1878, that gives a summary of his life.

personally take it as 1869, but it could be one or two years later.

One can only speculate what would have happened had the velocipede craze not ended so abruptly in 1869 in America. This prototype was likely a "one-off," and may not even have been intended for industrial production. We are fortunate the photo has survived, since no other record of its existence has been located up till now.

Acknowledgements

I am indebted for the help of many in researching the vehicle and its history.

• Dr. Chris Brooks for his help and identification of the "Lampion" lamp.

• Glen Eames who diligently worked with me to keep everything in context and simplify the explanation so that it

day of Hovember, A. D. one thousand eight hundred and Scouty light 11 " this E. F. Dickinson Probate Judge. THE STATE OF OHIO,] We, the undersigned, do make solemn oath that we will County, ss. Struly, honestly and impartially appraise the estate and property that may be exhibited to us, belonging to the estate of deceased, and perform the other duties required by law of us in the premises as appraisers, &c., according to the best of our knowledge and ability. Huma · Havid June Sworn to and Subscribed, before me, this day of A. D. 18 We, the undersigned, appraisers of the estate and property of Fauthur D. Workon deceased, after being duly sworn, have made an inventory and appraisement thereof, as hereinafter set forth. SCHEDULE Fanekn Personal Goods and Chattels belonging to the estate. Aorton, deceased, which are assets and in the hands of the Administrator as shown to us. APPRAISED VALUE. Balting Sam 38 Inch & table Camplet \$ Boning machine + 2 augens 2 & Can 1 20 " 2 & Carroli Head & tale Black for grinding Bitts 12 table & an 12 ... 2 spipe le 11 rice 11 Tak of ald Belling for the in a up Small boning machine on man one donn Killen 12 1/2 9 15 Coc 75 uble Belting mach 17681/2 les Shapting & Cupling

Fig. 7. Our man was a successful businessman. Faulkner Isaac Norton passed away on Nov. 4, 1878, leaving behind his wife, two sons and a daughter. He was a successful businessman, and he left a will in which he valued his company at over \$2,000.

"read" comfortably.

• Steven Evans, a personal friend and photographic historian, who has always helped me view photographs in a manner that broadens my knowledge while testing his patience. His teaching skills have been of immeasurable benefit.

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• Carey Williams who happens to see things my eyes don't see. Not only does Carey do that for me, he always adds information which proves of great benefit.

This paper was the result of a collaborative effort of each and every one of you. I thank you.

Endnotes

1. Louis Schultz III of Sandusky, Ohio, did the research on the genealogy and work history of Faulkner Isaac Norton.

2. Gary W. Sanderson (2010). "Velocipede-mania in the USA (1868-1869)," Tables 1 & 2 and Fig. 8 on pp. 13-16. Cycle History 19 (JPMPF, Birmingham, UK).

3. There was a second Industrial Revolution later in the 19th century which is noted in the Encyclopedia Britannica. Despite considerable overlapping with the "old," there was mounting evidence for a "new" Industrial Revolution in the late 19th and 20th centuries. HYPERLINK "https://www.britannica.com/event/Industrial-Revolution" https://www.britannica.com/event/ Industrial-Revolution.

4. Digest of Cycles or Velocipedes with Attachments, Patented in the United States, from 1789 to 1892. By Authority of the Hon. Commissioner of Patents. Washington, D.C., Vols. 1 & 2, and Patents for Inventions; Abridgements of Specifications; Class 136, Velocipedes; Periods 1855–66 & 1867–76. London W.C. (England).

"The Church or the Wheel?" -Religious Institutions Contend with the American Bicycle Boom

By Chris Sweet, Bloomington, Illinois, USA

hese bladder-wheeled bicycles are diabolical devices of the demon of darkness. They are contrivances to trap the feet of the unwary and skin the nose of the innocent. They are full of guile and deceit. When you think you have broken one to ride and subdued its wild and Satanic nature, behold it bucketh you off in the road and teareth a great hole in your pants. Look not on the bike when it bloweth upon its wheels, for at last it bucketh like a bronco and hurteth like thunder. Who has skinned legs? Who has a bloody nose? Who has ripped breeches? They that dally along with the bicycle."

In 1896, the Minneapolis Tribune published this account of a Baltimore preacher's sermon. Given the preacher's choice of words and the ambiguity of the newspaper story it is not entirely possible to tell if this sermon was given in jest, or if it was completely serious. More than a century later it seems quaint - even bordering on absurd - that American churches were ever threatened by something as innocuous as a bicycle. As this article contends, during the American bicycle boom of the 1890's, many clergymen did, in fact, see the bicycle as a threat to religious values. The development of the pneumatic-tired safety bicycle brought cycling to the masses during the last decade of the 1800's. Specifically, the urban centers of the New England states through the upper Midwest saw an explosion of interest in all things related to cycling. [Figure 1]

The European scientific revolution of the sixteenth and seventeenth centuries had dealt a major blow to the authority and influence of the church. A vestige of this blow was a deep-seated distrust of technology among many Christian denominations. For a short time, the bicycle became a flash-point in Amer-



Figure 1: "Even the church has got it!" This satirical cartoon appeared in Puck magazine in 1896. (Vol. 38, No. 83)

ican churches. Traditionalists claimed the bicycle was the work of Satan since it often led to cyclists desecrating the Sabbath. Some preachers who advocated for the bicycle were even forced out of their parishes. In a time of intense religion-centered debates over temperance, some claimed the bicycle led to increased drinking among cyclists, while another faction argued that cycling actually kept riders out of the saloons. The Boston-based Woman's Rescue League (a Christian organization) even contended that bicycles led to an increase in prostitution due to their enabling inde-

pendent movement for women. However, condemnation of the bicycle was not universal within the church. For every critical clergyman, there was another who championed cycling as a way to attract young people to the church. Others quickly recognized that the bicycle could be an aid for evangelism efforts in the vast rural areas of the country. By the end of the nineteenth century the specific debates over religion and the bicycle had mostly been resolved, but the root of the matter, which is the complex relationship between religion and sport, is still a contentious issue today.

Review of the Literature

It goes without saying that much has been written about both the history of bicycles in America and the history of religion in America. However, a substantial gap exists where the two intersect. In his 1972 classic, A Social History of the Bicycle, Its Early Life and Times in America, Robert Smith included a few pages of anecdotes and analysis related to the religious response to the bicycle. In 2010, Michael Taylor's article, "Rapid Transit to Salvation: American Protestants and the Bicycle in the Era of the Cycling Craze," provided more extended analysis of protestant churches' responses to the bicycle boom of the 1890's. Taylor established the important connection between the Muscular Christianity movement and bicycling. Advocates of Muscular Christianity believed that physical health and manliness were the answers to the waning influence of turn-of-the century churches. Books by Ladd and Mathisen (1999) and Putney (2001) provide excellent histories of the American Muscular Christian movement, but have very little to say about the role of the bicycle in this movement. At the 20th International Cycling History Conference in Freehold, New Jersey, Professor Kevin J. Hayes delivered a presentation and corresponding paper entitled "Pedaling Preachers: Clergymen and the Acceptance of the Bicycle, 1881-1887." This paper focused on clergymen and cycling during the high wheel era. The natural place to continue this line of inquiry is a more substantive examination of the religious response to bicycles during the boom of the 1890's.

Before the Boom

A brief summary of the relationship between cycling and religion before the boom provides useful context for later developments. During the short-lived American velocipede craze (circa 1868-1870) the famous minister and abolitionist Henry Ward Beecher gave a sermon at Plymouth Church (Brooklyn) on "Rational Amusements":

One of the great questions of the day is in relation to the 'coming man' and how he is to come. I think he is coming on a velocipede (laughter) - a new machine that is bound to play a prominent part in the category of amusements; a toy to some, an instrument of great use to others. I have purchased two for my own boys, and there is every probability of my riding one myself. I am not too old to learn, but I hope it will not be said the velocipede is my hobby. You are none of you too old to learn, and I shall not be at all surprised to see in a short time a thousand velocipedists wheeling their machines to Plymouth Church.

Soon after he delivered this early clerical pronouncement in favor of the velocipede, that particular cycling fad came to an end. It would be another twenty years before Ward's vision of thousands of cyclists riding to church would become a reality. American interest in cycling was revived again in 1878 when Albert Pope began producing and marketing Columbia high wheel "ordinary" bicycles in the United States. Pope was a savvy promoter of anything related to cycling. He realized early on that to sell bicycles to the masses they needed to be viewed as a legitimate means of transportation and recreation for respectable men (and later on, respectable women). One of the ways Pope worked towards these ends was by creating and subsidizing an early cycling magazine called The Wheelman. Pope created a contest with cash prizes for the best essays on cycling written by clergymen. Between 1882 and 1883 The Wheelman published 15 of the winning essays. Unsurprisingly, these essays consistently lavished praise on a wide-range of benefits for clergy who used bicycles. Many bicycle manufacturers followed suit, publishing testimonials from clergymen in their catalogs and advertisements.

One other significant event pertaining to religion and cycling that occurred during the pre-safety era was "The Clerical Wheelmen's Tour." These multiweek tours covered a few hundred miles and were organized for clergymen only. Clerical Wheelmen's Tours took place in 1885 and 1886 (there were possibly others after these dates). The tours were covered by newspapers and cycling publications of the time. An article in Bicycling World noted: "No better illustration of the change that has taken place in public opinion is wanted than the fact that several dozen of the smartest and most eloquent young clergymen in America are now doing the country astride of bicycles. These men are not city hoodlums nor college boys out on a lark. They are cultured men, fully impressed with the responsibility that their chosen vocation imposes."

In summary, cycling during the velocipede and high wheel eras did not cause any conflicts of note within the church, nor did clergymen flock to the bicycle en masse. Cyclists were still few in number and bicycles were seen as more of a novelty than a threat. A few years later, the bicycle boom would change all of that.

America at the End of the 19th Century

To make any sense of the debates between the church and the bicycle some basic historical context is necessary. Clergymen who either vehemently damned the bicycle or passionately advocated for it reflected larger fissures in American society. The latter half of the nineteenth century saw a massive rural to urban migration. As large-scale industrialization became firmly established, people flocked to cities to work long hours in huge factories. During the "Gilded Age" America's first large corporations (and monopolies associated with them) led to accumulation of enormous wealth for a few elites. These corporations required a vast laboring force. Oftentimes this laboring class was composed largely of immigrants. White, elite, and middle-class males found themselves in mid-level sedentary office jobs that no longer required much in the way of physical labor or exercise in general. Strikes, lockouts, boycotts, and riots often pitted the working class against the elite owners and managers. The physical discrepancies between the two classes led Progressive Era reformers to endorse artificial exercise for the first time. Swimming, weight-lifting, outdoor camping, and bicycling were promoted as methods of strengthening America's upper and middle classes and combating the ill effects of city-dwelling.

America's churches were struggling with similar issues. Victorian city life came along with overcrowding, alcoholism, prostitution, as well as a host of other entertainments that kept people away from the church. In England during the 1860's the concept of "Muscular Christianity" was championed as a strategy for combating modern social ills and keeping the church strong. In his 1861 novel Tom Brown at Oxford, Thomas Hughes outlined the basic precepts of this new movement: "The least of the muscular Christians has hold of the old chivalrous and Christian belief, that a man's body is given him to be trained and brought into subjection, and then used for the protection of the weak, the advancement of all righteous causes, and the subduing of the earth which God has

given to the children of men." Similar to the desk-bound managers, many believed the church had become slothful and overly tolerant of physical weakness and effeminacy. Between 1880 and 1920 Muscular Christianity was a very popular idea among American Protestants in particular, and other denominations to a lesser degree. In a history of American Muscular Christianity, were only ridden by a small fraction of the American population, then the numbers that flocked to the new "safety" bicycles constituted a true craze. In 1885, Englishman John Kemp Starley began producing Rover Safety Bicycles. The Rover was the first mass-produced bicycle to feature wheels of about the same size with a midwheel pedal-actuated drive system coupled



If the wheelmen won't go to church, the churches will have to come to the wheelmen

Figure 2: Puck's suggestion to his reverend friends. "If the Wheelmen won't go to church, the churches will have to come to the Wheelmen." The placard on the church wagon reads: "St. Ixion's Sunday service for Wheelmen. Century run including morning and afternoon sermon." (Puck, vol. 37, no. 962, Aug. 14, 1895)

authors Ladd and Mathisen identify its four defining characteristics as: manliness, morality, health, and patriotism. Muscular Christians believed that the body was not meant just for mindless physical labor, but should be used for the greater Christian good. The establishment and growth of the YMCA is probably the most recognizable early result of the Muscular Christianity movement, but it was far from the only outcome. Given the widespread interest in Muscular Christianity, it would seem that bicycles should have been readily embraced by Christians as a means to greater physical health and as an aid to evangelism efforts. This was not always the case.

Diabolical Devices of the Demon of Darkness

If velocipedes and high wheel bicycles

to the rear wheel with a chain-drive. Shortly after this, the Irish veterinarian John Boyd Dunlop developed the pneumatic tire. The combination of a stable, easy-to-ride bicycle and the cushioning of pneumatic tires made bicycle riding readily accessible, and attractive, to a wide range of people. The 1899 Census of Manufacturers shows that more than one million bicycles were made that year by American factories. This would have been at the very end of the bicycle craze. A few years earlier the manufacturing numbers were estimated to have been closer to two million. In a short period of time cycling became the fashionable thing to do for the elite and middle classes. Cycling clubs built elaborate clubhouses for their members and bicycle racing rivaled baseball as a spectator sport.

Long Sunday bicycle rides soon became the important social events of the week. This practice of riding on Sunday soon became a main point of contention between the church and the bicycle. In an era of 6-day work weeks, cyclists who rode on Sundays were seen as desecrating the Sabbath in two ways. First, many decided to just skip Sunday morning church services and go for a ride instead. However, even those who did attend a church service before sneaking in a ride later in the day were risking eternal damnation since the Ten Commandments specify that the Sabbath should be a day of rest:

Remember the Sabbath day, to keep it holy. Six days shalt thou labour, and do all thy work: But the seventh day is the Sabbath of the Lord thy God: in it thou shalt not do any work, thou, nor thy son, nor thy daughter, thy manservant, nor thy maidservant, nor thy cattle, nor thy stranger that is within thy gates: For in six days the Lord made heaven and earth, the sea, and all that in them is, and rested the seventh day: wherefore the Lord blessed the Sabbath day, and hallowed it.

The church had other objections to cycling, including the belief that cycling led to alcoholism and that it undermined strict Victorian courtship practices, but it was the issue of cycling on the Sabbath that led to the deepest divisions. In 1895 (during the peak of the bicycle boom), Rev. David Beaton of Unity Church in Dearborn, Illinois, spoke for many conservative clergymen across the country when he told reporters at the Chicago Daily Tribune: "No greater crime against civilization can *be committed than the action of bicycle* clubs to hold meets, parades, races, and other sports on Sunday. It is a question of health and civic virtue. For to trample upon the religious use of Sunday as a day of rest and worship is to poison the lifeblood of our American civilization." One would imagine that when he questioned the "health" of cycling, Rev. Beaton was referring to spiritual health rather than physical health. Sermons against the evils of cycling came from small rural parishes and from some of the most notable religious figures of the day. The famed evangelist, Dwight Moody, railed against the bicycle in many of his sermons. Moody had come to Chicago in 1856 as a shoe salesman. From 1865 to 1860 he was president of the Chicago YMCA. In the latter years of the 19th century Moody became

one of America's foremost evangelists as he popularized urban revivalism. He went on to found the Northfield Schools (Massachusetts), Chicago's Moody Bible Institute, and the Moody Press. Moody was one of many who saw the bicycle as a threat to good Christians everywhere:

I don't believe any one can see the vast throng of young men in our cities — and I am sorry to say, bad women, too — on their bicycles going off into the country and fields and woods to spend the Sabbath, and trampling the law of God into the dust, filling their pockets with Sunday newspapers — and these are their bibles — it wouldn't have been tolerated a few years ago!

It is tempting to write off these sorts of sermons as over-reaction or just an extension of the traditional fire and brimstone sermon designed to keep parishioners on the straight and narrow Christian path. However, an observation from another one of Moody's sermons indicates that the threat from the bicycle was quite real. In this sermon Moody recounts how he was recently in Brooklyn and noticed a bicycle club starting a Sunday morning "run" directly across from the church where he was about to preach. He notes:

"It wasn't the scum of Brooklyn that were there, but some of the leading young men. And in that church where I preached there hardly seemed to be twenty-five young men."

In many Midwest and New England urban cities, cycling's impact on church attendance was a well-known fact. [Figure 2]

Some of the more progressive clergy saw no problem between the church and the wheel which led to deep divisions within parishes. On more than a few occasions, clergy who promoted cycling were pressured to leave or were officially reprimanded. In 1894, the Rev. F. M. Johnson of the Swedish Congregational Church in Rockford, Illinois, had taken up cycling. Conservative members of his congregation thought this behavior unbecoming of a minister and called for his dismissal. In such cases, the bicycle question often exposed a divide between more conservative rural areas and larger urban cities which tended to be more progressive. The Chicago Daily Tribune caught wind of this squabble and noted "If Pastor Johnson occupied a Chicago pulpit, he could hump himself over a wheel to his heart's content, for none of the clergymen or people of his nationality [here] appear to think

that the gates of heaven are closed to all except pedestrians." Reporters from the Sandusky Register (Ohio) were even more blunt in their assessment of the case, writing that "Probably the disgruntled prefer that he should ride the foal of an ass."

A few years later Rev. J.A. Rondthaler of Indianapolis found himself in a similar situation. Rev. Rondthaler had not only embraced cycling himself, but he also took the additional bold step of forming a cycling group called Rondthaler's Angels which consisted of many of his church's younger members. Older members of his congregation objected to this frivolous behavior and formally censured their preacher. Again, Chicago, which was a major center of the bicycle boom, took note of Rondthaler's troubles and offered him a position at the more progressive Fullerton Avenue Presbyterian Church. After some delay and debate, Rondthaler ended up accepting the new position in Chicago.

Clergy were not the only part of American religious institutions that were taking sides on the bicycle question. Christian organizations waged their own battles for and against the wheel. The Epworth League was a large Methodist young adult organization. During the height of the bicycle craze' 700 members of the Epworth League swore this oath: "I promise that I will not ride my wheel on the Sabbath, only as it will honor my Master, and as I believe he would like to have me do. I also promise to exert all possible influence to discourage others in the use of the Sunday wheel." Another Christian organization, the Boston Woman's Rescue League, made what is perhaps the most outlandish claims against cycling. The League circulated a pamphlet outlining their many objections to cycling:

"A great curse has been inflicted upon the people of this country because of the present bicycle craze, and if a halt is not called soon 75 per cent of the cyclists will be an army of invalids within the next ten years. Bicycling by young women has helped more than any other medium to swell the ranks of reckless girls, who finally drift into the army of outcast women of the United States. 'Bicycle run for Christ,' by so-called Christians, should be properly termed 'Bicycle run for Satan,' for the bicycle is the devil's advance agent, morally and physically, in thousands of instances."

In a time when suffragists and women's rights activists were celebrating the bicycle as aiding in the liberation of women, the Woman's Rescue League claims that bicycling led women into prostitution was met with derision in the press. The Times Herald (Chicago) published this rebuttal: "A woman who will violate the decencies and proprieties of life while wheeling will violate them upon other occasions when the opportunity is offered. Where one woman rides to destruction on the wheel a thousand ride to good health and maintain all the decorum, modesty, and circumspection that characterize the wellbred, self-respecting women from the ideal American homes." The Tribune (New York) published an even stronger (and surprisingly progressive) response to the League's claims about the bicycle:

To say that the use of the bicycle by women of any age is a prolific cause of disease is flatly to contradict the all but unanimous opinion of intelligent physicians as well as the results of experience. We trust we may be pardoned for accepting the judgment of the medical profession rather than that of the Woman's Rescue League. To say that a practise which takes women into the open air and into communion with nature, which develops their muscles, strengthens their nerves, gives them truer poise of mind and body, and teaches them self-help and self-reliance, is transforming them into physical wrecks and moral lepers is an affront to common sense which would be more amusing if it were less revolting.

It is clear that during the 1890's the role of the bicycle in American society was rapidly evolving. The bicycle craze challenged a variety of social and religious norms. Although churches were primarily concerned about how the bicycle was impacting church attendance, and how riding on the Sabath affected cyclists, these were not the church's only concerns about cycling. Church leaders and Christian organizations also claimed that the bicycle led to alcoholism.

The Bicycle and the Temperance Movement

Alcoholism had always been a problem in American society, but during the nineteenth century drinks with high concentrations of alcohol - like rum and whiskey - became readily available. As a result, alcoholism became an even greater national problem that strained the moral fabric of society. Alcoholism led to high rates of spousal abuse, family neglect, health problems, and chronic unemployment. Churches and religious organizations be-

came leading temperance advocates. The Catholic Total Abstinence Union of America was founded in 1872 and followed two years later by the Woman's Christian Temperance Union (WCTU). By the 1920s, the WCTU was an influential international organization with nearly eight hundred thousand members in 40 countries. The WCTU along with the Anti-Saloon League (1893) succeeded in getting the 18th Amendment to the U.S. Constitution passed. This law banned the manufacture, transportation and sale of intoxicating liquors, and it led to the period of American history from 1920-1933 known as Prohibition.

Even for the most adamant preachers and teetotalers, connecting the cycling craze with increased alcoholism was something of a stretch. Still, there were those that argued that in addition to facing eternal damnation from desecrating the Sabbath, cycling also led to drunkenness. In New York's Calvary Baptist Church Rev. Frank Rogers Morse declared: "drinking is nowadays one of the adjuncts of the bicycle. Will not the wheel lead many a young man and young woman into this vicious and destructive *habit?*" There may have been a kernel of truth to some of these accusations. It was true that a common practice among wheelmen was to ride to some distant country inn or tavern, enjoy a meal and possibly a few drinks and then return home. Cyclists may not have all been strict teetotalers, but one can imagine that balancing a bicycle after more than a drink or two would have been difficult and downright dangerous. Churches also claimed that young people who had access to bicycles could easily evade supervision and get themselves into a variety of troubles; of which drinking was just one. Of course, where some saw damnation, others saw entrepreneurial opportunities. In 1895, Thomas Jerkins of Indianapolis found a creative way around Indiana's Nicholson Law which essentially allowed any voter to stall approval of a liquor license for up to two years. Jerkins made special coats and slacks with many hidden pockets to hold flasks of whiskey. He then took to his bicycle to sell his wares to other cyclists and pedestrians. His bootlegging operations were put to an end when

he was arrested by local authorities.

A few outliers like Jerkins aside, the bicycle was generally embraced by temperance reformers. The Rev. J.W. Fifield put it succinctly when he told the *Chicago Tribune: "The bicycle has a moral glory. It is emptying the billiard*



became a leading progressive reformer, best known for being one of the founders (and longtime president) of the large and influential Women's Christian Temperance Union (1874). Willard came to cycling later in life, first learning to ride at age 53 during the beginning of the bicycle boom

(1892). She was so struck by the experience of learning to ride that she wrote a book about it: A Wheel within a Wheel: How I Learned to Ride the Bicycle, with Some Reflections by the Way. Willard describes learning to ride for health benefits but also because she strongly associated cycling with the advancement of the temperance movement. Once when she was asked about the possibility that cycling led to consumption of alcohol she responded, "Oh fol*ly!* In Chicago there is nothing so hated by the saloon keeper, the cigarette dealer, and the proprietor of the low theater as the bicycle. They say the people are all scurrying for the parks." For Willard, the bicycle was "the

Figure 3: American Temperance Life Insurance Association of New York advertisement to clergy. (Homiletic Review, vol. 30, 1895: 182)

halls and saloons and filling the country roads. It has one great virtue- a drunken man cannot ride it. Had the devil tried to invent his own gallows he could have done no better than to have made the bicycle." The bicycle craze was attributed with a reduction in profits not only for vices such as alcohol and tobacco consumption, but also proper Victorian pursuits such as attending the theater or purchasing a piano. In 1897, the Commissioner of Internal Revenue noted that in the previous year whiskey consumption was down by 6 million barrels and beer down by nearly 1.5 million barrels. A nationwide economic depression certainly accounted for some portion of this decrease, but most believed that the bicycle craze also contributed to the decrease. Even the American Temperance Life Insurance Association got into the game by recruiting clergymen as sales agents. In 1895, they offered a free high grade Columbia Bicycle to any clergymen who secured twenty new members. [Figure 3]

Clergymen were not the only ones to recognize the bicycle as a useful tool in forwarding the temperance movement. Frances Willard was born in New York and educated at North Western Female College in Evanston, Illinois. She later greatest agent of temperance reform."

Bicycles and Evangelism

Aiding temperance efforts was only one area where bicycles were strategically used by churches and religious organizations. As safety bicycles grew in popularity during the early 1890's, many churches realized that rather than fight a losing battle to keep people from riding, they should embrace the bicycle to further their evangelism work. Evangelism is a core component of the American Christian tradition and is defined as the spreading of the Christian gospel by public preaching or by giving witness. Bicycles were a boon to evangelists for the same reason they were wildly popular among the urban American middle-class; that is, they were far cheaper to own and operate than horses. One contemporary clergyman estimated the cost of keeping up a carriage and feeding a horse at \$150 per year compared to only \$2.50 per year for the bicycle. His estimate for bicycle maintenance may have been on the low side, but even so the yearly maintenance cost differences between horses and bicycles were massive. The lower cost of bicycles allowed preachers and their parishioners to more easily undertake evangelism efforts - particularly in the

THE REV. MORRILL TWINS AMERICA AND EUROPE.



Figure 4: The Rev. Morrill Twins: singing and riding evangelists. (undated newspaper clipping)

expansive rural areas that were not directly accessible by train or streetcar in the nineteenth century. Some members of a Baptist church in Chicago exhibited admirable resourcefulness in their evangelism efforts when they mounted sails on their bicycles to take advantage of prairie winds. As the Muscular Christianity movement gained in popularity it was easy to make the case for the bicycle as an aid to greater physical fitness and therefore greater capacity to spread the word of God. Writing in The Wheelman prior to the bicycle boom Rev. John Scudder contended, "My firm belief is, that if bicycles were more generally used by American preachers, there would be fewer hollow chests, round shoulders, sensitive stomachs, and torpid livers; These would be superseded by strong muscles, clearer heads, sweeter tempers, [and] less soporific sermons..."

Among the most eccentric of the bicycle-evangelists were the Rev. Morrill Twins of Chicago. [Figure 4] Herbert and Horace Morrill were identical twins committed to a life of Baptist evangelism. Among the twins many schemes was the construction of a "Gospel Ship" building on Chicago's west side. The "ship" was 100 feet long, 25 feet wide, and included 40 porthole windows. It was made of iron and designed to seat 500 people. The twins held many services in the gospel ship and profited nicely to boot. Even more than the gospel ship, the twins were known for their use of the bicycle for evangelism. In 1895, *The Daily Republican* (Monongahela, Pennsylvania) reported that "The Rev. Morrill Twins," the evangelists, probably attract more attention when they go forth on their wheels than any other of Chicago's great army of bicycle riders. Wherever they go on their 'bikes' people line the streets to watch them pass by; wherever they stop is a crowd. It is rather unusual to see two men in silk hats, Prince Albert coats, and looking as much alike as two peas in the pod ... " The twins sometimes rode a tandem bicycle and sometimes matching safety bicycles. In addition to preaching, they would often sing together while riding. The bicycles helped attract people to their street corner sermons and rural revivals. As previously mentioned, riding bicycles also had the fringe benefit of helping to reduce the brothers' travel costs.

In the latter part of the nineteenth century, the Salvation Army was a major Christian evangelistic organization. [Figure 5] The original Salvation Army was founded in London by William Booth and focused on evangelism to the poor, the homeless, the hungry, and the destitute. During the 1890's, when some clergy were vehemently opposed to cycling, Booth contended "Prejudice sometimes tells us, 'You never saw Christ on a wheel.' But neither did you hear of him speaking through



Figure 5: These two women cyclists were part of the Salvation Army's bicycle brigades. (From the Cycling Photographica Collection of Lorne Shields, Toronto Canada)

a telephone. The opportunities of today are wide and God-given, and we should be blind indeed if we failed to recognize and seize the greater facilities they give our holy fight." The Salvation Army did indeed "seize the greater facilities" of the bicycle through the formation of multiple different bicycle brigades. In fact, William Booth's daughter, Evangeline, was a leader of the bicycle brigades campaign. The brigades were something of a novelty used to attract people in the same way that the Salvation Army also used brass bands and parades. The bicycle brigades traveled from city to city seeking converts. The use of bicycles substantially lowered the costs of this type of evangelism. The Salvation Army even commissioned its' own line of bicycles (including both men's and women's models) that were sold at reduced rates to Salvation Army members. Clearly it was becoming commonplace for many churches and religious organizations to use bicycles as tools for evangelistic work. Noting this phenomena, the Chicago Daily Tribune reported that "Many local ministers...think it would be a good stroke of policy for the church to divert some of the missionary funds from the old-time channels and subsidize a cycle factory or two that the conventional prices may be cut and people get wheels as reasonably as they now can get New Testaments and prayer books." Other than some subsidized bicycles such as those sold to Salvation Army members, this particular scheme was never brought to fruition.

During this same time period, another major religious organization, the Young Men's Christian Association (YMCA), was also undergoing tremendous growth in the United States. The YMCA exemplified the Muscular Christianity ethos with its emphasis on developing a healthy body, mind, and spirit (even today these are the three points of the YMCA triangle). During the bicycle boom, various YMCA's formed bicycle clubs and offered bicycle storage to their residents. In 1892, the YMCA Chicago Central offered indoor storage for more than four hundred bicycles for their dormitory residents. The Marshalltown, Iowa, YMCA even allowed 15 women to be part of its bicycle club.

In the years before motorcycles and automobiles, the bicycle was an ideal tool for evangelism. Not only did it reduce travel costs and extend the range of evangelists, but bicycles also had the added benefit of strengthening the body in the process. For adherents of Muscular Christianity there was no question about the morality of cycling, provided one rode in moderation and attended Sunday services.

Good Roads

As bicycles gained in popularity in the United States, so did the Good Roads Movement. First discussed among cyclists in the 1870s, the Good Roads Movement really took off during the 1890s as one of the main initiatives of the League of American Wheelmen (L.A.W.). The primary goal of the Good Roads Movement was improving roads in the U.S. At first glance, linking religious institutions to the Good Roads Movement seems like another stretch of the imagination. There were certainly plenty of economic and social arguments for better roads, but religious arguments? Unsurprisingly, the church's support of Good Roads again resided in a greater ability to spread Christianity (particularly to rural areas). In 1892, the New Catholic World wrote an editorial pointing out "Good roads are good civilizers, because they facilitate the intermingling of the people, and the consequent interchange of ideas. Moreover, good roads are



VE HAVE PLENTY OF SCRIPTURAL JUSTIFICATION IN DEFENSE OF THE BICYCLE." Page 70.

Figure 6: "We have plenty of scriptural justification in defense of the bicycle." (Brown, H.E. Betsy Jane on Two Wheels: A Tale of the Bicycle Craze. (Chicago, 1895): 70

an aid to religious advancement, enabling people to attend religious services with greater facility." The L.A.W. even strategically chose to co-opt the language of the preacher when it created and printed 20,000 free copies of *The Gospel of Good Roads: A Letter to the American Farmer* (1891). This "gospel" was meant to convince farmers that good roads were in their best economic interests. From temperance to evangelism to Good Roads, religious attitudes towards the bicycle were rapidly evolving.

The Church and the Wheel

As the nineteenth century came to a close bicycling had become commonplace in American culture. The tidal wave of cyclists that had swept the country forced the resolution of debates about the religious propriety of cycling. Churches could not continue to condemn an activity that so many of their upstanding members participated in. In addition to using bicycles for evangelism, some clergy argued in favor of embracing cycling to bring more people to the church. [Figure 6] In 1894 the Rev. John Scudder put it this way:

If men and women will ride on Sunday why not invite them to ride to church and provide a place for their machines? Why

not allow them to stack their wheels in the lecture room or build a shed for bicycles as the country church provides a shelter for horses and carriages? People living at a distance might thus be induced to come to church who otherwise would certainly stay away. Surely riding a bicycle to church is not a sin. It is a saintly procedure compared with riding on horse cars and elevated railroad trains for these forms of travel necessitate the labour of drivers, conductors and brakemen and prevent their attending divine service.

Scudder's characterization of cycling as a "saintly procedure" falls on the opposite end of the religious spectrum from clergy who saw the bicycle as the work of the devil. Scudder's argument that cycling on Sunday is preferable to riding horse cars or elevated trains because those modes of transportation require drivers and operators to miss church services is a compelling Christian moral argument in favor of the bicycle. It is not clear if Rev. Scudder enacted the bicycle-friendly reforms that he mentioned, but other clergy certainly did.

The Rev. Jenkin Lloyd Jones was a Unitarian minister who founded the All Souls Church on Chicago's South side. [Figure 7] As a historical note, the Rev. Jones was also the uncle of Frank Lloyd Wright. His ideas about religious architecture heavily influenced his young nephew. Among Rev. Jones' many progressive religious reforms was his advocacy for the bicycle. In 1896, the Rev. Jones garnered headlines in the Chicago Daily Tribune for encouraging cyclists to ride to services at All Souls Church. Not only did Jones encourage cyclists to ride to his church, but he also provided valet bicycle parking in the church basement. Reporting on these events the Chicago Daily Tribune wrote:

The bicycle is every man's carriage. An ever increasing number of people are bringing it into their personal service. Its attractions are many. It undoubtedly will come into competition with the church services on Sunday. From this time on, if it is 'the church or the wheel' one needs no prophetic eye to see which will win in thousands of lives. All Souls' Church, Chicago would fain avert the conflict by saying 'the church and the wheel.'

Conclusion

By the end of the 19th century the bicycle boom had come crashing down. By this time though, most clergy had come to agree with Rev. Jones that the church should welcome - or at the very least tolerate - cyclists. In a classic case of "what goes around, comes around," the invention of motorcycles, and then automobiles, briefly ignited similar debates about their role in religious life. In 1904, the Rev. E.W. Taylor wrote an article in the Motor-Car Journal entitled, "Are Motor-Bicycles Desirable for Clergymen?" In this article, Taylor makes much the same case for the motor bicycle for evangelism and parish outreach that his predecessors made for the bicycle:

During the last two years a motor-bicycle has been doing service, and the writer is frank so say that with it he can cover a much larger district, reach more people, and do it quicker and easier than is possible with the bicycle...I find that about three calls can be made with the motor-cycle to one in the ordinary way. This means that with the motor-bicycle a much larger flock can be shepherded, and that more effectually, than would otherwise be possible. Here, then, we can identify one of the broader themes illustrated by the church's debates over the bicycle during the 1890's. The real threat to the Church's power and control wasn't



Figure 7: Headline from the Chicago Daily Tribune, Apr. 16, 1896.

bicycles per se, but rather, technological progress in general. Recall that prior to the European Scientific Revolution of the sixteenth and seventeenth centuries the Church exerted an extraordinary level of control over the average person's daily life. The Scientific Revolution had eroded a great deal of this control. In nineteenth century America, the Industrial Revolution was in full swing. Corporations and profits were kings, churches were antiquated. Bicycles were yet another technological challenge to church authority. The church controlled courtship practices and marriage, but the bicycle undermined that control by allowing young people independence of movement. Attending services on the Sabbath was a cornerstone of being a good Christian, yet many chose the bicycle over the church pew. In historical terms, the debate over the bicycle was rather short-lived, but it would be supplanted by a long string of technological developments that the church had to contend with including the automobile, radio, television, and the internet. Like the

bicycle, the television was initially met with distrust by the church, but it wouldn't take many years for televangelists to become commonplace.

One of the positive outcomes of the Industrial Revolution was that Americans began to have true leisure time as opposed to continually working just to survive. The Church had to contend with a variety of entertainments and products that were vying for this new-found leisure time. Therefore the bicycle's role in the development and furthering of the Muscular Christianity movement is another important outcome of the religious debates over cycling in the 1890's. This movement began in the 1860's but really began to play an important role in American Christian churches during and directly after the boom. Muscular Christianity adherents embraced cycling wholeheartedly as a means of strengthening the body and mind in order to do God's work. Muscular Christianity has continued to be an important element of American Christianity. Nineteenth century organizations such as the YMCA continue to thrive today while promoting a form of Muscular Christianity. Likewise, the Fellowship of Christian Athletes (founded in 1954) also utilizes sports for evangelism purposes. They follow a model quite similar to that developed by evangelists who used cycling to promote Christianity. Still, debates over the role of sports in Christian life are far from universally resolved. For example, Apostolic Christian interpretations of the Bible have led that denomination to ban adult members from participating in - or even attending - sporting events. This ban even extends to attending their own children's sporting events. In his 2004 autobiography, former Apostolic Christian, Tom Speicher, recalled how his brother's work as a volunteer youth football coach caused deep divisions within their church. When his brother was nominated to be a Sunday school teacher, conservative members of the parish strongly objected to this appointment. It would appear that more than one hundred years after bicycling divided congregations, some of the same tensions between religion and sport still persist.

Charles Palmer and the New Rapid

By Christian Wignall, San Francisco, California, USA

n 2008 I bought a New Rapid ordinary. I knew almost nothing about old bicycles, but quickly learned that a number of New Rapids survived on both sides of the Atlantic. The badge on the backbone declared that it had been made by St. George's Engineering Company of Birmingham, England. As luck would have it, a reproduction of the 1888 catalogue of New Rapids was readily available and therein was my bicycle, the Light Roadster, in all its glory.1 The catalogue revealed that the St. George's Engineering Company was owned by Charles Palmer, and it promoted two distinctive features of New Rapid ordinary bicycles: the True Tangent wheel and the Palmer handlebar. This whetted my appetite, and I set off to find out more about Palmer and his bicycle. The tale I unraveled revealed a man who was a remarkable athlete, innovator. entrepreneur, businessman, public citizen, and philanthropist. Moreover, the life and times of Charles Palmer highlight some of the seminal moments in the development of cycling as a sport and an industry.

The Early Career of Charles Palmer

Charles Andrew Edward Talbot Palmer [Figure 1] was born in 1859, to Thomas and Martha Palmer. The name Talbot comes from his mother's side of the family, the Talbots apparently being a well known family in Birmingham at that time. He had at least three siblings, an elder brother, John Henry, an elder sister, Elizabeth Mary - and another sister, Evangeline Martha (who remained a spinster and outlived them all.)

Charles' father, Thomas Palmer, was a machinist who - like so many small-scale businessmen in Birmingham - turned his hand to whatever was in demand at the time. Thomas Palmer had plunged into the velocipede business in 1868. "By the way, I think I saw the first bicycle brought into England", Charles Palmer recalled later. His father had been given an order to make 500 copies of the original brought over from Paris, by a foreign (French?)

buyer. "A bad 'spec' it turned out, as they got very little money from the foreigners who owed it."

Charles' elder brother, John Henry, was one of the very earliest velocipede racers, riding to victory at a championship race in Paris in 1870 and coming second in Aston the following year. These 500 bicycles were the only bicycles Thomas Palmer made in that early period. The gun trade in 'Brum' got brisk shortly afterwards, in consequence of the Franco-Prussian war, and 'boneshaker' making discontinued.² In 1870 Palmer Brothers was listed in Hulley's Birmingham Directory only as sewing machine and breech-loading gun-action makers. Although Thomas Palmer of 21 Victoria Road, Aston, was still listed as a maker of breech-loading gun-actions in 1878, in that year he decided to resume the production of bicycles. Wire-spoked wheels and better cheaper steel had transformed the clumsy boneshaker into a more rideable machine, bringing about a revival in demand.

Palmer and Son, as the business became in 1879, touted the fact that their bicycles were produced on the 'Interchangeable System'. In other words, parts were machined with such precision that they did not require custom finishing to ensure they fitted together. Broken or worn out components could be readily replaced by standard parts ordered directly from the manufacturer.

Thomas Palmer's younger son, Charles, left school at the age of sixteen and was apprenticed into the jewellery trade. Two years later (1877 or 1878) he followed his elder brother, John, into the employment of the National Arms Ammunition Company, but this was not where his enthusiasm lay. Charles was a keen sportsman, excelling in swimming and football before he took up the new sport of cycle racing in 1878. He first cropped up as a champion cyclist in July 1878 when he was 19 years old.

Two years later, he became the centre of a bitter controversy which gives us an in-



Figure 1: Charles Palmer (courtesy of Hand-sworth Golf Club)

sight into the status of competitive cycling in England when it was still struggling to gain a measure of respect and autonomy from traditional sports associations.

On June 5th, 1880, a cold, windy and drizzly day, C.A.Palmer took part in a one mile handicap cycle race at Aston. According to The Cyclist magazine, after shooting into the lead, Palmer mysteriously eased up and let rival Vaughton win by a couple of yards. Although Palmer raced "tooth and nail" against R. Baugh in the subsequent three mile race (but neither man managed to overtake the overall winner, Vaughton), he "was greeted with hisses and groans on all sides in condemnation of his performance in the mile." When he was hauled up before the committee of the Midlands Counties Amateur Athletic Association (the MCAAA) and asked to account for himself, Palmer explained that "he had been ill for some weeks and being out of training was suddenly run to a standstill." Although neither he nor anyone on his behalf had placed bets on the outcome of the race, the MCAAA suspended Palmer for three months, noting that it had been asserted that, prior to "roping" the finish, Palmer had deliberately called upon his competitor to "come on".

The Moseley Harriers Sports Association, who had hosted the racing event at which Palmer supposedly misbehaved, asked him to leave the club. Although the initial report by *The Cyclist* had been skeptical in tone, the journal now swung firmly in Palmer's favour. "We feel the MCAAA have placed themselves in an absurd position, and they have Mr. Palmer in an unjust one... No sensible person would ever believe that if any rider really wanted to 'rope' he would be such a simpleton as to do it by a sudden stoppage a few yards from the post." The Cyclist reported that the Charles Palmer suspension was 'the talk of the Midlands'.

Cycling clubs affiliated with the MCAAA took matters into their own hands and passed resolutions ignoring the suspension. Foremost among them was the Birmingham Cricket and Football Club since Charles Palmer was its Honorable Secretary - and he competed under its name in cycle races a few weeks later. The North Warwickshire Bicycle Club and the Speedwell Bicycle Club also took Palmer's side. The Cyclist was now in full cry, eager to excite a full scale rebellion, calling upon all the bicycle clubs who belonged to the MCAAA to withdraw their names and give their adherence to the Bicycle Union. 'Every man in the Union is a practical rider'. It was risible that cyclists' issues should be adjudicated by committees of cricketers and footballers. Cycling as a sport was coming of age.

Charles Palmer continued to be a champion bicycle racer for the following two years, winning many trophies including the Speedwell Cup and the North of England Championship Cup. Perhaps his most memorable triumph came in 1882 when in April he fought J.F.Griffith of the London Bicycle Club to a dead heat for first place in a fiercely exciting ten mile race. At a specially arranged play-off which took place in June, Palmer romped home with a clear win and thus became that year's winner of the Surrey Challenge Cup. By beating the "safe" (meaning 'certain') winner from London, Palmer earned himself the moniker as the "safer" man. Perhaps because he suffered injuries from some cycling mishap in that year, he gave up competitive cycling, but he was to be a keen sportsman for the rest of his life.

Charles Palmer does not appear to have had a straightforward relationship with his father's company. At the end of 1880 at the age of 22 he was attached for four years to William Andrews, one of the most notable cycle firms in Birmingham and makers of the Sanspareil.³ Indeed, at least part of the time he raced on a Sanspareil machine, and they proudly advertised the fact. He was still at Andrews at the beginning of February 1883, showing off the Andrews patented detachable handlebar at the Stanley Show,⁴ but here the record becomes confusing, because Charles also crops up briefly as manager of his father's cycle business in 1883-4.⁵

Perhaps his father became ill or died in 1883? Then perhaps Charles was given leave by Andrews to return to the family firm to sort out its future.⁶ Very tentatively we may suppose that he engineered the absorption of his father's struggling business into Andrews in July 1884. Thereafter he felt free to seize an opportunity at the St. George's Foundry appears to have been ceded to the mortgagee, John Cornforth.8 When Newton Wilson emerged from bankruptcy in 1880 he continued to market sewing machines which were made at St. George's and he was also selling "A.B.C" or "Acme Bicycle Company" machines, emphasizing their high quality ball bearings - presumably also made at the St. George's Foundry. In the 1880s, Newton Wilson gradually withdrew from business, closing down his London showroom at 144 High Holborn at the end of 1882 and moving to other premises. The A.B.C. name disappeared, but St George's Foundry (still owned by John Cornforth)9 continued to make cycles and continued to



Figure 2: Woodcut of the St. George's Foundry from a Newton Wilson sewing machine catalogue of about 1882-1884 (from Dincum.com)

St. George's Foundry at 52 Pope Street, Birmingham, of being a bigger fish in a bigger pond.

St. George's Engineering Company

The St. George's Foundry had been established back in 1847. **[Figure 2]** In 1866, William Newton Wilson, the sewing machine pioneer, took over the foundry to make sewing machines, but then was quick to cash in on the craze for velocipedes at the end of the decade. He loved publicity stunts so in July 1869 Mr. R.J. Klamroth from the firm of Newton Wilson attracted a lot of press coverage by riding over 400 miles from London to Edinburgh on a velocipede, sustaining himself along the way with enormous breakfasts and liberal amounts of sherry.⁷

Newton Wilson, a rather erratic businessman, went bankrupt in 1877 and the trumpet the quality of its bearings.

The new name St. Georges Foundry chose for their products was Rapid. It is clear that it is the bearing which is called Rapid, whence the cycles derive their name. They produced various types of tricycle, which gained some favorable comments, but their Rapid ordinaries were well respected but not outstanding. Henry Hewitt Griffin's 1882 annual review of bicycles devotes most attention to the design of the bearings and is not enthusiastic about any of the other features. St. George's produced three classes of ordinary: the cheapest (Class 1) sold for £15; the best (Class 3) sold for £24. They continued to offer these same cycles with minor improvements until the 1884 season. So when Charles Palmer joined the company as foreman of the cycle department on September 1st 1884, St George's

was already a long established sewing machine and bicycle maker, albeit not a very innovative or successful one.

Under Charles' leadership, the foundry was re-named St. George's Engineering Company and the cycles were re-launched



Figure 3: The extremely rigid New Rapid True Tangent wheel which won a gold medal at the International Inventions Exhibition in 1885.

as the New Rapids at the beginning of 1885 at the Stanley Show. The bicycles won enthusiastic reviews on account of their True Tangent wheels. [Figure 3] Unlike radial spokes, tangential spokes effectively transmit the torque from the axle to the rim. The innovation was not new: J.K. Starley had beaten them to the punch with a patent some time earlier, but the New Rapid wheels were immensely strong and uncompromising. The spokes weren't merely crossed; they followed the rigorous dictates of true tangents, crossing no fewer than seven other spokes from flange to rim and being tied at the sixth and seventh crossings. The new wheels were exhibited at the Stanley show, the Speedwell exhibition in Birmingham and, later in the year, at the International Inventions Exhibition at the Crystal Palace in London, where they won a gold medal. (There were 88 exhibitors of innovations in the cycle industry, reflecting its status as the high technology growth industry of the day.)

Another innovation introduced on the New Rapid was the Palmer detachable handlebar. **[Figure 4]** The bar could be removed from the bicycle quickly and easily by the removal of two pins, facilitating repair and replacement. Though probably standard for the U.S. market (because it enabled more compact packaging for export), the 'Patent Detachable Handle Bar' was initially offered only as an option in Britain for an additional five shillings, but in 1887 it became a standard feature. (There are at least two New Rapid ordinaries surviving which are without Palmer heads, one of which, #2324, is the earliest New Rapid surviving.)

Although universally admired, the New Rapids were in truth the last late flowering of the art of the ordinary. At the very same Stanley show in 1885, Starley introduced the Rover safety bicycle which was soon to make all further refinement of the high wheeled bicycle irrelevant. Nevertheless, the New Rapid was to enjoy several years of tremendous popularity.

But they did not go unchallenged. There is a curious and acrimonious correspondence in the pages of the Cyclists' Touring Club Monthly Gazette, triggered in April 1886 by an anonymous Liverpudlian who enumerated several flaws in the New Rapid he had acquired in August 1885. Only a minor sideways fall, he said, had caused a "grand collapse" buckling the wheel because of defects in its manufacture. This was a direct blow at the main selling point of the New Rapid - its immensely strong wheel. Charles Palmer wrote an impassioned response speculating that the writer was motivated by professional rivalry. The Liverpudlian retorted that his motives were pure. Meanwhile another correspondent wrote in to criticize the 'Diana' tricycle - also produced by St George's. Palmer disowned the tricycle: it was, he said, produced before he took over responsibility at the works. They had ceased all production of tricycles when he took over in order to devote all their resources to



Figure 4: Palmer's detachable handlebar. Note the patent date (August 1884) is prior to his joining St.George's.



Figure 5: A New Rapid Roadster photographed for the U.S. market. (from the collection of Lorne Shields, Toronto, Canada)

fulfilling the rush of orders for New Rapid ordinaries.

The Liverpudlian slanderer was tracked down and taken to court. John Cornforth, owner of St George's Engineering was the plaintiff. Legal counsel was retained on both sides and expert witnesses came down from Liverpool in February 1887. The defendant, Mr Hughes, backed off, apologized for relaying hearsay and Cornforth magnanimously declared he sought no financial redress, merely to clear the name and reputation of St George's. The deputation from Liverpool were then treated to a tour of the Pope Street works by Palmer to general satisfaction.

Perhaps the earliest New Rapid ordinaries did indeed have teething troubles: the Liverpudlian would have been in receipt of one of the earliest of the new models. In 1886 the company changed from using Warwick hollow rims rolled from thin sheet steel to hollow rims made with thicker steel on the inner (axle-facing) surface. In addition, the later bicycles appear to have more robust heads. Whatever the truth of the matter, the C.T.C. Gazette decided to do its own road test report, which appeared in the July 1886 issue. The machine received a glowing review: "The Wheel is as rigid as a rock, and it runs with minimum labour. As a hill-climber it must necessarily rank second to none..." They tested the quality and hardness of the parts the Liverpudlian had criticized and found them fully satisfactory- "...we believe the machine to be one of the best upon the market." [Figure 5]

The C.T.C. Gazette drew attention to the fact that "the present makers of the "Rapid", although the successors of, are by no means identical with, the St George's Foundry Co., a firm whose cycles a few seasons since were alleged to give but qualified satisfaction in several instances that came under our notice. The St. George's Engineering Co. is practically a new firm, and the master mind that presides over the mechanical detail is that of Mr C.A. Palmer..." He was 27 years old and already a star. On September 19th 1886 the dashing young 'master mind' married the petite 23 year old Miss Aida Pountney at Trinity Church, Handsworth, near Birmingham.¹⁰

Exporting to America

Samuel Clark [Figure 6] of Baltimore, Maryland (a founder member of the League of American Wheelmen and an importer of bicycles since 1879), had been the U.S. agent for Palmer's former employer, W. Andrews. When he heard that the New Rapid had won the Gold Medal at the Inventions Exhibition in 1885, he came over to England and struck a deal with Palmer to become the exclusive agent



Figure 6: Samuel T. Clark, sole U.S. agent for New Rapid. When Palmer moved from W. Andrews to St. George's Engineering, Clark moved his allegiance as well.

for the new bicycles.¹¹ He held a sale to unload his inventory of Sanspareil and Coventry Machinist cycles and by the late spring of 1886 was aggressively promoting the New Rapid and recruiting distributors around the United States. He took an initial consignment of 250 bicycles from Charles Palmer and thenceforth represented only New Rapid bicycles and Quadrant tricycles.

A few catalogues from Samuel T. Clark & Co. survive. The 1887 catalogue offered

the New Rapid Roadster, the New Rapid Light Roadster, the New Rapid Racer and the New Rapid Safety. The Light Roadster had been developed the previous year and was about four pounds lighter than the Roadster (36 lbs versus 40 lbs for the 50 inch), deploying a slightly narrower backbone and forks, and main bearing cases welded directly into the bottom of the forks rather than attached with a knuckle joint. The catalogue asserted that the New Rapid bicycles were made stronger for the American market to cope with the rougher roads. The safety was a 'Rover' type safety, not the Kangaroo-style hybrid which St George's had offered earlier in England.

Because of their more complicated design, safeties were initially more expensive than ordinaries, but the gap narrowed rapidly, and in 1887 St George's began offering their first Rover-style safety in the U.S. market for \$135 –the same price as their mid-range ordinaries. A review of their safety in *The Cyclist* on February 1st, 1888 puts the weight at a chunky 52 lbs - still much heavier than an ordinary at that date.

Demand for New Rapids was strong so on Tuesday and Wednesday, 13th and 14th September 1887, the company held an auction to dispose of all their sewing machine manufacturing equipment, the tools, patterns, patents, and inventory, to make room for the expansion of their bicycle facilities.¹² The following year Charles Palmer bought St. George's Engineering Co. from John Cornforth.¹³

The 1888 catalogue of their US distributor, which had become The Clark Cycle Co., was offering both the New Rapid Roadster and the New Rapid Light Roadster for \$130 for a 50 inch model in enamel - a reduction of \$5 from the previous year. It was still offering the ordinaries in its 1890 catalogue but had cut the prices again by \$5: it was very close to the end of the road for these bikes.

Prices had always been lower in England.¹⁴ The 1890 British catalogue priced its Roadsters at £18 each (the equivalent of just \$87), but as a last desperate effort to sustain demand they also offered a 'special' at the knock down price of £13 without (quelle horreur!) the True Tangent wheel, and solid rather than hollow rims. Together with longer saddles, the rear wheels of the roadster and light roadster were increased from 18 inches to 20 inches, a belated move to shift the center of gravity back and give the ordinaries a slightly safer and smoother ride. In 1891 the ordinaries were offered with little comment or exposition, the bulk of the catalogue being devoted to lengthy and somewhat defensive explanations of the various features of their five different models of safety bicycles and the pros and cons of cushion versus pneumatic tyres. Although still more expensive than the ordinaries, their No.3 (£20) and No.5 (£23) safeties adopted the diamond frame and their weights were down to less than 39 lbs. Pneumatic tyres were offered for £5 extra. Having been pre-eminent in ordinaries, they were me-too in safeties.

They continued to make a fuss about their True Tangent wheel, noting a further improvement which was to use perfectly straight spokes attached to nipples which were inserted in holes in the flanges of the hub. This eliminated the weak point where a conventional spoke was bent to attach it at the hub. Originally patented by Palmer in December 1885, this more expensive system of spoking a wheel does not seem to have been deployed on ordinaries, but it was used on the rear wheels of some of the solid-tyred safeties.

The stock market boom of the 1890s

Production of ordinaries had almost certainly ceased when, on 1st October 1893, the business of St. George's Engineering was reorganized into a limited liability company prior to an offer of stock to the public in April 1894. The prospectus for the issue reveals that the business achieved profits of £9,054/0/9 in the fiscal year ending September 30, 1891, £8,584/0/7 in fiscal 1892 and £10,335/4/4 in fiscal 1893. The company was to have total capital of £60,000 consisting of £40,000 in ordinary shares and £20,000 of debentures (bonds). The company was probably producing at least 7,000 cycles per year by 1894.

Charles Palmer retained one third of the stock and subscribed to half the issue of debentures. He undertook to remain the chief executive for five years and to hold his stock and debentures for that period. But his business interests had already extended well beyond St George's Engineering: he had become the chairman of Hudson & Company Limited, 'tube and bicycle manufacturer of Selly Oak and Bournbrook' in 1892, and shortly thereafter the chairman of the R.F.Hall Manufacturing Company, manufacturer of cycle components and accessories. In 1894 both companies were absorbed into the newly formed Cycle Components Manufacturing Company Limited.¹⁵

Of course, cycle components were lucrative, but they were dwarfed by the opportunities in pneumatic tyres.

John Boyd Dunlop's (re)invention took the cycling world by storm in May1889, when a safety cycle equipped with pneumatic tyres defeated two of the famous du Cros brothers on ordinaries in a cycle race at the North of Ireland Sports Club in Belfast. Their father, Harvey du Cros, turned the setback into an opportunity, enlisting Dunlop in an enterprise to exploit the invention, 'The Pneumatic Tyre and Booth's Cycle Agency Limited'.

The new firm had barely been incorporated in December of that year when C.A. Palmer arrived on the doorstep eager to do business. Palmer, as proprietor of St. George's Engineering, partnered with M.D. Rucker of the Humber company to lead a group of the most powerful cycle makers to secure a license for supplying and fixing pneumatic tyres from du Cros's newly formed company. In those early days the method of attaching the tyre to the rim and the puncture repair technique were still in flux, and it was envisaged that such activities would be a lucrative business requiring specialized professional expertise and equipment. The initial reaction from the directors of the Pneumatic Tyre etc. company was favourable, but the consortium was too greedy, proposing that licenses be granted to only four companies at a royalty of 9d per wheel. The board reconsidered their position and on December 27th, 1889, resolved "to throw the pneumatic tyre open to the trade." In other words, anybody could have a go at repairing punctures.16 The decision was instrumental in ensuring that Dunlop's pneumatic tyres would quickly become ubiquitous.

Starting with capital of less than £15,000, over the following six years under Harvey du Cros' leadership, the 'Pneumatic Tyre and Booth's Cycle Agency Limited' grew as fast if not faster than any internet technology company a century later. In April1896 it was bought for £3 million by the stock promoter, Ernest Terah Hooley, who promptly stuffed the board with aristocracy and floated it on the London stock exchange as the Dunlop Pneumatic Tyre Company for an astounding £5 million.

Although rebuffed in 1889, Palmer didn't give up. Following disputes with his fellow directors, John Boyd Dunlop quit the board of the original Pneumatic Tyre Company in the spring of 1895. Jealous of the explosive growth of the du Cros' family enterprise, Charles Palmer and others persuaded Dunlop to get back into the fray - and get even - by establishing a competitor. In April 1896 this new consortium bought the Birmingham-based 'India Rubber and Tyre Manufacturing Company' from Capon Heaton, and the



Figure 7: The logo of the New Rapid Cycle Company, which took over the business of St. George's Engineering in 1897.

patents for tubeless pneumatic tyres from Henry Albert Fleuss and James William Smallman. Putting these pieces together, the new business was awkwardly called 'The Tubeless Pneumatic Tire and Capon Heaton, Limited'. Dunlop became the chairman and Palmer a director, and the new entity was floated on the Birmingham and Dublin stock exchanges. Palmer ebulliently demonstrated how punctures became trivially easy to repair on the new Fleuss tubeless tyres when he was interviewed by *Handsworth, A Local Society Magazine* that summer.

But his interests were not limited to business; he was becoming a pillar of the local community:

Although not yet out of his thirty-eighth year, Councillor Charles Andrew Talbot Palmer has won for himself a position in the commercial world which is distinguished even in these days of rapid progress. Thorough-going, eminently practical, quick to see and prompt to act, filled with a laudable ambition and endowed

with robust health, it would indeed have been strange had he not risen above the common level. Whatever his hands have touched has been well done. An enthusiastic sportsman, he was a few years ago famous throughout the length and breadth of the country for his remarkable cycling feats; a manufacturer of the first rank, he is the controlling genius of companies whose names alone are a guarantee of the best work and the best workmanship; a philanthropist, willing and able to assist in charitable enterprises, he is a governor of the General Hospital, the Children's Hospital, Dental Hospital, the Graham Street Dissenting Charity School, and similar institutions.

He was a councillor on Handsworth District Council, a Justice of the Peace and a notable philanthropist. In 1898 he donated a drinking fountain (which still survives) to Victoria Park in Handsworth, and he and his wife hosted events for the local horticultural society. He was admired as a man of phenomenal energy, engaged in so many activities as would exhaust a lesser person.¹⁷

1896 marked the height of the cycle share mania. Having rushed to put together and float The Tubeless Pneumatic Tire and Capon Heaton Ltd, Palmer decided to do the same for St. George's Engineering. But the rather dowdy name would have to go. The business of St. George's was acquired by the newly formed New Rapid Cycle Co. Ltd. [Figure 7] Fellow Handsworth councillor and fellow director of St. George's Engineering, George Henry Capewell Hughes (the founder of St Stephen's Ariel Wheel Works, who was already deputy chairman of The Tubeless Pneumatic Tire and Capon Heaton Ltd.), was invited to become chairman of New Rapid Cycle Co. Ltd, which listed 130,000 shares (one pound par value) on the Birmingham stock exchange in March 1897. The original debentures of the St. George's Engineering Co. were replaced with New Rapid debentures, of which Palmer continued to be the largest subscriber, taking over half the issue.

Charles Palmer was almost too late. The cycle industry in total raised over £17 million in capital in the space of twelve months, triggering an over-expansion of capacity, a glut, and the consequent collapse in profitability. To make matters worse, the export market (mainly the United States) collapsed in the second half of 1897. Less than a year after the flotation,



Figure 8: In 1898 New Rapid cycles were struggling to remain competitive.

the New Rapid Co. warned that business was unlikely to meet expectations for the year. Things deteriorated further and the company reported an operating loss of $\pounds 682$ for the year ending September 1898, and other expenses and a write-down of a bad debt resulted in a total loss to share-holders of $\pounds 14,037$. The company slashed prices by 40% in an attempt to retain market share.

The company was still losing money two years later. [Figure 8] It made a trading loss of 431 pounds and an overall (after debt service etc.) loss of £4,304 in the year ending August 31st, 1900, and the stock price had fallen from the issue price of $\pounds 1$ to a mere 6d by the middle of 1900. The shareholders meeting was mutinous, and after some altercations, Palmer was ready to submit to a reconstruction of the company, offering to convert his holding of £13,000 of debentures into ordinary shares provided "shareholders found the money to pay off the bank overdraft of $\pounds 12,000$." In other words, if he were to do his bit to ensure the survival of the company, the other equity holders ought to chip in some more money to eliminate the debt of the company.

The company went into voluntary liquidation in January 1901, and the court appointed R.T.Johnson as liquidator. Palmer continued to be heavily involved as advisor to the liquidator and manufacturing operations continued. Relief from debts and presumably cost cutting and other measures improved the business so that in the year ending August 1901 they achieved a trading profit of $\pounds 2,192$ and a net loss of $\pounds 306$.

The improvement continued in the year to August 1902, such that the company achieved a trading profit of £3,681 and even a net profit of £710. Palmer reported that the severe price competition of the past few years appeared to be stabilizing, and it was resolved to continue operations. There is a mention in the December 3, *Motorcycling and Motoring News* that the New Rapid Co. was to introduce a motorcycle with "a 2 1/4 HP Kelecom engine".

The company exhibited at the Cycle Show at the Crystal Palace in November 1903. They heavily promoted long cranks as their distinguishing feature, but the public didn't take to them, and their bicycles, while universally acknowledged to be soundly built, were too heavy. In July 1904 the company gave up. The liquidator admitted defeat having been unable to make a go of the business or find a buyer. The debenture holders (in effect, Charles Palmer who owned half the total amount) took control and appointed E.V.Sharp, chartered accountant, as the Receiver. The Pope Street premises with all inventory, fixtures, fittings and machinery were auctioned over three days, October 12, 13 and 14th, 1904.

Who bought them? In all likelihood it was New Hudson. Somebody was still using the New Rapid name in January 1906, when the *London Daily News* commented on a letter received from the "new New Rapid Cycle Co. of Birmingham" which expressed amazement that their predecessors had spent so much on long cranks with so little result. Significantly, advertisements for New Hudson Cycles, Armstrong Triplex and New Rapid often appeared grouped together in various publications until 1907, but thereafter the trail goes cold.

The last year the New Rapid company appears in *Kelly's Directory for Birmingham* is 1909. By then, the St. George's works had another occupant, The Armstrong Triplex 3-Speed Co., manufacturer of three speed hub gears. It had been incorporated in 1907 and in 1908 it moved to the St. George's address. By June 1907 New Hudson (and only New Hudson) was advertising bicycles with Armstrong Triplex 3-speed hubs, which strongly suggests the companies were affiliated in some way. The New Hudson Cycle Company¹⁸ acquired Armstrong Triplex 3-Speed Co., Ltd. in 1915 and used the St George's Works to produce bicycles in the subsequent decade, before switching over to motorcycles. My best guess is that New Hudson acquired the Pope Street works and the rights to the New Rapid name at the 1904 auction.

Why did New Rapid fail? From the tenor of the catalogues and what we know of the bicycle industry at that time, it is likely that New Rapid never properly adjusted to the harsh realities of mass production. Their emphasis was always



Figure 9 : C.A.Palmer, a man of property and proprietor of Capon Heaton, the rubber company.

on their premium product (one of the reasons their ordinaries have survived and are prized so much today) whereas by the late 1890s, the safety bicycle had become commoditized, and the key to survival was ruthless efficiency and economies of scale. In contrast, New Hudson used the latest machine tools to maximize productivity while pitching a product aimed at the new mass market, and as a result, while New Rapid was still hæmorrhaging losses, New Hudson was actually profitable in 1899/1900 and survived until it was absorbed into BSA in 1942.

Palmer's other famous business, Capon Heaton, fared better - although it was also



Figure 10: C.A.Palmer's house, Park Hill, Handsworth, where he lived from the 1890s until his death in 1932. (source: digital Handsworth)

in financial trouble by 1900. The Fleuss tubeless pneumatic tyres didn't prevail but Capon Heaton continued to manufacture conventional bicycle tyres (Boothroyd Cycle Tyres)¹⁹ and other rubber goods for many years. It continued as an independent business until it was sold to Avon Rubber in 1964. **[Figure 9]**

Having been a swimmer and soccer player as well as a cyclist in his youth, Charles Palmer took up golf in his forties and quickly "worked his way to the front rank of amateur golfers"²⁰. He won the Irish Open Championship in 1913 at the age of 55. Indeed, to the extent that he is remembered and celebrated at all today, it is as one of the most illustrious members of the Handsworth Golf Club, where, so it is said, he had a bit of a reputation as a lady's man and members of the Handsworth Golf Club still compete for two Palmer Cups.²¹ Every Friday, Palmer would award a Capon Heaton golf ball to the winner of the day. Like his bikes, his golf balls had a premium reputation and were priced accordingly. (Early Capon Heaton golf balls fetch fancy prices on eBay today.). He was also a life-long shooting enthusiast, maintaining a property for that purpose at Brampton Bryan in Herefordshire. It appears that one of his last active roles in business was as the chairman of the local Aston beer company, Holt Brewery.

Charles Palmer's wife, Aida, died in August 1932 and Charles passed away a month later at his home, Park Hill, on 27th

September 1932 at the age of 73. [Figure **10**] He was a very rich man, leaving an estate which was valued at £219,597 even at the bottom of the Great Depression.22 He does not appear to have had children, but back in the 1890s, he and his wife had taken into their home an orphan, Carl Bretherton. Palmer passed on to Carl his love of golf, and the two of them, putative father and son, count among the greatest golfers in the history of the Handsworth Golf Club. Bretherton was one of the executors of Palmer's will and was himself one of the largest beneficiaries of Palmer's estate. In addition to Carl, Palmer left his estate to his sisters and sisters-in-law, vari-



Figure 11: The Wheel motif over the Office Entrance of the New Rapid Headquarters.

ous charitable hospitals and small amounts to his servants. His funeral at St. John's Church was attended by a large crowd, reflecting his broad range of business and sporting interests.

The original St. George's Foundry at 52 Pope Street no longer exists, but sometime in the 1890s, Palmer acquired the neighboring premises on the corner of Icknield and Pope Street. There he built a new factory into which the newly floated New Rapid Cycle Co. moved in mid-1897.23 It was into these facilities that first Armstrong Triplex and then New Hudson moved in the twentieth century. Today, the red brick building is boarded up awaiting redevelopment as part of an inner city renewal project. On current plans the façade and the name will be retained (but as St. Georges, without the apostrophe, in keeping with this post-literate age). Above the Office Entrance in the decorative brick work can still be seen four tangentially spoked bicycle wheels which are the only visible sign that these were once the premises of the New Rapid Cycle company. [Figure 11] •

² Quotations from an interview with Charley Palmer in *The Athletic News*, Tuesday June 14, 1887.

- 2 In 1880 Andrews relocated to 3 Steelhouse Lane and, in 1881, the first mention is made of his new career as a bicycle manufacturer. The story goes that one day a customer arrived in the sewing machine shop and, after purchasing one, asked if he might place a bicycle he wished to sell in the front window of William's shop. William replied that if it sold he would go into the bicycle manufacturing business. The census of 1881 shows William and his family living at 3 Steelhouse Lane. He is listed as a master machinist employing six men and two boys and he was able to afford one servant. He continues to be listed as a sewing machine manufacturer until 1884 when it would appear he closed down these works and moved the bicycle works to Victoria Road in Aston. The name Sanspareil lived on as the name of his topline pennyfarthing." (source: In search of William Andrews by Andy Brockway in ISMACS NEWS, July 1996.)
- ⁴ The Athletic News, Wednesday February 7th,1883. The detachable bar was a safety feature, if hit simultaneously by the thighs of the rider the bar would fly off, enabling the rider to land on his feet rather than do a 'header'.
- ⁵ There is even a piece of evidence that his relationship with Andrews continued well after he moved to St. George's in 1884: he is mentioned as representing Andrews at a cycle exhibition in 1886.
- ⁶ His father's business went through a number of changes in the early eighties; from being Palmer & Son - makers of 'Interchangeable' bicycles - in 1879, it became Palmer and Holland in 1881. Obviously things didn't work out with Holland (whoever he was) because in 1882 it was back to just Palmer

¹ From Greg Barron of Rideable Bicycle Replicas, HYPERLINK "http://www.hiwheeler.com" www. hiwheeler.com

& Co. Then Charles Palmer was listed as the manager of 'The Interchangeable Bicycle Company' at the Victoria Works, Aston in 1883. The following year the Palmer family company disappears and in July 1884 Andrews takes over the Victoria Works.

- 7 Bicycle: The History, David V. Herlihy, 2004. Yale University Press, page 150.
- 8 There was a notable Cornforth family in Birmingham at that time who were manufacturers of steel wire.
- ⁹ The St. George's Engineering Co. catalogue for 1890 requested that cheques be made payable to John Cornforth, but the following year that had been altered to C.A.Palmer, suggesting that Cornforth owned the facilities from 1877 to 1890, although other sources state that Palmer bought the business in 1888.
- ¹⁰ Aida Pountney had at least two other sisters, one of whom, Nance, was the secretary of the Ladies section of the Handsworth Golf Course club in 1906.
- 11 Springfield Wheelmen's Gazette, September 1886
- 12 Birmingham Post, 1st September 1887.
- ¹³ The year of this transaction comes from the profile of Palmer published in Handsworth, A Local Society Magazine, July 1896. available at HYPERLINK "http://www.digitalhandsworth.org.uk" www. digitalhandsworth.org.uk
- 14 The U.S. imposed a 35% tariff on bicycle imports in

Conference Moment

the 1880s. In 1891(the McKinley tariff bill) the tariff was increased to 45%.

- ¹⁵ Cycle Components was to become one of the larger and more successful cycling shares traded on the stock market. Its chairman was Harvey du Cros, the driving force at the Dunlop Pneumatic Tyre Company. In February 1897 the cycle tubing division (formerly Hudson &Co.) was spun out again in a scheme devised by the notorious cycle stock promoter, Hooley, and subsequently collapsed leaving a trail of angry litigious shareholders seeking recompense. Hooley himself went bankrupt in 1898.
- ¹⁶ Wheels of Fortune by Arthur du Cros. Chapman & Hall, 1938. p 89.
- ¹⁷ Handsworth, A Local Society Magazine, July 1896. available at HYPERLINK "http://www.digitalhandsworth.org.uk" www.digitalhandsworth.org.uk
- 18 There was no connection between the Hudson &Co, of which Palmer was chairman in the early nineties and the New Hudson company.
- ¹⁹ There is no connection between Charles Palmer's bicycle tyre company, Capon Heaton, and the much more famous Palmer Tires of the U.S.A.
- 20 Golfing Magazine, 10th September, 1913.
- 21 History of the Handsworth Golf Club 1995, by R.L. Neale. I am indebted to Reg and Mary Neale for their hospitality and help in researching Charles Palmer for this article.

- ²² 219,000 is equivalent to about 40 million in economic power (relative to per capita GDP) in 2015 or over 100 million relative to total GDP.
- ²³ A letter from the company to *Bicycling News*, May 5, 1897 reports that new premises were nearly ready for occupancy, without stating the address.

How many New Rapid Ordinaries were Produced?

In a paper presented to the Institution of Mechanical Engineers in October 1885, a Mr. Robert Phillips stated that there were more than 170 cycle manufacturers in Britain producing more than 500 models and employing more than 5,000 people. He estimated that the industry was producing about 40,000 cycles per year. The St George's Engineering Co. employed about 500 people in the mid-eighties though only a portion of them would have been engaged in bicycle production, suggesting that it represented at most 10% of the total industry. Assuming the productivity of St. George's was comparable with others, they were therefore probably producing fewer than four thousand cycles per year. In their 1891 catalogue the company claimed that they had made upwards of 3,000 machines with True Tangent wheels during 1889, but this number would have included safeties, which at that late date would almost certainly have been in the majority. So these numbers suggest that an annual average of a thousand ordinaries a year would be a ballpark guess at the output of New Rapids in the second half of the eighties. And this estimate accords with the serial numbering of New Rapids. No New Rapid ordinaries survive with a serial number either below 2000 or above 5000.



An 1860s velocipede and an 1980s road bike resting after a ride during the conference.

The Genesis of the Original Michaux Bicycle Operation: Constructing a "Best Fit" Schematic

By David V. Herlihy, Boston, Massachusetts, USA

rom the perspective of the man on street, living in Paris, France, in summer of 1867, the bicycle industry-headed by the pioneer brand Michaux-seemed to materialize almost overnight. Why? The curious product was relatively refined and elegant enough to appeal to its primary market: wealthy sportsmen. Evidently, this Michaux bicycle had been "under wraps" (that is, discretely developed) for some time before it was finally unveiled to the public. What, then, had gone on "behind the scenes" in the years leading up to the product launch? In particular, who were the key players, what was their "order of appearance," and what roles did they play?

5.

The early Michaux advertisements were oddly mum on the subject of the com-

pany's history, except to imply (falsely) that the blacksmith Pierre Michaux, the nominal head, had obtained a patent on the new vehicle. Neither the company nor the press offered any detailed account to explain how the invention or industry had come about. That would have to wait until the early 1890s, during the great bicycle boom, when French cyclists demanded—and got—a historical premise to build a monument claiming the original invention for France.

The account that emerged from that lengthy and convoluted process, furnished by Henry Michaux on behalf of his late father, held that the elder Michaux and another son, Ernest, jointly came up with the first bicycle in March 1861 after repairing a broken draisine. Henry also claimed that the family



Fig. 1. An artist's conception of Pierre Lallement ca. July 1863, riding around Paris on his first bicycle prototype. Published in the October 1883 issue of The Wheelman to illustrate a biographical sketch of Pierre Lallement by Charles E. Pratt, then the patent lawyer of Albert A. Pope, who had purchased the Lallement patent.

launched the industry shortly thereafter, building and selling over one thousand bicycles between 1862 and 1867. These belated revelations led to the erection of a monument in Bar-Le-Duc, France (the hometown of Michaux Sr.), dedicated in the fall of 1894, proclaiming Pierre and Ernest as the sole inventors and developers of the original bicycle.

I have long argued that Henry's account of invention is not credible. For starters, he changed key details during the memorial campaign, moving the invention date from 1855 to 1861, thus making himself (at age seven) an eye-witness to the alleged invention. And he initially insisted that his brother Ernest "had absolutely nothing to do with the invention," only to change his story to counter growing rumors that his father had never even ridden a bicycle.

Nor does Henry's account itself hold up to scrutiny. The notion that Ernest built a functional bicycle, per his father's instructions, by simply adding cranks and pedals to the front hub of an existing draisine, and that he learned to ride that machine the same day, simply is not believable. Moreover, no credible evidence points to 1861 as a milestone in bicycle history. Nor is it conceivable that as many as one thousand bicycles operated in the French capital between 1862 and 1867 without leaving a discernible trace.

A far more credible claim to the invention is the one put forth by Pierre Lallement, who would obtain the only patent claiming the basic bicycle in 1866, while residing in Connecticut, USA. He testified that he built his first bicycle in Paris around July 1863, while working for Strohmayer, a maker of children's vehicles. After considerable tinkering and training, making use of a long corridor in his workshop to master the art of cycling, Lallement demonstrated his vehicle along the Faubourg Saint-Martin, and "all the people saw it." [Figure 1] We can therefore safely deduce that Lallement was the catalyst who got the basic bicycle rolling. It is clear, however, that he did not single-handedly launch the bicycle industry. He left Paris in July 1865 and was still living abroad when the first commercially available bicycles began to appear in Paris, virtually identical to the design depicted in his patent. Who then, after Lallement, first recognized the potential of the Lallement prototype and took steps to transform the concept into a marketable vehicle?

While Michaux might seem the obvious candidate, given that the original company carried his name, there were at least two other key players in the early going who could conceivably have played the role of "chief visionary": René Olivier (who was advised by his brother Aimé) and Georges de la Bouglise. These two were classmates at the Ecole Centrale des Arts et Manufactures (ECAM) in the school year 1862-63, and both would become heavily involved behind the scenes setting up the Michaux company.

Both continued to oversee the operation once it was up and running. As early as September 1867, the magazine *La Vie Parisienne* singled both of them out as leading proponents of the new bicycle. They would continue their collaboration until May 1868, when the company was reorganized as Michaux et Cie. At that point, Georges was out and Aimé was in, and production shifted from the original serpentine model of malleable cast iron to the diagonal design of forged iron.

Let us now attempt to construct a schematic that sequences the "points of entry" of the four parties and defines their respective roles. We can start by naming Lallement as our "Player A," i.e. the catalyst at the origin of the bicycle idea. But what happened next—who among our other three other players (Michaux, Olivier, and de la Bouglise) was the first to take an active interest in the primitive bicycle (our "Player B")?

Unfortunately, we have very little to work with in the way of direct testimony from the parties themselves, nor do we have firm evidence establishing their "order of entry." To come up with our "Best Fit" schematic we must therefore carefully assemble and examine all available circumstantial evidence bearing on these three basic possibilities.

Possibility 1: Michaux was Player B

This scenario assumes that Lallement somehow put Michaux onto the bicycle. Indeed, there is some evidence to suggest that Michaux began experimenting with the bicycle—if not actually producing them for public consumption—around 1864, which dovetails well with the date Lallement gave for his invention. Consider:

• An article in *Le Sport* of July 28, 1867 (one of the first of its kind) claimed that the youngest Michaux son, Francis, had been giving lessons for "3 years." • René Olivier, in his court testimony, stated that he met Michaux "about 1864," and the latter was already making bicycles.

• An Irishman, John Townsend-Trench, in a letter to the editor published in *The Irish Cyclist* of 25 September 1895, claimed to have visited the Michaux shop in July 1864, where he was told by the blacksmith himself that he had "just invented" the bicycle, and had made six to date, only one of which was still available for purchase.

But while an "entry date" of about 1864 for Michaux seems quite plausible, the notion that Lallement directly induced Michaux to take up bicycle experimentation, upon scrutiny, becomes tenuous at best. In the first place, Lallement was a young workman who specialized in the manufacture of small vehicles, whereas Michaux made small parts for carriages. It is thus unlikely that they would have become acquainted with each other through their ordinary business activities. Moreover, they operated at opposite ends of the city, some distance from each other, making it less likely that they somehow connected by a chance encounter.

More to the point, it is difficult to fathom how Lallement could have induced Michaux to start experimenting with bicycles, while evidently failing to interest his own employers, Strohmayer and Jacquier—in the new vehicle, even though their principal activities made them much better positioned to undertake bicycle production relative to Michaux. (In fact, around 1868, Jacquier would become one of the first Parisian bicycle makers after Michaux).

Finally, this scenario suggests that Olivier and de la Bouglise came along later as Michaux customers, before they assumed active roles in the company. If that had been the case, however, one would expect to find evidence of other early (i.e., before 1867) enthusiasts who were eager to develop the primitive bicycle.

Verdict: In all probability, Michaux was not our Player B.

This leaves us with a far more likely scenario: Lallement initially attracted the interest of either Olivier or de la Bouglise, or both, and they, in turn, enlisted the services of Michaux. Similar in age to Lallement, and based near Strohmayer's shop, they might well have witnessed Lallement's early outings and perhaps even tested Lallement's prototype. Moreover, as engineering students, they might have readily appreciated the possibilities to develop the concept into a marketable vehicle

It would then follow that one of the students conceived of the idea of manufacturing the bicycle frame and its parts from malleable cast iron, as a means to reduce material and labor costs while increasing output. That would explain why Michaux was tapped to build the bicycles: the blacksmith was well versed in that method of manufacturing.

Such a sequence of actions seems highly plausible on the surface: a workman conceives and demonstrates a prototype, engineering student(s) recognize its potential and engage a manufacturer to begin experimentation. Before we can complete our "Best Fit" schematic(s), however, we need to figure out the Olivier/de la Bouglise dynamic.

In particular, did they effectively jointly discover the Lallement prototype and, being close friends, undertake the "bicycle project" together, acting as a single, cohesive force (in which case we could consider them jointly as our Player B)? Or were they instead distinct players with their own agendas, each bent on exploiting the bicycle concept for personal gain?

The evidence favors the latter scenario. In the first place, it seems unlikely that Olivier and de la Bouglise jointly discovered the bicycle prototype. Lallement testified that he completed his first model around July 1863. At that time, ECAM was not in session and thus the two students presumably were not hanging out together, at least not on a regular basis. And when school resumed that fall, they were no longer classmates, Georges having transferred to the Ecole des Mines (the School of Mining, located across the Seine) following his expulsion from ECAM.

Moreover, the assumption that the two students were close friends before the bicycle prototype came on the scene may not be correct. To be sure, they undoubtedly knew each other starting in the fall of 1862, when both enrolled at ECAM (the classes were relatively small). But they did not necessarily bond as friends or socialize together. For one thing, they came from fairly distinct backgrounds. René's father Jules was a wealthy industrialist from Lyon, whereas Georges came from a far more modest-if noble-family with roots in Normandy. In fact, private letters held by Caroline Rocherolle (a great-granddaughter of George's sister Margheritte)

suggest that René was not among Georges' closest circle of friends in the period 1863-64.

Finally, even if we suppose that Olivier and de la Bouglise were buddies who jointly discovered the bicycle prototype, they clearly did not proceed to exploit the idea as a single, cohesive force. The first piece of evidence suggesting that they were not always on the same page with regard to the bicycle project dates from October 1865. That's when Georges alone filed an application to show a "new two wheel velocipede" at the upcoming Paris Universal Exhibition (scheduled to open in April 1867). To be sure, one might suppose that he was acting with René's knowledge and approval but that was not necessarily the case.

It also appears that, once production was up and running, de la Bouglise was in much closer contact with Michaux than was René, who had effectively left Paris following his graduation from ECAM in mid-1866. (A compendium of letters received by the company in the first half of 1868 includes a number of telegrams from Georges directing Michaux to purchase production materials.) It is also apparent that Georges was on much better terms with Michaux than was René, who would eventually sue the blacksmith for breach of contract.

That de la Bouglise acted as his own player throughout the bicycle project is further underscored by the recent revelation that he invested in the off-shoot company Père Michaux et Cie., founded in late 1869, following the blacksmith's separation from the Oliviers.

It is clear, therefore, that we need to treat Olivier and de la Bouglise as two



Fig. 2. The Olivier brothers (Aimé is on the right) at costume ball in Avignon in 1874.

distinct players. But the question remains: which one was our Player B, the one who decided to develop the bicycle prototype, enlisting the help of the other? Was it Olivier who tapped de la Bouglise to help with technical (and administrative) matters, or de la Bouglise who turned to Olivier to fund his venture?

Proposition 2: Olivier was Player B

Although we have no testimony from de la Bouglise himself concerning his role in launching the original company, we do have various statements from the Olivier brothers [Figure 2] to the effect that René enlisted Georges in the bicycle project. Wrote René in his lawsuit against Michaux in late 1869: "I arranged with Mr. de la Bouglise, my comrade, so that *he would oversee the use of* [*my*] *money* and help Michaux by giving him [technical] advice, of which he had great need." Aimé also seemed to suggest that René brought Georges into the bicycle project to help with technical matters. In an article published in La Nature of 6 August 1892 he wrote:

"For this entirely new industry, special machines had to be made, along with new tools. Mr. de la Bouglise, engineer (from the Mining School) was the principal organizer, with no interest other than the pleasure of participating in the surprising rise of the invention of his friends."

The notion that René turned to Georges for technical assistance seems highly plausible. Shortly thereafter, in the summer of 1866, Georges patented "a process for the fabrication of any object of glass or crystal." Clearly, Georges had a keen mechanical mind, possibly even a special interest in manufacturing systems, and René was aware of that.

It would then follow that Georges was the one who conceived the idea of manufacturing bicycle frames and parts with malleable cast iron. Michaux was no doubt brought into the operation precisely because he was skilled in that particular manufacturing process.

But whether it was de la Bouglise or Olivier who tapped Michaux is difficult to determine. The evidence from 1868-1869 that de la Bouglise was on relatively good terms with the blacksmith might suggest that Michaux was Georges' pick. However, it is also entirely possible that, once the decision was made to work with malleable cast iron, it was Olivier who recruited Michaux.


Fig. 3. Georges de la Bouglise, ca. 1865.

Verdict: Olivier was very likely our Player B, who brought in de la Bouglise and (directly or indirectly) Michaux. This yields our first candidate for a "Best Fit" schematic:

• Schematic 1: A: Lallement (inventor); B. Olivier (visionary); C. de la Bouglise (technical advisor); D. Michaux (manufacturer)

However, Aimé's assertion that Georges was a disinterested party, "in it" simply to help out his "friends" (presumably himself and René), clearly does not ring true. Georges was obviously deeply invested in the original Michaux operation, to such an extent that we might even wonder, in the absence of conclusive evidence to the contrary, if he was not in fact the instigator of that operation.

Proposition 3: De la Bouglise was Player B

At present, we cannot entirely rule out the possibility that it was de la Bouglise [Figure 3] who first recognized the potential of the Lallement prototype. In this scenario, he was still presumably the one who conceived of the idea of using malleable cast iron, being largely responsible for technical affairs.

Player C, however, could be either Olivier (brought in for funding), or Michaux (brought in for manufacturing), depending on which party he tapped first. We can depict these two permutations as follows:

• Schematic 2a: A: Lallement (inventor); B: de la Bouglise (visionary); C: Olivier (investor); D: Michaux (manufacturer) B: de la Bouglise (visionary); C: Michaux (manufacturer); D: Olivier (investor)

Which of these two "Player B" hypotheticals amounts to our "Best Fit"? It is difficult to say. The collective testimony from the Oliviers suggests that René brought in Georges to give technical and administrative assistance. But while there is no doubt that he did indeed provide those services, it is not entirely clear who brought in whom.

Perhaps the main piece of evidence favoring Proposition 3 is the fact that Georges invested in Michaux's "re-boot" following the blacksmith's definitive separation from the Oliviers in mid-1869. Clearly, that had to have been a real "slap in the face" directed at René. Georges must have been quite aggrieved with his former partner about something. Perhaps he resented that "his" operation had been commandeered by René, who ultimately engineered Georges' ouster?

Conclusion

In all probability, Lallement was our Player A; the one who established the basic bicycle. René Olivier and Georges de la Bouglise were two other key and distinct players in the early going, and one of them was no doubt our Player B (the one who first recognized and exploited the potential of the prototype and engaged the help of the other). It seems likely that it was René who tapped Georges to give technical and administrative support. However, the circumstantial evidence at present is inconclusive, leaving open the possibility that Georges was in fact the "chief visionary" behind the operation who turned to René to provide funds.

In either case, given that Georges was primarily responsible for designing and overseeing the original bicycle production line, he was most likely the one who conceived of the idea of using malleable cast-iron in that manufacturing process. Michaux was in all probability enlisted to oversee production because he had the requisite blacksmith skills, though it is difficult to say at this point if he was brought in by de la Bouglise or Olivier.

Let us hope that more evidence surfaces (such as testimony from de la Bouglise) that will enable us to settle on one compelling "Best Fit" schematic. •

[•] Schematic 2b: A: Lallement (inventor)

The Origin of the Raked Fork and Angled Steering Axis

By Nicholas Clayton, Heather Alderley, Cheshire, UK

y enquiry as to why the safety bicycle needed over seventy years, 1817 – 1891, to develop from the draisine has already taken me nearly thirty years and led to half a dozen papers at past conferences. Setting aside the embarrassing question as to why this job has taken so long, I still find it odd that the prolific inventor Karl von Drais, did not continue with his ingenious



Fig. 1. An 1887 advertisement for the Referee bicycle - the first stayed diamond frame.

bicycle experiments and go on to develop a ten-speed pneumatic roadster some time during the 1820s?

Last year at Entraigues-sur-la-Sorgue (France), I described the penultimate step in the process, how G. L Morris fitted a bracing tube into the diamond frame of his 1887 Referee [Figure 1] thus facilitating the pneumatic safety of 1891 that effectively became the finished article.

Whilst old cyclists have not always made the best historians, I think it does help in understanding the progress of development, or indeed the lack of progress, to have actually ridden a diversity of bicycles from earlier years. One can easily follow the evolution of the safety bicycle during the 1870s and 1880s through the cycling papers of the day, but an essential element is always missing from these reports. That is the expectation and prejudices held by potential customers of a bicycle.

Thomas S. Kuhn in his hugely influential 1962 book *The Structure of Scientific Revolutions* laid down the importance of the existing paradigm in facilitating or discouraging new research in every branch of science. For instance, the emergence of Copernican astronomy swept away the old Ptolemaic system, which had worked pretty well for 1500 years, and the power of the existing paradigm applies equally well in the field of technology - in our case, to the bicycle.

Wire suspension wheels had been 'invented' several times prior to the boneshaker era, yet it was only after Meyer successfully fitted them to his bicycles in 1869 that it became adopted into common use, becoming itself the new paradigm. [Figure 2]

Similarly, Thompson patented an inflatable tyre in 1846, but no cycle maker thought to use pneumatics before Dunlop came up with the idea in 1888 and made enough to win a few races. After derisory quips about 'pudding tyres', the world clamoured for pneumatics.

The paradigm exerts such a strong constraint on the adoption of new ideas because of the comforting mantra that 'this is how it has always been done'. Ideas and inventions being described as 'before their time' almost always prove to have been defeated by the paradigm of an established technology. So this paper aims to look at the powerful constraints that



Fig. 2. Meyer wire-wheeled bicycle, 1869.

the paradigm of the vertical steering post exerted, in holding back development of a safety bicycle.

The hobbyhorse had a distinctive, yet hardly ergonomic, riding position. The rider had to lean forward against a breast board in a semi-crouched position and gain purchase against the ground as it receded behind him, nevertheless, steering the machine was easy, even with a short handlebar. [Figure 3]. This was because the steering post, passed vertically through the beam, allowing the front wheel to turn on one spot, what David Gordon Wilson calls the 'tire patch'. With the arms



Fig. 3. 1819 Johnson hobbyhorse.

restricted by the need to rest the elbows on the breast board, movement of the body and legs also helped with the steering, and despite some discomfort, the hobbyhorse proved to be a remarkably safe ride.

It is yet to be established whether the boneshaker subsequently developed from a hobbyhorse or from a tricycle, but boneshakers almost universally retained the vertical steering post of the hobby, although in order to resist the twisting action of the cranks, a longer 24 in. handlebar was needed. The riding position was different but still not ergonomic. It involved leaning backwards whilst thrusting the feet forwards against the pedals. **[Figure 4]** Patented straps were sometimes used for attaching one's belt to the headstock to avoid being pushed off the back of the saddle, but it was easy to steer and accidents were few.

When the ordinary bicycle replaced the

6.



Fig. 4. 1869 velocipede aka boneshaker.

boneshaker in 1870, things appeared much improved. Meyer's light, rubber-tyred, suspension wheel quickly established a fresh paradigm. A bicycle could now be managed with a short handlebar, initially about 18 in. wide, although with increasing speeds and more adventurous riding gradually returning to 24 in. during the ordinary's fifteen-year reign. The riding position, up near the head, enabled leg muscles to be given full play and the rider's bodyweight fully employed. With



Fig. 5. The header or Imperial crowner.

its inherited vertical steering axis, it was again easy to manage, but the geometry of the high wheel, created a new peril - the header. [Figure 5] The obvious answer was a smaller, geared-up, driving wheel with pedal pressure applied behind the front axle and preferably with the front forks raked and the handlebars swept back towards the rider.

The Kangaroo was a halfway house. [Figure 6] The driving wheel was suitably small, around 38 in., geared up to 56 in., and the foot pressure was applied behind the axle. The forks, however, remained vertical, as on the ordinary, with the wide handlebar allowing good control. Hillman trumpeted it in February 1884 as the Kangaroo Safety Bicycle, intending that it should compete with the now well-established Facile, but Henry Sturmey and Harry Griffin both quickly pointed out that on

encountering an obstacle there was nothing safe about a kangaroo - the fall over the handles simply occurred from a lower height. In the hands of professional riders, who understood



Fig. 6. Hillman's Kangaroo - British Patent No. 4487/1884.

the risks, huge success was achieved in breaking road records from 1884 to 1886, but it was the final fling of what I shall call the 'vertical steerers'. For over sixty years, a 90-degree vertical steering post with the steering wheel simply pivoting on the tyrepatch had been the paradigm. For the same reason, toddlers today can quickly learn to ride a balance bike.

Others have noted that the steering fork of Dalzell's ca. 1846 machine, **[Figure 7]** which still exists in the Glasgow Museum of Transport, was not vertical, but raked about 85-degrees, suggesting that Dalzell had some anticipation of the future, but he was not alone. Several hobby horses and boneshakers also had raked forks resulting in a trail of up to three inches (7 centimetres). This would not be sufficient to make them unsteerable because iron tyres slid easily on loose roads, but the ordinary bicycle, with rubber tyre and a wheel approximately fifty per cent larger, demanded an upright fork because even



Fig. 7. Gavin Dalzell bicycle, 1846.

an 85 degree rake would increase the trail to at least five inches (12 cm.) causing considerable steering difficulties.

> The first ordinary maker to address the problem was George Singer (1847-1909) with his Patent No. 4265, filed 24 October 1878 for the 'Xtraordinary'. [Figure 8] Singer founded his own company in 1875, after leaving C.M.C., and became a firm believer in using other people's ideas. He had launched Lawson's Safety in 1876, which had failed, and now a new game-changing idea came from George

Dominy, captain of the Weymouth Bicycle Club. Singer described this dramatically new steering column design in the first paragraph of his patent:

Heretofore bicycles have been constructed with the bearings of the front wheel in a straight line or nearly so with



Fig. 8. Singer 'Xtraordinary' with raked steering, 1878.



Fig. 9. Singer's 1878 British patent.

the steering centres, and if it were desired to add to the safety in riding by inclining the fork backwards the proper control of the steering was destroyed. Now according to my Invention I bend the fork in such a manner that whatever inclination backwards is given to the fork the centre line of the steering centres will meet the ground at that part of the wheel's circumference that touches the ground. I thus obtain great safety and also control over the steering even though the inclination of the forks be 12 inches or more.

Whether George Dominy had built a prototype, or simply suggested the idea for Singer to work out, is not known, but Singer's patent illustrated five possible versions of the machine with rakes varying from 70 to 80 degrees. **[Figure 9]** Singer's 'Xtraordinary was launched in 1879 with a rake of



Fig. 10. Lawson's failed Bicyclette, 1879.

around 70-degrees, later modified to 80-degrees. Rake on a modern safety is generally agreed to be between 71.5 and 74.5 degrees, with the rider's weight distributed between the two wheels, but Singer showed that simply raking the forks was not sufficient to put the danger problem to bed, the head had to be suitably inclined as well.

Surprisingly, makers appeared not to understand Singer's clear explanation of the problem and its neat solution. Raked forks with a direct steering post continued to appear for nearly a decade before the new paradigm finally sank in with makers as well as well as cyclists.

Famously, Woodcock's Tangent & Coventry Tricycle Co., the forerunner of Rudge, launched Lawson's Bicyclette [Figure 10] a year after the 'Xtra. It had straight forks with a steering rake of around 70-degrees, resulting in a trail of around 7.5 inches. This effectively made it unsteerable for the average customer as well as for Woodcock



LONDON SHOW ROOMS, 22, COLEMAN ST., CITY.

Fig. 11. Lawson's 1885 National - another 'might-have-been' or failed design.

himself who reportedly encountered his first fall from a bicycle when attempting to ride it round the factory yard. It must surely have been this defect, rather than the oft suggested indirect steering, that caused the Bicyclette to fail.

In contrast, the 'Xtra was an immediate success, praised as a hill climber and lasting in the catalogue for nine years. Why Lawson did not immediately re-jig the Bicyclette according to Singer's plan is not clear, but the fact that his final safety, the 1885 National, had a vertical steering post, suggests that he too was clinging to the old paradigm. [Figure 11] He was not alone - many makers of the safeties of the mid- to late-1880s failed to understand the importance of this new requirement. [Figure 12] J. K. Starley's famous 1885 (Golder pattern) Rover had 60 degree straight forks and as late as 1889 his Popular Rover and Rational Rover also had straight forks. [Figure 13, 14, & 15] They must all have been virtually unrideable for any novice, and it was only in 1890 that all



Fig. 12. Diagram showing location of the 'tire patch' and its relationship to the 'steering axis' ('head tube angle').



Fig. 13. Rover 'Golder' pattern, 1885.

Rovers were given an angled steering post.

The 'Xtraordinary was highly praised, in its day and ever since, whilst prolific inventor George Dominy's contribution to the safety, acknowledged by Bartleet in his 1931 Bartleet's Bicycle Book, is today sadly overlooked. I have found no evidence that Singer licensed the principle elsewhere or ever drew royalties from it. Maybe, the new paradigm was thought inapplicable to dwarf machines. However, if he had managed to collect a shilling for every safety made with an angled steering axis, Singer could have pursued his later career as Mayor of Coventry (1891-93) without ever needing to make another bicycle.





Fig. 14. 1889 Popular Rover.



Fig. 15. 1889 Rational Rover.



John Malseed attends to an 1860s velocipede on the Green in downtown New Haven.

M.I.T. Aluminum Bicycle Project 1974

By Harriet Fell, Newtonville, MA, USA, and Marc Rosenbaum, West Tisbury, MA, USA

n 1974, Professor Shawn Buckley ran an M.I.T. Independent Activities Period (IAP) course where participants, including Marc Rosenbaum and Harriet Fell, got to build their own bicycle frames. Marc Rosenbaum, then a student at the Massachusetts Institute of Technology, set out to create a bicycle that would give a rider an acceleration advantage by being ultra light without sacrificing stiffness. In this paper,

7.



Figure 1: Rear hub.

we describe some of Marc's design, the frames he and Harriet built in the IAP course, and how these played a role in the Klein vs. Cannondale patent litigation in the mid-1980s.

Marc Rosenbaum's Aluminum Bicycle

In 1974, Marc Rosenbaum was a senior at M.I.T. majoring in mechanical engineering. The goal of his undergraduate thesis

Table 1: Frame - Tube Specifications

Tube	Outside diameter (in) Thickness (in)	
Top tube	1.5	0.049/.032
Head tube	1.5	0.049
Down tube	1.5	0.049/.036
Seat tube	1.5	0.049/.036
Bottom bracket	1.75	0.187
Seat stays	0.625	0.625
Chain stays	0.750	0.083 taper to .045

(Rosenbaum 1974) project was to create and describe a bicycle that would give a rider an acceleration advantage by being ultra light without sacrificing stiffness. Marc stressed stiffness over strength, pointing out that "[f] rames never break in normal racing conditions, which indicates that

strength is not a problem." Clearly things have changed since carbon fiber bicycles have entered the racing scene though the problem is not their resistance to normal loads encountered during rides but to impact damage.

In 1974, normal track bikes weighed 18 or 19 pounds. There are lighter bikes today; the I.C.U. minimum weight limit is 6.8 kg, which is about 15 pounds.

There were also some lighter bikes in 1974. A bicycle made for Eddy Merckx in 1971, which he rode to set the one-hour record (30.715 mi), weighed only 13.25 pounds. It had a very light steel frame, custom built titanium handlebars, stem, and seatpost, partially plastic pedals, 24-spoke wheels, and tires expected to last at most 4 hours on a smooth board track. The components were extensively drilled out. This



Figure 2: Front hub.

bicycle was not designed for strength or to last (Rosenbaum 1974).

Marc's Design Guidelines

• Use larger diameter tubular components – Strength goes up as the cube¹ of the diameter so unless there are geometric constraints, use larger diameter tubes with thinner walls to get a lighter structure with increased strength and stiffness.

• Use sealed precision bearings – higher quality and lighter.

• Sacrifice adjustability – adjustment features add weight.



Figure 3: Pedal.

• Use alloys – Marc settled on 6061-T6 aluminum where welding was needed and used 2024-T4 aluminum and titanium (Ti 6Al 4V) in other places. He ruled out magnesium, which is best per unit weight in compressive buckling but is brittle and difficult to extrude. He noted that aluminum is easier to weld and fabricate than titanium and more than twice as efficient as steel against compressive buckling. The walls in existing steel tubes were already down to .020" - .025" and would be prone to buckling if they were made thinner to compensate for increased diameter.

The Frame

Table I shows the tube lengths and thicknesses that Marc used in his frame.

The frame was put into a jig to hold it in alignment and was joined by tungsten-inert-gas welding. After welding, it was heat-treated (annealed) to relieve stresses induced by welding and to bring the aluminum back up to its initial strength. The top tube sagged about 1/32 of an inch



Figure 4: Saddle.

during annealing. This was apparently due to the greatly decreased strength of the aluminum at the high temperature of the heat treatment process.

The Bottom Bracket

The bottom bracket was bored out to press fit the bearings directly into it. The result is a highly accurate and simple system. A Teledyne titanium axle was modified to accept the precision bearings. The axle saved three ounces and the bearings were 2.5 ounces lighter than the conventional bearing arrangement.

The Hubs

The body of the rear hub [Figure 1]



Figure 5: Handlebars and stem.



Figure 6: The bicycle built by Marc Rosenbaum weighing 12 lbs. 5oz.

is of 2024-T4 aluminum. It was bored out for precision sealed bearings and has a hollow titanium axle. It weighs only 5 ounces vs. 11.5 ounces for standard track rear hubs. Similar construction was used for the front hub [**Figure 2**]. It weighed only 3 ounces vs. 9 ounces for a conventional hub.

The Pedals

The pedals were designed to be comfortable, easy to get into (with toe clips), and to allow sharp cornering [Figure 3]. They have platforms of 2024-T4 aluminum on which the whole ball of the rider's foot can rest. The axle is of titanium and is threaded to fit a standard crank. The bearings are pressed into the pedal body and onto the axle. The pair of pedals weighs 7.5 ounces, 5 ounces less than the lightest track pedals of the time.

The Saddle

The saddle is a prime example of eliminating unneeded adjustability. Marc determined his saddle-to-pedal distance on another bicycle and decided on an integral seatpost/saddle for the bike [Figure 4]. The result is a savings of nearly a pound.

Handlebars and Stem

Track bikes have the bars down low to put the rider into an efficient sprint position. Track riders often use only one position. Marc attached the handlebars directly to the fork crown, reducing weight and increasing rigidity [**Figure 5**]. A simple, wide shallow U-shaped handlebar was attached via the handlebar-mounting end of a steel stem silver-soldered to a steel strip that was in turn silver-soldered to the top of the fork crown. This arrangement saved almost a pound.

Other Components

The wheels used Hi-E Engineering tubular rims and Pirelli Specialissimo Corsa Leggero tires. The track sprocket, chain, and T.A. cotterless 48 tooth chainring were standard. The bike initially had an 18-tooth rear sprocket for a gear of 72 inches. The headset was Stronglight Competition, and a Raleigh road-racing fork was modified to give the required wheel clearance and the design fork rake of 1.5 inches.

The bicycle that Marc built [Figure 6] for his undergraduate thesis project was the world's lightest track bicycle at that time. The finished bicycle was as rigid as a normal sprint track bicycle and with wheels built up for road riding, weighed 12 pounds, 5 ounces. The bicycle is currently at the M.I.T. Museum.

Harriet Fell's Aluminum Bicycle

In 1974, Harriet Fell was an Assistant Professor of mathematics at Northeastern University, across the river from M.I.T. The Independent Activities Period (IAP) (M.I.T. 2016) is a special four-week term at M.I.T. that runs during the month of January.² In 1974, Professor Shawn Buckley offered an Aluminum Bike Project class. This was an opportunity for students to build their own aluminum

bicycle frames. The tubes suggested for the class were of a smaller diameter and had thicker walls than the ones Marc decided to use. Harriet showed up and ordered a set of tubes. She designed her frame by using some measurements (e.g. top tube, seat tube, and the angle between them) from her favorite bicycle, a Holdsworth Strada. Working with the constraints of the wider tubes and her small size (5' 2") and making sure to leave enough space for 700C wheels, she made an accurate half-size drawing of the planned frame. She then measured the lengths of the other tubes from the drawing. With advice and instruction from Marc, Shawn, and the machine shop staff, she learned to use a metal lathe and milling machine enough to machine the tubes and dropouts for her bicycle. She put the parts into a jig, and Shawn sent it off for welding. Shawn said that the completed frame was particularly light and strong. (The fact that it was made for someone only 5' 2" tall surely had something to do with this. A frame for Eddy Merckx at 6' 1" would surely have weighed more.) Shawn demonstrated the strength of the frame by laying it on its side and standing/bouncing on the seat stays.³

Gary Klein also made a frame in this project and in the spring of 1974 got even wider tubes to make a larger frame.

Harriet's Frame Goes to France

Just after finishing the frame, Harriet moved to France to continue her career in mathematics. She also started cycling with the cyclosport group at the Faculté de Sci-





Figure 8: List of Sheldon Brown's bicycles in 2008.

ence at Orsay. She got as far as mounting a headset and fork on her frame, but math and cycling, including riding the 1975 Paris-Brest-Paris (Fell 1991), filled most of her time. In September 1976, unable to extend her leave of absence for another year, she returned to Northeastern University. As she was determined to move back to France, she left her frame. a large bag of books and clothes, and a pile of tubular tires in a friend's cellar. She did spend another year in France, but not until 1988/1989 with her husband, Sheldon Brown, and their children Tova and George. The clothes and books were intact. The tubulars had hardened

bicycle frames and sued Cannondale for patent infringement. Schwinn was already making large-diameter aluminum frames and paid Klein license fees. Cannondale claimed that Klein was not entitled to his patent(s) because the real design came out





Cannondale

fate.

to a rocklike state and were unusable. The frame met another

In 1983, Cannondale manufactured its first aluminum bicycle (Wikipedia 2016). Gary Klein had been issued a patent on aluminum



Figure 10



Figure 7: Defendent exhibit in Cannondale case.



Figure 11



Figure 12

of Marc Rosenbaum's thesis and the 1974 Aluminum Bike Project (mtnbke 2009) Marc Rosenbaum was subpoenaed in the Cannondale/Klein case and gave a 6-hour videotaped deposition. He hid his bicycle in a friend's barn so it wouldn't be subpoenaed. He was afraid he would lose the bicycle for years and possibly never get it back if it were taken.

Cannondale's lawyer wanted frame(s) that were built before Klein's for the case. He contacted Shawn Buckley who told him that there were five light/strong frames produced in the project. The lawyer called Harriet to ask if he could use her frame and she said, "Yes, but it's in a friend's cellar in France." He visited her friends and brought the frame back for the trial. [Figure 7]

Bringing in large diameter aluminum frames built by Bill Shook, founder and engineer of American Classic (American Classic 2016), and by Harriet Fell that predated Mr. Klein's, Cannondale successfully argued that the Klein patent was null and void due to "prior art" - you can't patent something that's already in existence and known publicly (tcs 2009).

Klein's patent discovery documents had referenced Marc's bike and thesis numerous times, and it had taken Klein almost 8 years to be granted a patent. Essentially, Cannondale asked, "Why is Klein's bike different from Rosenbaum's frame?"

From Frame to Bike

Marc was right to fear losing his bicycle for many years if it were subpoenaed. Cannondale kept Harriet's frame for many years and never let her know where it actually was. Eventually she asked her husband, Sheldon Brown, who worked in the bicycle business, to call a friend at Cannondale and ask for the frame. That worked. When the frame arrived, Sheldon hung it high on a living room wall and told every visitor about it.

In May 2005, Sheldon asked Harriet what she wanted for Mother's Day. She said, "Sheldon, since we've been married you've built up about 40 bikes for yourself so how about getting that one on the road for me." [Figure 8]

He built the aluminum frame up with standard, fairly lightweight parts. Harriet has recently added lights, a Quad-Lock mount for an iPhone, and a bag with USB

charger, all easily removable. [Figures 9-12]

Proof in the Riding

Marc Rosenbaum rode his bicycle up Mount Washington twice⁴ before donating it to the MIT Museum. Bill Shook rode his homemade bicycle frame in several races (Justia 1989). Harriet Fell continues to ride hers around the western suburbs of Boston [Figure 13].

Endnotes

1 From correspondence from Marc Rosenbaum: "For solid tubes, section modulus is proportional to radius (or diameter) cubed, so strength increases with the cube of diameter. Moment of inertia is proportional to diameter to the fourth power, so stiffness increases with the fourth power of diameter.

For hollow tubes, it's not as cut and dried. If you double the diameter and double the wall thickness, then strength goes up as the cube and stiffness as the fourth power. If the wall thickness remains constant, doubling the diameter doesn't increase strength by 8 and stiffness by 16. '

- ² It is an opportunity for MIT students, faculty and staff to organize or participate in a wide variety of courses ranging from Blacksmithing to Charm School.
- ³ Harriet's frame did not show any sagging due to annealing. The tubes on her frame were shorter than those on Marc's bicycle and had slightly thicker walls.
- ⁴ He did not ride this with the original 72" gear. He rode Mt Washington in 1975 alone as the race organizers wouldn't allow him in the race with a fixed gear. He rode a 1:1 gear - 20T rear and made the front chaining from a Sturmey Archer 3 speed cog



Figure 13

(so about a 27" gear). The next year he rode the bicycle in the race, having installed a single speed freewheel with an 18T (so about a 30" gear).

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Remnants of Pope Manufacturing Co.

By Robert McCullough, Burlington, Vermont, U.S.A.

Factories in 2016 – A Pictorial Review

obert McCullough has traveled many miles over the northeastern U.S.A. searching out the remnants of buildings that had been used by the Pope Manufacturing Co. for the manufacture of Columbia bicycles in the late 1870s through to the early 20th century. He has also spent many hours in libraries and government contain maps, plans, pictures, and other information relating to the buildings used by the Pope Manufacturing Co. for its pioneering work in establishing a thriving bicycle industry in the U.S.A. Pope's interest in bicycles was piqued when he saw an exhibit of these intriguing machines from England on display at the Philadelphia Centennial Exposition that was held in Philadelphia, Pennsylvania, in 1876, to commemorate the 100th Anniversary of this country. It has been said that a picture is worth a thousand words, and this pictorial review certainly contains a wealth of information about the beginnings of the modern bicycle industry in the United States. Additional information about Albert A. Pope and his endeavors to create interest in bicycles beginning with the high wheel can be found in the following authoritative books:

Epperson, Bruce D. (2010). *Peddling Bicycling to America: The Rise of an Industry*, 294 pp. (McFarland & Co., Jefferson, North Carolina).

Goddard, Stephen B. (2000). *Colonel Albert Pope and His American Dream Machine*, 253 pp. (McFarland & Co., Jefferson, North Carolina).



Figure 2: Plan of the Weed Sewing Machine Co. in 1880. City Atlas of Hartford, Connecticut, G. M. Hopkins, C.E. (1880), Plates D and N



Figure 1: Plan of the Sharps Rifle Manufacturing Company factory complex on Rifle Avenue in Hartford, Connecticut. The Weed Sewing Machine Co. buildings are located on the northerly side of the Park River. Col. Albert Pope places an order to manufacture bicycles with the Weed Sewing Machine Co. in the spring of 1878. *By 1880 the facilities of these two* companies are joined to make *bicycles for the new company* called Pope Mfg. Co. From Atlas of Hartford City and County by Seth E. Marsh, and H.G. Loomis (1869), Plate 24



Figure 3: Weed Sewing Machine Company buildings looking south as shown in Frank Leslie's Popular Monthly (*November, 1881*).



8. Robert McCullough: Remnants of Pope Manufacturing Co. Factories in 2016 - A Pictorial Review



Figure 5: Weed Sewing Machine Company buildings as shown in 1886 in the L.A.W. Bulletin (February 26, 1886). The center wing is eight bays wide with windows spaced between six piers (corner piers included).



Figure 6: Weed Sewing Machine Company buildings in 1888 as shown in the L.A.W. Bulletin (February 3, 1888).



Figure 7: Capitol Avenue factory complex of the Pope Mfg. Co. in Hartford, Connecticut, 1888-1889. Courtesy Hartford Preservation Alliance.



Figure 8: Pope Mfg. Co. housing for employees in 1888 on the west side of Columbia Street, Hartford, Conn.



Figure 9: Pope Manufacturing Co. buildings in 1891 located in Hartford, Connecticut. Wheel and Cycling Trade Review (January 30, 1891). Vol. VI(23), p.602.*



Figure 10: Plan of the Pope Mfg. Co. factory in Hartford, Conn., in 1891.





Figure 11. Partial view of lithograph showing the Capitol Avenue factory complex owned by the Pope Manufacturing Co. by Keyes & Woodbury, Worcester, Massachusetts (c.1892-1893). The center wing is now ten bays wide with windows spaced between seven piers (corner piers included).

Figure 12: Corporate Headquarters in Hartford, Conn. of the Pope Mfg. Co. George Keller, architect.



Figure 13: Plan of the buildings that were part of the Pope Mfg. Co. in Hartford, Connecticut, in 1896. Comparing this plan with the earlier plans shown in previous figures, it is easy to see that the company's operations had increased considerably over the intervening years. Atlas of Surveys - City of Hartford (1896), Plate 5.



Figure 14: Plan of the extensive Pope Mfg. Co. in 1909. Atlas of the City of Hartford and the Town of West Hartford, Connecticut (1909).



Figure 15: A 1905 postcard showing the Columbia Bicycle Factory Complex in Hartford, Connecticut, USA.



Figure 16: Former Station A, Hartford Post Office (1897) and former Pope Manufacturing Company (Massachusetts Corporation) Motor Car Plant (1912).



Figure 16a. Rear façade of the center wing show*ing the trace of a partial* cornice for the gable roof *of the earlier, two-story* building enlarged in 1891 *by adding a third story* and increasing the building width. The precise methods and dimensions of the enlargement are not known, nor is the extent of any surviving materials from the earlier building. However, illustrations of the piers supporting the front façade of the 1891 building confirm the additional width, as does the roof line of the gable roof on the rear façade. Any surviving materials or interior space from that earlier building represent the sole remnants of the Pope Manufacturing Company's high-wheel era.



Figure 17. Plan for Pope Park in Hartford by Frederick Law Olmsted Jr. and John Charles Olmsted, 1898. Courtesy National Park Service, Frederick Law Olmsted National Historic Site.



Figure 18: Pope Memorial Fountain and Cycler's Rest. George Keller, architect (1913). This Memorial was originally located at the entrance to Pope Park near the Capitol Avenue factory complex, but it was relocated during the 1960s to a hillside near the park's southwesterly edge.

GREG SIPLE



David Herilhy, Nick Clayton & Carey Williams visit the former Pope factory in Hartford, Connecticut during the bus tour.

Conference Moment

Cycling in the 19th Century in Gent, Belgium

By Dirk Van Luchem, Ghent, Belgium

he earliest mention in Flanders of a velocipede dates to 1819. In a local Doornik Journal *La Feuille de Tournay* of 23 April 1819, mention is made of a man

from Brussels named Karr who imported into Belgium a bicycle similar to the model that Baron Von Drais had made. **[Figure 1]**

Between 1819 and 1865 no accounts have been found of any bicycle contests or sightings in written reports. City people enthusiastically engaged in drinking beer and local forms of

entertainment such as animal games (e.g. cock fighting), shooting and bowling games, and mast climbing. Exercise for the nobility included drinking cognac,

hunting, dancing, fencing and horse riding arts. Near the end of the 1860s a small breakthrough for the bicycle was at hand. Velocipedes became more and more fashionable and riding schools appeared in the main cities. **[Figure 2]**

> There is also a first mention of bicycle races. On Sunday 11 April 1869 a velocipede event took place in Gent on the Begijnhoflaan. [**Figure 3**]

According to the *Gazette van Gent* these races attracted a lot of attention. Originally they were planned on Easter Monday but did not take place due to major traffic congestion problems on that day.

They were postponed until April 11 and these were so successful that a second event had to be programmed in July. **[Figure 4]**

This form of entertainment, which was



Figure 3: Picture of the programme for a velocipede race in 1869 (photo City Archive Gent)

new for Gent, was so successful it was nearly impossible to get a seat as a spectator on the main street and platforms had to be built for this occasion.

The velocipedes rode in a parade with a musical corps in front towards the starting line. There were participants from all

tiek korps en de anntenaars in aischeidgehoor ontvangen.

Gemengde berichten.

De groote wedstrijd voor velocipeden, die den 2^{eo} dag na Paschen zal plaats hebben om 24_12 ure namiddag, op de Begijnevest te Gent, belooft curieus te zullen zijn. Er zullen liefhebbers van verschiltige steden verschijnen. Er zullen twee estraden opgericht zijn, eene voor 't muziek, voor den *Café du Baulevard*, en de andere bij de plaats van vertrek en aankomst der mededingers. Men zal op die estrade kunnen plaats nemen mits eene kaart van 50 centimen per persoon.

Te dier gelegenheid zal er ook eene velocipede met één wiel rijden, wat zeer aardig is. Het is een nimemend groot, en zal in hooge mate de aandacht der nieuwsgierigen opwekken.

De engelsche brouwers zijn in onrust. Het vreemd bier moet een aanzieulijk recht betalen alvoreus in Engeland in te komen, en het gouvernement is van zin dat inkomregt zoo veel te verminderen dat de vreende bieren op deo zelfden voet als de engelsche oog slechts aan een zoogennamd ezeise recht zouden onderworpen zijn.

Eene erge zaak en welk op dit oogenblik al de

Figure 4: Picture of article in Gazette van Gent *April 1869 (City Archive Gent)*



Figure 1: Picture of a Draisine

(repro. Miat in Museum Gent)

Figure 2: Picture of a Boneshaker School (photo Miat). Originally published in Harper's Weekly - *February 13, 1869. (USA),*

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Figure 5: Picture of Gustaaf Stragier (collection Bouqué Overmere)

major cities. There were also very beautiful young ladies, dressed with trousers and vest, who rode on 2 wheeled velocipedes.

The races were mainly for speed, but there was also one for the slowest rider where the winner was the one who came in last but still riding.

Bicycle races in those days were very spectacular and experimental. For instance, there was an experiment with a one wheel velocipede, but this was not a big success.



Figure 6: Picture of Hubert Houben (collection Bouqué Overmere)

Quote from the The Journal: "people were very curious to see the big one wheeled velocipede being ridden, but they were somewhat disappointed with the result. The velocipede has been ridden but the rider had need for a lot of help from many friends to continue his ride. Some of the friends started the wheel and its rider on its way and others were needed to keep them in balance. The operation was surely not very well optimised and this experiment is to be redone."

Soon after this, velocipede shops opened and local newspapers began to report the results of bicycle races. Around 1870 bicycles were still very expensive and relatively dangerous. Most of the velocipedists were young aristocrats. It appealed to their competitive spirit and sense of risk, and the bicycle provided them with adventurous travel possibilities.

In spite of this burst of enthusiasm, the long-term future of the velocipede did not seem very bright. A large number of bicycles were being sold at public auctions,

indicating a decline of interest. We had to wait till the end of the 19th century, with the invention of the pneumatic tyres, before cycling and races attracted widespread interest again.

Cycling in general at that time included 4 aspects. First, long distance rides; second, record attempts and challenges; third, local races; and fourth, the rise of cycle clubs and velodromes. 1) **The long distance races:**

These races were mostly ridden between major cities. In 1893 a



Figure 7: Picture of Flag advert in 1895 (collection UB Found Gent)

long distance ride from Gent to Oudenaarde and back (approx. 70 km) was won by Gustaaf Stragier in 2 hours and 12 minutes, which was 7 minutes in front of the second finisher, Deschaepmeester. Both of these riders were amongst the best riders in the country at that time. [Figure 5]

2) Record attempts and challenges:

The most important and renowned record ride of the period was the one by Charles Terront in 1893 from St. Petersburg to Paris. The Belgian Hubert Houben from Brussels was a very wellknown cyclist who won many two-man races in the 1893-1895 period. [Figure 6]

The most famous encounter in Gent at that time was initiated by Gustaaf Stragier who challenged William Cody

(alias Buffalo Bill), bicycle against horse. [Figure 7]

The duel between Stragier and Cody took place in the Gent velodrome in 1895. Cody was in Gent with his Wild West Circus



Figure 8: Picture of race hippo-cyclist (repro Miat Museum Gent)

at that time. The challenge attracted a mass of people and was a very bizarre race. On the inside of the track in the velodrome a sand track was laid, so that the horse could run alongside the track. That gave Cody an advantage of 10 meters per round.

Cody and Stragier had to ride for 1 hour - Stragier on his bike and Buffalo Bill on his horse. Cody could change horses as often as he wanted to, choosing

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Figure 9: Picture of board of the Gent Cycle club (photo Miat Gent)

from a batch of 6 horses. The first day of two, Stragier won the race with 50 meters ahead of Cody, while on the second day Buffalo Bill won. Everybody, including the organisers, were happy with this outcome.

Table 1: Number of Bike Shops in Belgium – 1893-1900		
Year	Number of Bike Shops	
1893	12	
1894	13	
1895	19	
1896	23	
1897	28	
1898	35	
1899	51	
1900	58	

[Figure 8]

3) Local races:

These were attractive meetings with a local character: music and races took place together. The races were combined with obstacles and required certain agility and skills of the riders. These obstacles were specifically put in the race and were not so much based on strength. Examples

of obstacles were: putting a stick through a ring during the ride; crossing a 4 meter long and 40 cm wide board mounted on a pile of wood like a balance; passing under a cord tied between 2 trees, which required riders to dismount and climb on again; riding over a big tree log or a trough of shallow water were further obstacles.

4) Rise of cycle clubs and velodromes:

Gent had one of the first cycle clubs in the country. A newspaper article dated 27 April 1869 speaks about "*la société Sport Vélocipédique Gantois, établie au café du Boulevard du Béguinage nr. 51*". This is the same club that had organised races for velocipedes earlier that month. [Figure 9]

The Gent velodrome was founded in 1892 in the gardens of the local hospital De Bijloke alongside the orphanage. The track was made of concrete with high bends and had a length of 370 meters. The middle square could be used for festivals, jumping, tennis - and soccer games. **[Figure 10]**



Figure 10: Picture of the Gent Velodrome (collection A. Vander Haeghen)



Figure 11: Picture of Ed. Vandersluys factory advert (collection Miat)

Finally some numbers:

Table 1 deals with cycle merchants in Gent before 1900. The shops and factories are only mentioned after 1893. There are no records before that period. We see that they increase in number each year. They were mainly located around the centre of town and specialised in importing foreign bicycles, mainly British. There are only 5 constructors. The local makers were Boterdaele, D'Haenens – Gathier (with factory), Goossens & Steyaert, Van Wassenhove and Ed. Vandersluys (with factory). **[Figure 11]**

Interestingly, whereas there was a decline in cycling in other countries after 1896 as the bicycle boom came to an end, in Gent growth did not stop as Belgians, like the Dutch, took to cycling as a life-style. **[Table 1]** \bullet

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Fred St. Onge, "Tramp Cyclist," and the Transformation of Bicycling in the Bust Years

By Lorenz J. Finison, Boston, Massachusetts, USA

oston cyclist Fred St. Onge's life as a racer, vaudeville performer, manufacturer's representative, and safety instructor makes real the concept of a cycling career. This framework questions how people get started and trained as cyclists, and then make transitions among different styles of cycling (e.g., recreational, racing, utilitarian, charitable); take on different roles within it (e.g., cyclist, coach, builder); and then, sadly for some, give it up for other pursuits. A cycling career unfolds in the changing nature of the cycling industry and society. During his lifetime, St. Onge struggled as the industry struggled.

Historical Context

10.

Until the 1880s Boston's upper-middle-class professional men and a few women – early adopters – were the recreational bicycling craze. The truly wealthy didn't need a bicycle to get out of urban Boston – they had horses stabled at the ready and loved to cruise down the boulevards and parkways to show off their carriages in summer and decorated sleighs in a winter snow. The working classes did not have the money to buy a high-wheeler and they had other sports in mind – packing into the baseball stands, for example.

Professional men regularly biked out the carriageways to close locations like the Chestnut Hill Reservoir and Franklin Park, and then further into the nearby countryside, about which Robert McCullough has written, and what the landscape historian John Stilgoe has called the "borderlands." ¹ They were trying to get away from the smells, sounds and crowded conditions of an increasingly immigrant-populated city where hour-long traffic jams of trains, streetcars, horsecars and wagons and the shouts and oaths of their drivers reverberated along the narrow urban streets of Boston.

As cheaper safeties appeared, recre-

Bostonians. Middle- to lower-middle-class clerks, artisans and others rode. By 1895 some of the very people the professional men had tried to get away from followed them. Imagine their surprise when the Boston Italian Wheelmen surfaced in the borderland community of Needham on a jaunt where they might have observed the vast excavation of gravel used for filling in Back Bay. Imagine their surprise, too, when a dozen "colored" riders from the Riverside Cycle Club registered for a century ride and then filed a lawsuit when their registrations were rescinded.2 In Boston racing was never segregated, but recreational bicycling was, occasionally.

provided just the right opportunity for refuge. For those who still wanted a wheel, the new motorcycles provided a touring opportunity beyond the borderlands into the distant rural towns. The cultural split between bicycling and motorcycling had not yet occurred. The recreational cycling craze collapsed, a victim of its own success – it lost its chic.

In the early 1900s the bicycling bust among white upper-middle-class professional men and those who followed them into the countryside was accompanied by changes in the cultural view of cycling: the bicycle became the utilitarian vehicle for such "lower-order" and boy's occupations as messengering. It would not come back much with commuting urban workers either – they now had a five cent fare on the new electric streetcar system to get to their jobs.

Racing declined, too. The remaining bike racers were typically of working-class backgrounds. They had always been racers – not recreational cyclists. Many of them were sons of immigrants or immigrants themselves. For example, the famous Boston Pursuit Team of



Figure 1: "A Tramp on Wheels," ~ 1898. Source: St. Onge Scrapbooks, Bicycling History Collections, University Archives and Special Collections, Joseph P. Healey Library, University of Massachusetts, Boston.

Boston's attitude about this was mixed.³ The professional class had to escape by other means. Luckily for them the private country-club movement was growing and 1897 included Marshall "Major" Taylor, the African American cyclist originally from Indianapolis; Eddie McDuffee, an Irish-American mason whose father and brothers were masons, too; and New Brunswick-born immigrants Nat and Frank Butler, and Burns Pierce, fleeing poor economic conditions in that province. They took factory jobs in Boston but were saved from that life by professional racing.

As bicycle merchants and manufacturers assessed their situation, returning to sales records set during the bicycle craze seemed remote. But they would do their best to ride out the post-1900 bicycle bust. According to historian Robert Turpin, they settled on the boy as their marketing target.⁵

One man well suited to help them out was Fred "Kid" St. Onge. He raced the professional circuit, operated a Boston bicycle academy, and taught Helen Keller how to ride tandem. He became an internationally acclaimed comic and trick vaudevillian; representative of bicycle and motorcycle manufacturers; and traveling ambassador of bicycling, crisscrossing the United States and Canada. He organized hundreds of big bicycle parades, recruited youngsters to cycling and offered safety education. The daily and bicycling press published thousands of articles about his travels and showmanship. St. Onge's biography shows the struggles to make a career at bicycling in the post-1900 bust amidst the industry's efforts to survive.

Racing Through the Bicycling "Craze"

Fred St. Onge was born in Cambridge, Massachusetts, on April 11, 1874, son of a Montreal immigrant hostler and an Irish-American mother. "Kid," as he was soon known in cycling circles, started riding a high-wheeler at age 14. The following year he won his first mile novice race on a cushion tired safety.5 He was a teenaged protégé of Peter Berlo, a German émigré racer, bicycle repairer, and custom builder.6 He entered amateur races on many occasions.7 On September 17, 1891, he competed against well-known local racers Eddie McDuffie, E.F. Burnham, and George L. Davis in the "Middlesex County Exhibition" at Mystic Park, Medford. Fred placed third. He took on a novel role in 1892 for the Suffolk Athletic Club's cross-country run, acting as a "whipper-in" for the "slow pack" of runners.8 For the next few years he competed in local races; for example, in 1894 at the new Waltham track, coming in second in the "3:00 [handicap] class." 9 At the famed 1895 twenty-five mile Linscott Road Race - from Malden to Waltham and back - he placed twenty-third with a three-minute handicap.10

In June 1895 he was suspended from "all amateur racing pending investigation" and shortly declared a professional due to "violation of clause (b)": He had committed the sin of taking money for pacing a rider in a six-day race at Madison Square Garden.¹¹ One of his clubs – the "Garden City Wheelmen" of Newton – reported that they were "lamenting the fact that their favorite rider" had been declared a professional, but that he would "keep the club colors going in the ranks of the pros." ¹²

Perhaps his most spectacular "win" was summiting Corey Hill in Brookline, beating out his mentor, Peter Berlo. Berlo, the first of the 'pros,' lurched up the hill like a rocking horse, using the whole road, and throwing his great body forward at each push. Five minutes later the lithe little Allston boy, St. Onge, came shooting out of the crowd, pedaling up the first rise of the hill like mad. He wriggles all over and fairly slipped up the steep road. And he had enough left for a spurt at the top. His time was two minutes flat. Peter's was 2:26 2-5." ¹³

Despite his summiting strength, Kid St. Onge was seldom among the leading professional riders as he raced through the fall individually and on tandem at Manhattan Beach, Buffalo, Springfield, and other racing venues. In July 1895 he teamed up with three other riders to ride a pacing quad for Berlo against three tandem pacers, ending in confusion and a deflated tire for the quad.¹⁴ In September they tried again in a professional match between A.W. Porter and Peter Berlo, paced by the "Berlo" quad: the veteran rider A.B. Rich, St. Onge, Frank Mayo, and Peter Berlo's younger brother, Leonard.¹⁵

The Tramp Cyclist

Fred's disappointing race career perhaps drove him to the discovery that his true talent – and potential for a career in cycling – lay elsewhere: in trick riding, in which he already had established some local fame. On a windy Sunday in April 1894, he and hundreds of Boston cyclists had ventured out to the Reservoir, where he amused the crowd "*with his queer antics on an ordinary*." ¹⁶ Fred began to experiment more with trick and comic cycling to entertain his fellow Boston cyclists, and eventually he went on to the theatre.

The use of bicycles in the variety theatre was not at all novel. As early as 1874 a Professor Henry Brown, the "famous velocipede rider, and his corps of female velocipediests of eight beautiful riders all on the bicycle in new Parisian costumes" shared the bill with a "graceful [roller?] skatorial ballet." 17 By 1882 the celebrated Martell Family, advertised as "the world's greatest bicycle riders" performed at the Opera House in Springfield, Illinois, and the celebrated "Stirk Family" of bicycle riders performed at the Bijou Opera House in New York.18 In the 1890s the comic potential of the bicycle was recognized by the Powers Family - "Wizards of the Wheel" - who promised "Marvelous evolutions on the bicycle interspersed with eccentric comedy situations" to New York and Boston audiences by B.F. Keith's Amusement Enterprises.¹⁹ Variety theatre was becoming vaudeville and boomed trick and comic cyclists in a big way.

Fred was well recognized locally for his comic riding. On August 29, 1896 he was part of a large gathering at the Bijou Theatre to award prize cups for the recent Herald Bicycle Parade. Club delegations included "Press C.C, Roxbury Wheelmen, Tiger Roadsters, Chelsea C.C., Somerville C.C., Nashua C.C., and many others." The English High School bicycle division, Newport Artillery Company of Rhode Island and Company L, MVM [Massachusetts Volunteer Militia – an all-black company] joined in, too. "Kid St. Onge, the trick and fancy rider made the hit of the evening when he came out for his [prize] cup, dressed in the tramp suit which has helped make him famous." 20 The concept of the tramp began in the economic depression of 1873, which threw many men out on the roads in search of work. In vaudeville, the image evolved to a genteel man with scruffy beard and baggy tuxedo. W.C. Fields was a tramp juggler on the vaudeville circuit, and Charlie Chaplin later mastered the character for silent film. Fred and others simply adapted it to the bicycle.

The *Boston Globe* reported that many members of the bicycling community would attend an opening party in January 1897 at Boston's Keith Theatre where Fred made his formal debut as a professional actor. He played a tramp who had no experience with a bicycle but picked up a discarded one and tried to ride it with all kinds of almost-mishaps the result, played for great comic effect, frequently against the foil of a partner: the "scientific" bicyclist. In May 1897 a new trick, "riding up and down a flight of stairs, was especially amusing."²² [**Figure 1**]

St. Onge's act was usually part of a larger bill of "polite" or "clean" vaude-

ville. The Keith circuit of theatres were especially demanding that the performers not use "blue," or suggestive language or behavior – "not the slightest tinge or suggestion of coarseness or vulgarity." St. Onge had a variety of partners, and sometimes threesomes and foursomes, touring as the St. Onge Brothers for the next 18 years. [Figure 2]

Fred was by no means alone in his attraction to show business as a means of maintaining a cycling career. Nova Scotia emigrant and fellow Boston racer Tom Butler made the same move.23 Tom was an international champion in 1896, '97, and '98. His flair for showmanship came out as he roller-raced against Mile-a-Minute Murphy at Keith's Theatre in Philadelphia in 1901. His most astounding performance was a loop-the-loop trick on the "Culver" cycle sensation, headlined: "Tom Butler and Frank Caldwell, the human squirrels." and described as



squirrels." and described as Figure 2: St. Onge "Brothers." Fred St. Onge on right, unknown part-"the most intrepid, daredevil, and ner on left. Source: St. Onge Scrapbooks.Boston.

sensational act ever performed by man."²⁴ Butler soon joined the Barnum and Bailey Circus where he appeared as Volvo, the Volitant," to "jump the gap."²⁵

While Tom Butler favored the spectacular, St. Onge continued to favor the comic. Other Boston comic cyclists included Wilbur S. Stephens, Lee Richardson, and trick cyclists Thomas H. and James R. Mosher, who later performed as a comedy trio, Mosher, Houghton, and Mosher, and still later as Mosher, Hayes, and Mosher. In June, 1897, one of the brothers challenged St. Onge to a trick riding duel at the Cambridge Cycle Park: "during the races this afternoon will be a trick and fancy bicycle riding competition between Kid St. Onge and T.H. Mosher, ... Mosher considers that *he can perform more clever tricks than the* skilled St. Onge, and the competition is expected to be keen." They provided the intermission entertainment "while the big [pacing] machines are being put into condition for the match race between [Eddie] McDuffee and [Jimmy] Michael." 26

In 1898 Fred partnered with Louis J. Clay, who was reputed to be "the first in the country to ride a safety bicycle on one wheel;" conducted a bicycle riding school at Cottage City [now Oak Bluffs]; and had played polo on a Star bicycle. Clay suggested a "double act which they put together and have since worked in all the high class vaudeville houses in the country." ²⁷ The partnership was interrupted briefly when Clay was hospitalized, and one of the Mosher brothers took Clay's place – billed as America's "Greatest Comedy and Scientific Cyclists." ²⁸ Late in 1898 Fred also partnered with Clarence W. McLean, a Kentucky trick cyclist who had come to New England. They played "the tramp and the dude." ²⁹ [Figure 3]

While comic riding, St. Onge kept up his racing credentials as a pacer too, on Eddie McDuffee's team of pacemakers, steering a triplet. In 1898 he joined the "National Cycle Drome Team" and toured the United States and Canada, with his trick riding as a special added attraction.³⁰

In June 1900, as racing began to falter, the St. Onge Brothers were featured for "summer vaudeville" entertainment at the famed Cambridge Cycle Park. Also on the bill were a pair of "merry monopedes," "a singing comedian," a "second-sight marvel," a "black-face come-

dienne," and a pair of "comedy vocalists." ³¹ *The Boston Globe* announced that he and a partner would be at the Boston Music Hall in October 1900 – "just returned from a triumphant transcontinental tour" and performing in an act which "should attract every bicyclist in Boston." ³² He continued



Figure 3: St. Onge and Clay act ~ 1898. Note: "White" refers to a bicycle brand. Source: St. Onge Scrapbooks.



Figure 4: Flyer for Minstrel Show of the Brookline, ~1901. Source: St. Onge Scrapbooks.

to be vastly popular with local cyclists as a headliner for the "Third Annual Minstrel Show" of the Brookline Wheelmen in February 1901.³³ [Figure 4]

St. Onge played Massachusetts indoor theatres and the outdoor pavilions, too, as at Plum Island Pavilion with Louis Clay in 1899³⁴, and Norumbega Park Pavilion in Auburndale.

The *Detroit News* captured the heart of the St. Onge Brothers act:

The thing that caught on best was the bicycling riding of the St. Onge brothers. One of them, in the familiar guise of a Casino review tramp, succeeds to the happiest degree in showing what a really funny thing a bicycle is. At first there is a considerable restraint between the wheel and the tramp, one being painfully suspicious of the other. There is a disposition toward friendliness, but the two have a great many fallings out before they get on good terms with one another. It is these *little differences between them that amuse* the audience so much. The tramp will be sailing around on the back of his mischievous friend, when, all of a sudden, the steel joker will kick up his heels and land him on his neck half way across the stage. But the tramp finally comes out victorious, after a savage scrimmage, in which the wheel gets the strangle hold on him and nearly ties him in a knot. This appears to make the tramp seriously in earnest, and he proceeds to do all sorts of things to the obedient machine. The older brother is likewise an expert trick rider, and the act

has the double merit of being both clever and funny.³⁵

In October 1901 Fred left Boston with his wife Caroline, and a new partner, Theodore Fourcher, on a round-the-world tour under contract to the traveling troupe: "The World's Entertainers," advertising "polite vaudeville."

Fourcher came from Augusta, Georgia, his father a bike shop owner and locksmith. Theodore raced and did "dare-devil" bicycle tricks. He was known for riding a bike down huge ramps and jumping over obstacles, and was reputed to be the first to ride down the U.S. Capitol steps. The Augusta Chronicle headlined its home town hero – "Globe Trotter Fourcher is Heard From" - and described the partners' travels in great detail. They had left San Francisco for Honolulu, Samoa, New Zealand, Australia, Tasmania, South Africa, France, England, Ireland, and Scotland before a triumphal return to Boston in March 1903.³⁶ [Figure 5]

In 1905 a St. Onge Brothers pair (possibly including Fourcher) represented "the professional vaudeville end of wheeling" and the monk-a-cycle." ⁴⁰ They barnstormed around the country, advertised as the "whimsical wheelmen; daring and drollery a-wheel." ⁴¹ While in Denver they appeared along with Tuskegee's Southern Jubilee Singers.⁴²

Fred went back to the Continent several times. In April 1910, Variety magazine reported that he "reappeared this week in a new act, after an absence in Europe. Dorothy Florence and John Betternoff were with him, the former first appearing in a tailor-made skirt and doing some good bicycle work on a bicycle. St. Onge enters in a scream of a make-up riding a bicycle. Betternoff makes his appearance as a tramp on a velocipede wearing plaids. Some very good comedy cycling is seen, shots ringing out as tires are punctured." ⁴³

Property and Scene Plot for St. Onge Act (for the Stage Manager)

- · Garden or wood scene in four
- One kitchen chair PAINTED WHITE
- One revolver. Two shots each show
- Dressing room on stage left for lady to make quick changes during the act.



Figure 5: Melbourne Flyer, ~1902. Source: St. Onge Scrapbooks.

in the silver jubilee of the League of American Wheelmen (L.A.W.), which was celebrated at the Reservoir.³⁷

Fourcher retired briefly from the stage in 1908, settling in Los Angeles. He worked variously as a salesman, electrician, pyrotechnician, and entertainer and is reported to have done the first bicycle stunt film.³⁸ Fred put together a new cycle act – St. Onge and Company – with two assistants.³⁹ The 1908 act featured some new comic bicycles: "the giraffe-a-cycle Table, chair and light the same

- Dressing room for two ladies and two men
- Spot light used for finish of act, about 25 seconds, will explain cue on arrival (Source: Bicycling History Collections, University Archives and Special Collections, Joseph P. Healey Library, University of Massachusetts, Boston: St. Onge Scrapbooks.)

St. Onge returned to Europe as late as

1912, reporting back that he would be in Budapest for a month-long show at the Royal Orpheum Theatre and then on his way to Holland. ⁴⁴ He came back via England in January 1913. The vaudeville circuit declined, due to the inroads of motion pictures, and international travel blocked by World War I, and he increasingly operated in the United States and Canada as a cycle manufacturer's representative.

The Manufacturer's Field Agent

St. Onge's ability to sell bicycles and components and his French Canadian heritage no doubt attracted Canadian companies. In 1915 he relocated to Montreal and landed a contract with A. Bregent, a wholesale sporting goods house,⁴⁵ to demonstrate the Smith Motor Wheel, a single wheel attachment to a bicycle which he boasted could tow six additional bicycles – 1,207 pounds of bikes and men. *Motor Cycle Illustrated* reported from Frederickton that "*St. Onge's order book showed the happy results of such a demonstration.*" [Figure 6]

The Bregent contract lasted three years, and in 1918 Fred then made a brief return to the vaudeville stage with a woman partner in a new act called the "Knobby Tread Couple." ⁴⁶ One reviewer commented: "Votaries of daredevil riding stunts will find much to interest them in the exhibition given by St. Onge and Ritchie, cyclists of the new school. The act is a combination of comedy, singing, cycling, pantomime and moving pictures.⁴⁷"Fred did his best to adapt to the new entertainments but they soon passed him by.



Figure 6: "Smith Motor Wheel Tows 1,207 Pounds." Motorcycle Illustrated. 10.35 (September, 1915): 34.

He returned to traveling the country at the invitation of local bike dealers and newspapers interested in big events -"sociability rides" – that Fred frequently led on a high-wheeler, even when ostensibly "on vacation" with his wife Caroline at the farm of friends in Agawam, near Springfield, Massachusetts. Motorcycling and Bicycling Magazine's "Arkay" in July 1919, reported that "Fred just naturally has to be busy at something." He repaired bikes for local kids and then pulled together Fisk Rubber Company, and the Hendee [Indian] and Westfield [Columbia] Manufacturing Companies to support a big Springfield-area bike event with plenty of souvenirs, lemonade, sandwiches, and doughnuts, attracting six hundred riders on a twenty-mile run, starting with a bicycle parade led by Fred and "his Agawam Bicycle Club." For Arkay this proved that the bicycle was "coming back strong." 48 His enthusiasm for organizing cyclists continued: Just a month later he led a

contingent of cyclists along Main Street in Springfield and then on a fifty-mile ride to Hartford and back.⁴⁹

A few months later another newspaper account described him as: "one of the best bicycle riders in America," and stated that he had "connected with the Hendee Manufacturing Company, Corbin Screw Company, makers of Corbin coaster brakes, and the Continental Rubber Company as a traveling bicycle educator in an entirely new line. Upon reaching a city where he is to 'work', Mr. St. Onge will at once connect with the dealers and enlist their cooperation for reaching the riders. He will help the dealers and their salesman in points of salesmanship, wheel displays on floors, windows, etc. The riders themselves he will instruct in proper riding position, adjustment of running parts, road deportment, and he will take them on bicycle runs. He will also give exhibitions of fancy, trick, wrong and right methods of riding." 50

The Corbin connection resulted in St. Onge's book: *The Art of Bicycle Riding*, published in 1920. The booklet demonstrated how to ride safely, the how-to of some of the bicycle tricks he had perfected, and how easily they might be accomplished when a bike was equipped with a Corbin Duplex Coaster Brake. ⁵¹

One of the great Boston cycling events during the bust featured St. Onge. September 12, 1920, featured a day of parade and contests at the Reservoir, "and was the most wonderful turnout, 4,000 cycle riders in line with both sexes and all ages represented. It was a parade and a contest



Figure 7: St. Onge Day celebrations at Reading Pennsylvania. Source: American Bicyclist and Motorcyclist 19.10 (October, 1923). St. Onge is on a high-wheel bicycle. Note the banner on the float with the text "A Bicycle is the Birthright of Every American Boy & Girl."



Figure 8: St. Onge with Doctor Kendall of the Boston Bicycle Club and bicycling medals (year unknown). Source: St. Onge Scrapbooks.

of skill directed by Fred St. Onge, one of the bicycle missionaries of the cycle trade. The parade flowed from Copley Square to the Reservoir. Four policemen on motorcycles were followed by Fred and other old-timers on ordinaries, and 14 year old Lewis Storrow, too." 52 Then, much of the surviving leadership of Boston bicycling from the 1880s and on, including racing stars Nat and Tom Butler and Peter Berlo. St. Onge gave a demonstration of his comedy and scientific riding and addressed the crowd, stating "that this was the happiest moment of his life as it brought him back to the very spot where he started the career that made him world famous" – a big success. The L.A.W. Bulletin editor, Abbott Bassett, complained, however, that only one of the Boston papers, The American, had mentioned the parade and that it "does not speak well for the public spirit of the others." ⁵³ A big contrast to the many column inches devoted to bicycling during the craze of the 1890s.

By 1921, at age 47, he left professional vaudeville forever and became a full-time "bicycle booster" for the Cycle Trades Association (CTA). St. Onge was on the road for most of the year, going from city to city – essentially homeless according to one account – organizing big bicycle parades, known as "St. Onge Days," involving hundreds of children and teenagers. The formula was always the same: a big bicycle parade with boys' and girls' contests for best decorated bikes; local high-wheeling old-timers; tandem riders; freak wheels; local bands; oldest and youngest rider prizes; comic riders; a plank contest to determine who could do the best on a narrow (five inch) one hundred fifty foot plank; a "Billy Sunday"-style pep talk by St. Onge; a prize for the "neatest" bicycle troop of Boy Scouts; and a prize for the school with the most riders. Caroline would judge the decorated bikes, along with a committee of prominent local women.

An additional element fit right into the CTA's focus on recruiting children at the youngest ages: invitations to

children riding scooters, scooter-bikes, and tricycles. A scooter-bike was described as a "little sidewalk vehicle equipped with pedals, saddle, and coaster brake." Thus, the manufacturers tried to allay parental concerns about safety, suggesting that chil-



Figure 9: "Cycle-logical Ways to Happier Days," A representation of one of the ads to be used in National publications in C.T.A. advertising campaign." American Motorcyclist and Bicyclist 24.8 (August, 1928): 7.

dren would stay out of the roadways and eventually graduate to youth bikes. Safety was a big deal. As more and more automobiles traveled at higher and higher rates of speed down the roads, and in the face of increasing casualties, the auto manufacturers and others planned safety campaigns to reduce interaction on the roads. For the autoists this meant regulating pedestrians – promoting the use of the term "jay-walker", for example – and instructing children how to avoid cars while biking.⁵⁴ Fred's instruction fit right in.

Fred would spend a week in each city preparing the groundwork with local bike dealers and news media, lecturing and demonstrating in schools and with Scout groups to push bicycling and provide bicycle safety education. Within a few weeks after each event, the cycle trades magazine *American Bicyclist and Motorcyclist* would publish a glowing account of his successes, including the number of children involved, the names of winners of local contests, and the number of dealer display ads and column inches of free publicity in the local newspapers. So

successful were his events that in 1925 the CTA split the U.S. territory. J. Howard Rodda was added for the West Coast trade, and St. Onge ranged the East Coast and as far west as Texas. [Figure 7]

Such hoopla went on in hundreds of cities from 1921 to 1927 when CTA suddenly announced without explanation that its publicity department had folded. Not to be thwarted, in 1928 Fred made good use of his Canadian heritage once again and worked his way coast-to-coast across Canada for the cycle trades in that country.

Bike Safety

As manufacturers' jobs dried up, Fred adapted his safety message for motorcyclists. Despite his and Caroline's essential homelessness on the road, Fred kept a strong tie to Massachusetts and in 1929 he worked as the "Safety Director" for Massachusetts affiliate of the American Motorcycle Association (AMA). He spoke frequently on safety, and lobbied state agencies on behalf of motorcyclists' interests. He claimed, in response to attempts to keep motorcyclists off the roads, that "reports from dealers show that autoists are to blame for motorcycle accidents in a large majority of in-



Figure 10: Signage on Young's Bike Shop, Nantucket, early 1930s. Courtesy of the Nantucket Historical Association.

stances. To keep motorcycles off the roads would be to take away the best school for chauffeurs and aviators, because motorcycles and bicycles enable riders to better judge time and distance." 55 He MC'd a Motorcycle Safety Rally in Worcester, including speechmaking, vaudeville acts put on by his friends from the old days, and roller racing. The event featured an appearance by his friend and champion cyclist from the early 1900s, Major Taylor, who received a lengthy ovation from the crowd, and likely stayed to sell his new autobiography.56 Fred organized a motorcycle hill climb and endurance trial at Little Quabbin Mountain in Enfield (a town since destroyed in the creation of Quabbin Reservoir).57 Indefatigable, he organized wintertime bicycle roller races around the state, too.58 He was also noted for his occasional participation in the nostalgic annual runs of Boston Bicycle Club's Wheel Around the Hub. [Figure 8] As the AMA job played out, in 1930 he went on tour for the Canadian Safety League ("Bicycle Rider Gave Lectures to Thousands of School Children") before

settling, it seems permanently, in Hollywood.⁵⁹

The End of the Road

About St. Onge's experience in the 1930s little is known except his residence in Hollywood and ill health in the decade before his death. Perhaps for the first time in their adult lives, Fred and Caroline had a home. Toward the end of his life he apparently functioned as a bike safety instructor for the Riverside, California public schools. His diagnosis for the children was simple: avoid "carelessness, thoughtlessness, and heedlessness," and his solutions were simple, too: Remember: "'A.B.C' – always be careful." Don't ride another on your bike; have "good brakes, a lantern and a reflector." ⁶⁰

Fred was seriously injured in a bad train crash in California in the fall of 1938.⁶¹ In his last days he lived at the Adams Sanitarium in Los Angeles. His May 20, 1939, death certificate listed cerebral hemorrhage as the immediate cause of death after several years of arterial sclerosis. His occupation was listed as "moving pictures, stage and safety" – no mention of bicycles. Fred was cremated at the Hollywood Forever Cemetery along with many other former vaudevillians, including his long-ago partner, Theodore Fourcher.⁶² His ashes are interred along with Caroline's at Forest Lawn Cemetery in Glendale, California.

Post-St. Onge

At the end of CTA's St. Onge Days in 1927, the trade association readied a different strategy to attract children and teens to the bike: a concentration on advertising in family- and youth-oriented magazines, such as The Saturday Evening Post and Boys' Life. In a twist on the newly popular field of psychology, CTA adapted to its own ends a New Departure Coaster Brake advertising gimmick called the "Cycle-logical Wizard," and introduced the slogan "Cycle-logical Ways to Happier Days." 63 [Figure 9]

The adoption of this slogan began a long struggle by the bicycling industry to renew adult participation in recreational cycling,

including recruitment of college students and other young adults to take part in bike-train and bike-camera-train excursions, and support for the American Youth Hostels. The slogan "cycle-logical ways" has appeared since the early 1930s on a Nantucket bike shop sign.⁶⁴ [Figure 10] Fred St. Onge's life spanned the cycling craze, and its bust, and the precursors to its renaissance. The story of his life provides a window into an individual's struggle to maintain a bicycling career, and into an industry in its struggle to maintain a presence in American life.

Acknowledgements

Thanks to the Fred St. Onge and Theodore Fourcher family members for their help in discovering new materials about these intrepid cycling vaudevillians. Thanks also to the staff of the University Archives and Special Collections, Joseph P. Healey Library, University of Massachusetts, Boston..

End Notes

- ¹ John Stilgoe, *Borderland: Origins of the American Suburb, 1820-1939* (New Haven: Yale University Press, 1988); Robert McCullough, *Old Wheelways: Traces of Bicycle History on the Land* (Cambridge: MIT Press, 2015).
- ² African-Americans at that time were referred to as "colored", and this was the preferred term taken on by African-American cyclists too.
- ³ Lorenz J. Finison, Boston's Cycling Craze, 1880-1900: A Story of Race, Sport and Society (Amherst: University of Massachusetts Press, 2014).
- ⁴ Robert Turpin, "Our Best Bet is the Boy": A Cultural History of Bicycle Marketing and Consumption in the United States, 1890-1960 PhD diss. University of Kentucky, 2013). See also: Robert Turpin, "Our Best Bet is the Boy: Bicycle Advertising Campaigns after World War I", Cycle History 22: Proceedings of the 22nd International Cycling History Conference (Paris, France; May 2011), p. 158-170 (Birmingham: Cycling History (Publishing) Ltd., 2011).
- ⁵ "An Old-Time Crack Interviewed," Australian Cyclist, February 20, 1902. Source: Bicycling History Collections, University Archives and Special Collections, Joseph P. Healey Library, University of Massachusetts, Boston: St. Onge Scrapbooks. Courtesy Richard St. Onge.
- ⁶ Peter Berlo, b. 1866, emigrated in 1873 from Prussia with a large family. His first recorded occupation at about age 14 was "hatmaker."
- ⁷ "The Wheel," Detroit Free Press, November 17, 1899. Alfred (Fred) St. Onge was born in Cambridge in 1874, son of Alphonse (resident of Brookline at marriage) and Susan A. Leonard (resident of Cambridge at marriage); married in Cambridge on January 29, 1872. Three brothers were Seraphin James, George, and Alphonse. Three sisters were Marie, Winifred, and Alphonsine. Fred lived in Brighton and married Caroline Horgan of Worcester. Sources: Massachusetts State Archives and local city directories.
- 8 "Suffolk Cross Country Run," *Boston Herald*, March 29, 1892. A whipper-in was originally defined as a huntsman's assistant who brings straying hounds back to the pack during a fox hunt.
- "At the Waltham Track," *Bearings* 10.6 (September 7, 1894): np.
- ¹⁰ "Linscott Road Race Entries," *Boston Herald*, May 4, 1895.
- ¹¹ "Gideon's Weekly Say," *Bearings* 11.22 (June 27, 1895): np; "Professional Racing," *Bearings* 11.23, July 4, 1895: np; "An Old-Time Crack Interviewed," *Australian Cyclist*, February 20, 1902. Source: St. Onge Scrapbooks.
- ¹² "Bicycle News," *Boston Post*, June 30, 1895. Clubs frequently adopted leading racers, even if they lived in other towns. Some racers were members of several town clubs. The sum of the club "perks" might blur the line between amateur and professional.
- ¹³ "St. Onge Broke Record," *Boston Globe*, October 27, 1895.
- ¹⁴ "Professionalism Launched," *Bearings* 11.26 (July 25, 1895): np.
- 15 Boston Herald, September 29, 1895.
- ¹⁶ "Cyclers Had a Lively Day," Boston Herald, April 2, 1894.
- ¹⁷ Classified Advertisement, *New York Herald*, April 21, 1874.

- ¹⁸ "Opera House," *Daily Illinois State Journal*, April 26, 1882; "Bijou Opera House," *New York Herald*, April 15, 1882.
- ¹⁹ "B.F. Keith's Amusement Enterprises," *Boston Herald*, January 21, 1894.
- ²⁰ Unidentified ~ August 29, 1896 newspaper clipping. Source: St. Onge Scrapbooks.
- ²¹ "Tiger Roadsters," Boston Globe, January 10, 1897.
- ²² "Good Racing. Boston Electric Light Meet Successful," *Boston Journal*, May 20, 1897. Fred's partner Theodore Fourcher might have invented and certainly publicized the down-the-stairs trick.
- ²³ Older brothers Nat and Frank raced with Major Taylor on the Boston Pursuit Team of 1897.
- ²⁴ Newspaper advertisement for Keith Theater, unknown newspaper, Philadelphia April 5, 1903. Photograph taken of Culver collection, Copake Bicycle Auction, June 2016.
- ²⁵ "Report Proved Untrue, Volvo, the Daring Bike Rider, Still Alive," *Idaho Falls Times*, August 22, 1905.
- ²⁶ "Gossip of the Wheel," *Boston Herald*, June 17, 1897. Jimmy Michael was a great Welsh racing champion. Eddie McDuffee was a Boston native racing on the national circuit.
- ²⁷ Newspaper clipping from unknown Muskegon newspaper circa 1900, Source: St. Onge Scrapbooks.
- ²⁸ "Trick Bicycle Rider 'Tom' Mosher, Dead," Boston Globe, March 7, 1938.
- ²⁹ Newspaper clipping unknown date in summer, 1898. Source: St. Onge Scrapbooks
- ³⁰ "An Old-Time Crack Interviewed," *Australian Cyclist*, February 20, 1902.
- 31 "Charles River Park," Boston Herald, June 17, 1900.
- ³² "Plays and Players: Boston Music Hall," *Boston Globe*, October 7, 1900.
- ³³ Program: "Third Annual Minstrel Show of the Brookline Wheelmen," Union Hall, February 19, 1901. Source: St. Onge Scrapbooks.
- ³⁴ "Great Bicycle Riding," Unidentified Newburyport newspaper, August 3, 1899; clipping. Source: St. Onge Scrapbooks.
- ³⁵ Unidentified newspaper clipping Source: St. Onge Scrapbooks
- ³⁶ "Globe Trotter Fourcher is Heard From," *Augusta Chronicle*, February 25, 1903.
- ³⁷ "The Silver Jubilee," *Bassett's Scrapbook* 3.4 (June 1905): 124.
- ³⁸ But he and/or his wife apparently came back to Boston occasionally, at least long enough to have a daughter, Lillian, born in Boston in 1910.
- 39 Variety, June 1908.
- ⁴⁰ "New Act," clipping dated 1908. Source: St. Onge Scrapbooks.
- ⁴¹ "The Whimsical Wheelmen," *Boston Herald*, July 26, 1908.
- ⁴² "Tulleries Opens its Summer Season Today," *Denver Post*, June 7, 1908.
- ⁴³ "Fred St. Onge and Co. Comedy Cycling" Variety, April 1910, 20.

- ⁴⁴ Postcard from Fred St. Onge to Alphonse St. Onge, Vienna, September 11, 1912. Source: St. Onge Collection. Courtesy Ann Levack.
- 45 "Fred St. Onge Returns to the Bicycle Game," Worcester Daily Telegram, December 24, 1915.
- ⁴⁶ Fred appeared with May Ritchie and May's husband, W.E. Ritchie, the bicycle comedian and inventor of comedy bicycles. See Official Bulletin and Scrapbook of the League of American Wheelmen 16.12 (December 1918): 187.
- ⁴⁷ Untitled, *Richmond Times Dispatch*, February 23, 1919.
- ⁴⁸ "Huge Wheel Run in Springfield," *Motorcycling and Bicycling* 18.5 (July 30, 1919): 52, 4.
- ⁴⁹ "Springfield-Hartford Bicycle Run," *Motorcycling* and Bicycling 18.9 (August 27, 1919): 39-40.
- ⁵⁰ "To Go 'On the Road', Fred St. Onge, Well-Known Cyclist, to Help Dealers and Give Exhibitions," *Baltimore Sun*, October 12, 1919.
- ⁵¹ Fred St. Onge, *The Art of Bicycle Riding* (New Britain: Corbin Screw Company, 1920).
- ⁵² Lewis Storrow was undoubtedly the son of William Storrow, a Roxbury bicycle dealer. Source: 1919 Boston City Directory.
- ⁵³ "Parade and Contests at the Reservoir, Boston," Official Bulletin and Scrapbook of the League of American Wheelmen 18.10 (October 1920): 155-7.
- ⁵⁴ See Mark Foster, From Streetcar to Superhighway: American City Planners and Urban Transportation, 1900-1940 (Philadelphia: Temple University Press, 1981).
- ⁵⁵ "St. Onge for Motorcyclists," *Springfield Republican*, September 10, 1929.
- ⁵⁶ "St. Onge Visits Worcester," *American Bicyclist and Motorcyclist* 25.2 (February 1929): 24.
- ⁵⁷ "Motorcycle Climb Attracts Throngs," *Boston Globe*, October 21, 1929.
- ⁵⁸ "Motorcycle Riders to Be Entertained," Springfield Sunday Union and Republican, January 13, 1929.
- ⁵⁹ "Fred St. Onge Back from Canadian Tour," *Springfield Republican*, September 8, 1930.
- 60 "Hear Veteran Cyclist," *Riverside Daily Press*, February 21, 1931.
- ⁶¹ "11 Killed, 100 Hurt in Train Wreck in Imperial Valley," *San Diego Union*, September 21, 1938.
- ⁶² Tony Scott, *The Stars of Hollywood Forever* (Hollywood: Tony Scott Publishing, 2001): np. An obituary reported St. Onge's home as 1306 North Kenmore, Hollywood, rather than the address of the Adams Sanitarium, 1775 North Las Palmas Ave. But no city directory gives the 1306 address for him. A correction to his death record was entered by his wife, Caroline, listing a middle initial "J" for him. She gave the address as 1825 North Cahuenga, Los Angeles, California.
- ⁶³ "Ready for Atlantic City... Advertising Campaign Planned," *American Motorcyclist and Bicyclist* 24.8 (August 1928): 7.
- ⁶⁴ The use of the term cycle-logical first appeared in a newspaper cartoon of 1904. In the teens it appeared as a short joke to fill space in the daily newspapers, i.e., "Your father must have been in an unusually good humor when he gave you a motorcycle." "Oh, I seized the cycle-logical moment to ask for it." In the 1920s it appeared in New Departure Coaster Brake advertisements.

Joseph R. Wilson, Jr., State v. Yopp, and The League of American Wheelmen

By Michael Gately, New York, NY, USA

oodrow Wilson's younger brother Joseph (Josie) R. Wilson, Jr. (1867-1927) is often ignored by

biographers, but his letters reveal that he was an avid cyclist in North Carolina and Tennessee in the late 1880s and early 1890s. In North Carolina in 1883, "Josie" Wilson co-founded the Wilmington Bicycle Club with his friend James L. Yopp, and the club petitioned the League of American Wheelmen to defend the rights of cyclists to ride on the local turnpike, a court case culminating in State v. Yopp (N.C. 1887). In the late 1880s, as a student in Tennessee, Joe Wilson was a local agent of Columbia and Rudge bicycles, an officer of the Clarksville Wheelmen, and an advocate of "good roads" as Chief Consul of the Tennessee Division of the L.A.W.



Fig. 1: Joseph R. Wilson, Jr., with his Columbia bicycle, c. 1884. (Princeton University Library)

Woodrow may be remembered for bicycling in the Lake District "with the Oxford Book of English Verse in his pocket," but letters from the president's brother Joseph, ten years younger and described as "a smaller, brown-eyed, less sparkling version of his older brother," show an enthusiasm for cycling that exceeds Woodrow's, and precedes the boom of the 1890s. In October 1883, sixteen year-old Josie (or "Dode"), wrote to Woodrow, working as a lawyer in Atlanta, with joy on ordering a "52 in. Standard Columbia bicycle" from a Wilmington, North Carolina merchant, with a gong and free shipping: "Hurrah!!!! For the bicycle." [Figure 2]

That November, Joe and his friends founded the Wilmington Bicycle Club. In December he wrote, "The only trouble about a bicycle club in Wilmington is that we have so few good roads, they won't let us go on the shell

road because 'we will frighten horses'!" Henry Haar, the superintendent, would not permit them to ride the eight miles to the Wrightsville coast, paved with rock, crushed shells and limestone, even if they paid the toll and dismounted for horses. Joe wrote, "We sent in a petition to the [Wilmington & Coast] Turnpike Co. to

grant us leave to ride on their road. If they say 'No!', then we will push the matter and go anyhow. We are going to join the 'League of American Wheelmen' (it is only one dollar a year per member) and then if we get into any difficulty about it they will send down three or four lawyers." [Figure 3]

After a meeting in February 1884, Joe wrote that they "decided on a badge for the club," and enclosed a drawing. He took a girl to ride "as

Wilmington M. C. October 22nd 1883.

My darling brother : I smant to tell you grenn of onen - dom what Mr Gordon could have a 52 in Q dard said he could no discount this time, and then I asked him if he more me have a machine? he could and that I would no have to pay the freight charges came on up and met on Fout Stin and mon the biggy, I told papa all about it and he said Its getting more and more hopeles

Fig. 2: Joseph R. Wilson, Jr. to Woodrow Wilson, October 22, 1883. (Library of Congress)

far as the second toll house on the turnpike" - it is not clear if or what she rode and "After the meeting adjourned, the club took a moonlight ride." [Figure 4]

He soon reported ten ("TEN!!!!") members and teased, "Tell the Captain of



Fig. 3: (Detail) Map of New Hanover County, NC (Moss Engraving Co.), c. 1886. (North Carolina State Archives)

the 'Maryland Bicycle Club' of Balti." – Woodrow was then studying politics at Johns Hopkins – "we are coming to race with them soon." He added, "My bicycle tells me to tell you that it is waiting anxiously for you to mount it next summer as you said you would," but it is not clear if Woodrow ever did.

In April 1884 Joe wrote, "I want to tell you all about this Turnpike business, and ask your advice as a lawyer." He wrote that "James Yopp, Pres. of the W.B.C. went to see Judge Russell to ask him if they could keep us off the road," and was told "that the Bicycle being a vehicle they had no right to keep us off. He said if we offered toll, and they did not accept it, we could go on anyhow and they could not do anything to us." [Figure 5]

Joe noted a New Jersey case that was among the L.A.W.'s "Legal Lifts," where cyclists won the right to ride on the Haddonfield Turnpike, and his letter outlines the conflict in Wilmington, where the ordinary bicycle was seen as a public nuisance. He wrote, "We have sent on our applications to the 'League of American Wheelmen' and just as soon as they admit us, we are going to tell them exactly how the case stands, get their support and go on the 'pike' in a body, and then make a test case of it." [Figure 6]

In early 1884, there were only a handful of L.A.W. members in North Carolina, but Joe and four others joined that spring, noting in *The Wheel* their hope to "make ours a League club very soon. We have very comfortable headquarters at No. 319 Orange Ave., corner of Fourth Street," in the Wilson house, the Presbyterian manse. Earlier, Joe wrote, "Mother and father have given the front room in the Basement for the Headquarters of the W.B.C.," and "members can come in through the Greenhouse, and not through the front door into the sitting room as they were obliged to do before."

A newspaper note that "The boys made good time on the turnpike between here and Wrightsville," was amended the next day: "we have been requested to say that the Wilmington & Coast Turnpike Company will receive no fare for the use of the road from riders of bicycles, and have posted notices prohibiting bicycles on the turnpike."

Joe resigned from the W.B.C. that summer, and Woodrow escorted him to military school. In October he asked, "Did



Fig. 4: (Enclosure) JRW, Jr. to WW, February 5, 1884. (Library of Congress)

Milmington A. G. April 4the 1884. My dearess brother : I want to tell you all about this Turnpike business, and ask your advice as a lawyor. Mos long ago, the W. Bi b. Janue Yokk, went to see Russell to ask him if they could keep us off the road. According lopp, Mr Gussell said that the Bicycle being a rehicle they had no right to keep us off. He said if we offered toll. and they did not accept it, we could go on any how and they could not do anything to us. And about this brother ? He said, also, that the only rick any have

Fig. 5: JRW, Jr. to WW, April 4, 1884. (Library of Congress)

you ride my bicycle at all after I left?" Woodrow's reply is lost, and letters later that fall do not mention the bicycle. Joe returned home at Christmas, and in early January he wrote that he looked forward to riding "in the North," where "there are a great many L.A.W. members." He noted, "My bicycle and I are on very good terms with each other, although I do not ride very much now. It has been standing idle during the last two or three weeks, out in the old kitchen."

This idleness may be shared by other cyclists, in part because, as Joe wrote in March 1885, "The W & C Turnpike Co. have about succeeded in keeping us off the Turnpike, by getting their charter amended by the Legislature." They "passed an act to prohibit bicycles on the shell road," which he says "was all the doings of that dog (begging the dog's pardon) Steadman [sic], who because he is Lieut. Gov. has some influence." Indeed, in February the state senate over which Charles Stedman presided ratified an act forbidding "use upon the road of the turnpike company", of which he was also lawyer and president, "a bicycle or tricycle or other non-horse vehicle, without the express permission of the superintendent" - who would not give it. (Stedman represented North Carolina in the U.S. House during Woodrow's presidency.)

Yopp sought help from the League, which in 1886 agreed to assist with the case. The W.B.C. submitted another petition "signed by the entire club, by many leading citizens and by a large number of stockholders in the company," with "a series of regulations that they agree to abide by if allowed on the road," but permission was denied. That July, Yopp and another cyclist tested the constitutionality of the statute and were indicted for riding bicycles on the turnpike. They were convicted in September, fined one penny and costs, and appealed to the state Supreme Court.

Yopp argued that the turnpike statute deprived him of the use of his property - his bicycle - in a way that did not injure others. In early 1887 the legislature debated, then tabled, a bill to repeal the law. Charles Pratt wrote that of all the miles that Thomas Stevens rode Around the World on a *Bicycle* – a copy of which Woodrow sent to his brother for Christmas that year – it was only "From Wilmington, North Carolina, to the sea, he could not ride on his own proper and universally possible carriage!" The Court held, however, that Yopp "had no right to go, using his bicycle, at the peril of other people," and that he could have ridden other roads, or with the permission of the superintendent, duly authorized as an agent of the law.

Wilmington Ricycle Club-	add 5.	• •
1465-James L. Yopp,	Wilmington,	N. C.
1471-Joseph R. Wilson, Jr		
1472-A. W. McDougall,		
1473-Arthur I. Mitchell,	**	
1474-Henry Burkhimer,	**	••

Fig. 6: (Detail) "Monthly Supplement to The Wheel," The Wheel: A Journal of Cycling, May 9, 1884.

State v. Yopp is often cited as early bicycle law, but within a few years the decision was "an old one," and by 1896 the case "would have but little weight, unless a bicycle were held to be a nuisance, which, in the face of its general use, is scarcely probable." The law's objection quieted as bicycles ceased to frighten horses, and as their novelty ceased, so did their nuisance - bicycles became more ordinary. In early 1891, cyclists in the legislature helped to repeal the law. In 1892 the W.B.C. became a League club, and bicycles were permitted on the turnpike for a toll of twenty-five cents, later discounted with L.A.W. membership.

A contemporary newspaper history credits Yopp as the first cyclist in Wilmington, in 1880, and mentions neither Wilson. One of Woodrow's early biographers notes, however, that he "is chiefly remembered in Wilmington as the first person who owned and rode a bicycle in North Carolina." But that is likely a false memory, and local lore that Woodrow once rode a high-wheel bicycle into the Cape Fear River may be a canard that is too good to verify.

Joe Wilson had moved to Tennessee in 1885 when his father, the Rev. Joseph Ruggles Wilson, was appointed professor of theology at Southwestern Presbyterian



Fig. 7: Advertisement, Clarksville Weekly Chronicle, October 10, 1885.

University in Clarksville. As a student that fall he started a bicycle agency, writing to Woodrow, "Bicycling seems to be just fairly beginning here, and the interest is increasing. I have my advertisement in one of the town papers, and expect soon to sell a few wheels." His ad for Rudge cycles of Coventry, England, ran for several weeks, once prefaced by the news that "The wheel not only affords much pleasure to those who can control it, but is very useful. Mr. Joseph R. Wilson, Jr., of this city is agent for one of the best bicycles made, and will take pleasure in filling orders that may be intrusted to him."[Figure 7]

In early 1886, Joe wrote to his sisterin-law Ellen, Woodrow's wife, of his

THE RUDGE LIGHT ROADSTER.



Fig. 8: "The Rudge Light Roadster," 1887 Rudge Bicycles and Tricycles catalog. (Courtesy of Veteran-Cycle Club Library)

"hope of selling my bicycle [...] to purchase a larger and much finer machine," and that he was "at last, a member of a State Division of the League of American Wheelmen," newly formed: "in Wilmington I could never get up enough enthusiasm [...] to form a division." He became the secretary-treasurer of the new Clarksville Wheelmen in March, and in May he suggested to Woodrow,

then teaching at Bryn Mawr, "The time will come, before many years, when there will be a professorship of cycling in the larger colleges, so when you get a chair at Princeton and I graduate at the S.W.P.U. you can 'get me in' at P. as instructor in cycling!" Woodrow returned to his alma mater in 1890 as professor, and in 1902 he became its president.

Joe added news "of one of the most important events of my life [...] a new bicycle! My old one was too small, and not suitable for road riding being somewhat worn, and minus ball bearings," so "at mother's request, father let me order a new wheel. It is a Rudge Light Roadster and is a beauty, there being no comparison between my old and new wheels. It is finished in nickel and black enamel, and, although there is not as much bright work about it, is much handsomer than my Columbia" and "one inch larger" (53 inches). Rudge bicycles were known for patented "single-row ball bearings that were easy to adjust for wear." His endorsement is printed in the American edition of the 1887 Rudge catalog: "the more I ride it, I am convinced that there is not a machine on the market that runs more easily." [Figures 8 & 9]

In 1887 Tennessee was "Entitled to Chief Consul and one Representative" in the League, and while "John R. Wilson" [sic] received just one vote for representative in the Spring election - maybe his own - the Chief appointed "Jas. R. Wilson" [sic] as local Clarksville consul. (Common typographical errors may complicate research.) Joe wrote to Woodrow in June about the family's trip to Columbia, South Carolina, noting that he is "very anxious

TESTIMONIALS.

We select at random a few of the many hundreds we have received : --I am more and more pleased with my Rudge Light Roadster; the more I ride it, I am convinced that there is not a machine on the market that runs I put my wheel to a severe test not long ago, by taking a quick more easily. run over a rocky road, and not a nut or bolt was loosened, so far as I know. Yours truly, JOSEPH R. WILSON, JR., CLARKSVILLE, TENN.

I am much pleased with my 53-inch Rudge Light Roadster. Its faults are few, and its virtues many; among the latter are great rigidity, ease of propulsion, and quickness to respond to pressure on the pedals. I have taken pleasure in respond to present on the petals. Yours very truly, HENRY W. WILLIAMS,

BOSTON, MASS.

I have ridden a Rudge Light Roadster for the past two years, and have found it is a serviceable, easy-running machine; and to any one intending to get a machine, I would say, by all means, get the Rudge. Respectfully yours, J. E. COREY CAPT. CHARLESTOWN BI. CLUB, BOSTON, MASS.

I ride a Rudge Light Roadster, and am proud of the machine. There is not any other make of machine in the market that I would exchange it for. Very truly yours, WM. ALLEN, New York.

Fig. 9: "Testimonials," 1887 Rudge Bicycles and Tricycles catalog. (Courtesy of Veteran-Cycle Club Library)

> to run over to Wilmington for about a week or so during the summer, to see how 'things' and folks look." By then Yopp had lost his case, and cyclists were prohibited from riding on the turnpike. Joe sent his "precious 'Rudge'" to Columbia, noting

CLARASVILLE, - TENN. Clarkwille, Turn, Tek 26/ My dearest brother -have been muid to write to you far a long to at it seems to me that have hardly any time for letter muting or anything else. Besidee theping up mith my college duties & have my litery society, fraturity, college J.M. C.A., Z.A. H., and Ciple Club (of which I am President Captain) to attend to I also have a matter to think about wave a matter to think about which is of great impertance to me viz my Commencement Speech. But of about twenty five speakers who spoke in \$255

Fig. 10: JRW Jr. to WW, February 26, 1888. (Library of Congress)

"I could not live two months without my wheel." Once home in August, however, he skipped the local races, writing that he had "very little chance to practice during the summer in the proper way" and "would stand very little chance for a prize," but he looked forward to an exhibition by the popular wonder "Prince Wells, the 'Champion Trick Bicycle and Unicycle



Fig. 11: 9th Annual Meet, League of American Wheelmen, June 18, 1888. Baltimore. Photo by Bachrach & Bros (Courtesy of Maryland Historical Society, Special Collections Department)

rider of America," who "rides down stairs &c on one wheel." [Figure 10]

In early 1888, Joe wrote to Woodrow on a note stamped "Rudge & Columbia Cycles," that he had been busy with "literary society, fraternity, college, Y.M.C.A., L.A.W., and Cycle Club (of which I am President-Captain)," adding, "The Clarksville boys are going to run me for Chief Consul of the Tenn. Div. L.A.W. in the March elections. I think I stand a very fair chance of being elected." In April their mother died, a hard loss for Joe at twenty-one, and in June he traveled to Baltimore for the League's 9th Annual Meet, writing that it may be "the most important and interesting meeting ever held, and I will probably never get such a good chance to go." The League adopted a constitution creating a national committee on the improvement of highways, and more than 600 wheelmen and a few wheelwomen rode in the parade, finishing at Mansion House in Druid Hill Park for lemonade and group photographs. [Figure 11]

League officers and ladies are in the foreground, buglers are on the terrace, and Joseph R. Wilson, Jr. may be in the photo somewhere.

Afterward Joe hoped to ride to Philadelphia with local wheelmen if he could "get in a good set of Pennsylvania boys who will return by wheel," and then the ten miles to Bryn Mawr, where Woodrow's brother-in-law Stockton Axson, Ellen's brother, recalled that Joe "rode with enthusiasm the old-style high bicycle, dressed in a natty suit of blue, with the letters, L.A.W. (League of American Wheelmen), woven on his blouse." Axson notes, however, that "it was a case of boys doing what men disdained," and only after the safety "craze of the early and middle 1890s" that Woodrow, then in his forties, "found the bicycle a convenient means of getting about, both in this country and in England."

That summer Joe was elected Chief Consul of Tennessee, and in the fall he recruited members and appointed local consuls, reported on a *Road-Book*, approved hotels, and by the end of 1888 the Division's numbers entitled it to additional officers. Woodrow sent his brother a subscription to *Outing* for Christmas, and in January 1889 Joe wrote, thanking him, "You could not, let



Fig. 12: Letterhead on letter from JRW Jr. to WW, June 13, 1889. (Library of Congress)

me assure you, have pleased me better, for I am more of an enthusiast on the subject of wheeling than ever, if possible, owing partly to the fact that I am more actively and prominently engaged in the work than ever before." He was a member of the L.A.W. National Assembly, organized the Tennessee spring meeting, and appointed local consul. But their father was concerned: "Josie studies a little, goes out a great deal, and is a member of every possible company – even is a 'drum-major.' I see not a great deal of him [...] and have grave apprehension as to his future."

In June, Joe wrote to Woodrow on his own League stationary, [Figure 12] "I expect to run over to Nashville next Tuesday, June 18th, to attend the annual meeting of the Tenn. Div. L.A.W. I expect to have quite a jolly time." He may downplay his role as parade marshal and organizer of a "four days" tour "over some of the best roads in the State." Cyclists were urged to wear a "Plain straw hat, white flannel shirt, no coat, blue knee pants, blue stockings," and afterward one newspaper called the meet "A Complete Success [...] A Line Half a Mile Long of Steeds of Steel." Its

> "Parade and Wheel Notes" claimed that "The ladies all said Chief Consul Wilson was the handsomest man in line," with his brown eyes and bushy mustache, and he was later "renominated without opposition" as chief - but sadly, his time for shining were short because "The 'four days tour' was com-

pleted in twelve hours, spoiled by heavy rain and muddy roads."

In October 1889 their father wrote to Woodrow, "Josie is looking (in vain so far) for a business in which to engage. He is a source of real trouble to me on this account: and I am utterly at a loss as to what to do with him." But on behalf of the L.A.W. that fall, Joe promised to assist a cyclist sued for frightening a mule, and wrote a defense of Scripture against riding on the Sabbath which may echo the Rev. Wilson's preaching. In late December, the



Fig. 13: *Wilson family in Columbia, South Carolina, c.* 1892. Woodrow is at far left, JRW *Jr. is at far right. (Library of Congress)*

Tennessee officers met to secure legislation "for the improvement of highways," noting that the work was in Joe's hands, and his "plan is to communicate with every member of the Legislature" in 1890.

As 1890 opened, their father wrote that

Conference Moment

"Josie is still unprovided for. I have tried amongst all my 'friends,' with no result." But he was again Chief Consul, hosted the spring meeting, and he published a letter on "Road Improvements in Tennessee," proposing macadam or gravel highways for farmers: a "plan for the building and maintenance of permanent and suitable roads," with hope for "a system of highways of which any State might well be proud."

That April, Joe started as a reporter for the Clarksville Progress, and by July he hoped for "an early promotion to editorship (local)." In January 1891, "James R. Wilson, Jr." [sic] resigns as Chief Consul, and through 1892 Joe was active in the local volunteer militia, in social and political groups, and he married Kate Wilson (no relation) that June. It is not clear how active Joe remained in the "good roads" movement, but his enthusiasm for cycling is never again as clear as it was in his early letters. One of Woodrow's biographers writes, disparagingly, "With his thwarted affections and unfulfilled hopes, he remained a pathetic figure in later years, moving in the shadow of his increasingly famous brother."

Joe Wilson worked as a newspaper editor for twenty years, in Nashville from 1904, then on Woodrow's 1912 presidential campaign, but afterward he left journalism and stayed out of politics, taking an insurance job in Baltimore. He died in 1927, three years after Woodrow, himself a late enthusiast for bicycling who was more famous for motoring, who added "good roads" to his reelection platform and signed the 1916 Federal Aid Road Act, the first to establish funding for national highways in the United States. **[Figure 13]** •

Part of the display of bicycles in the conference room at the 27th ICHC.

The Henley Bicycle Company of Richmond, Indiana, USA, and Its Founder Micajah C. Henley

By Gary W. Sanderson, Verona, NJ, USA

he Henley Bicycle Company evolved in 1894 from The Henley Manufacturing Co. of Richmond, Indiana (IN) that was established in the early 1880s by Micajah C. Henley for the manufacture of roller skates. [Figure 1] The founder of this company [Figure 2] was very successful



Figure 1. An 1893 advertisement for Henley Roller Skates from the back cover of the Richmond City Directory for 1883-84 published by M. Cullaton & Co., Richmond, Indiana.

as a manufacturer of several different products, but as this paper will explain, his excursion into the bicycle industry was not one of his usually successful ventures.

Micajah was born near Fountain City, IN, on June 6th, 1856, into a family of Quakers who were part of a migration of many Quaker families from North Carolina to Indiana in the preceding 20 years. This Henley family moved to Richmond in 1867, and Micajah's father established a firm called H. Henley & Son that was involved in the building and contracting trade - The "Son" in this company's name was 11 year old Micajah. Over the next 20 years, this company was the builder of several of the grandest buildings and residences in Richmond including the Friends' Fifteenth Street Yearly Meeting House and the Richmond National Bank.ⁱ The Henley firm was successful in getting contracts to build grand edifices, but the profitability was poor due to strong competition.

The poor profitability of the contracting business lead Micajah to begin experimenting with making things in a small shop at the rear of his family's home, and in 1880 he was granted his first US Patent for an improvement in "Roller Skates." ⁱⁱ Micajah's inventiveness is further evidenced by the 21 U.S. Patents that he was granted from 1880 to 1921 for several different products. **[Table 1]**

Micajah's interest in roller skates in 1880 was well placed because in the 1870s and 1880s the popularity of roller skating in the United States was growing by leaps and bounds.^{III} [Figure 3] Micajah proceeded to make a few pairs of roller skates and to open a small roller skating rink in Aurora, IN, about 70 miles south of Richmond. The patrons of Micajah's

rink purchased his roller skates, and they were pleased with the performance of these skates which encouraged Micajah to make more roller skates. To keep up with the rapidly growing sales of Henley Roller Skates, Micajah increased the size of his manufacturing facilities step by step until by the early 1890s he





Figure 2. Photo portrait of Micajah C. Henley (1856 – 1927) taken in 1894 when he was 38 years old.

had built a large factory near the railway station on the north side of Richmond [Figure 4]. Micajah C. Henley invested in a comprehensive program to promote his business and roller skating in general such as advertising his product [Figure 1], writing a manual on roller skating,^{iv} and supporting a "Roller Skate Hockey Team" [Figure 5]. Micajah C. Henley became in the 1890s perhaps the largest manufacturer of roller skates in the U.S.A. with sales extending overseas.^v

> Figure 3. Inside a *Roller Skating Rink* from Harper's Weekly, February 21, 1885, p. 121. Notice the spectator's gallery around the rink. This is the type of skating rink that was often converted to a velocipede riding school in the late 1860s during the period of "velocipede-mania" see Gary W. Sanderson (2008), Velocipede-mania in the U.S.A. - 1868-1869, Cycle History 19, p. 9-18 (JPMPF, Birmingham, UK).



Figure 4. The Henley Bicycle Works factory in Richmond, Indiana, built in 1895. The Wheel and Cycling Trade Review, Vol. XVI (6), p. 42 (September 27, 1895).

Michajah had become a very successful entrepneur. [Figure 6]

Micajah C. Henley enters the Bicycle Manufacturing Industry:

The Henley Bicycle Company was formed in 1895 and begins to be listed annually in the *Richmond*, *Indiana*, *Directory* in this year. The first advertisements for Henley Bicycles also appear in 1895: It is these ads that announced to the world that the first sales of Henley bicycles would be in 1896 [**Figure 7**].^{vi} A full line of Henley bicycles was developed [**Figure 8**],^{vii} and these bicycles were marketed in the usual ways: (a) through advertising [**Figures** **9a & 9b**]; (b) exhibiting at the major cycling shows held in Chicago, IL, and New York, NY;^{viii} (c) sponsoring a bicycle racing team [**Figure 10**]; and (d) creating rather spectacular mobile displays for civic events [**Figure 11**]. Some favorable reports were published as shown in [**Figures 12a & 12b**].

It was reported that the sales of Henley bicycles in 1896 were strong.^{ix} Of course, it must be remembered that 1896 was the peak year of the bicycle boom of the 1890s and the overall strong sales of bicycles at the peak of this boom undoubtedly contributed to the Henley Bicycle



Figure 6. The home (still standing in 2016) of Micajah C. Henley built in the early 1890s at 201 N. 14th St. in Richmond, Indiana. Note: The Wright Brothers lived at 211 N. 14th Street for a time in the 1890s, and Henley sold Wilbur his first bicycle for \$10, which Wilbur borrowed from his brother Orville. Thus the Wright brothers migrated from an interest in kites (which they were manufacturing in their father's carriage house) to bicycles and subsequently to airplanes (from Wikipedia).

Co.'s success in its first year. A freefall of bicycle sales nationally began in 1897. This especially hurt the Henley Bicycle Co. because its bicycles were only beginning to gain a position in the marketplace. Indications are that sales in year 1897 and beyond were not as strong as was necessary for the company to be truly successful as a bicycle manufacturer – it is stated in the report shown in Figure 13b that the Henley bicycle factory was only running at 30% of capacity at the beginning of 1897. By 1898 the Henley Bicycle Co. had decided that they would cease their participation in the trade shows in Chicago, Philadelphia, and New



Figure 5. The Henley Roller Skating Hockey Team in 1901. Micajah C. Henley is man in the back row dressed in a business suit.

York. Actual production figures could not be found, but the evidence available suggests that the Henley Bicycle Company had only limited success from 1897 onwards: For instance, this writer could find no advertising for Henley bicycles in trade journals after 1897. Furthermore, beginning in 1898 ads for Henley Roller Skates begin to appear in trade journals such as *The Wheel and Cycling Trade Review* suggesting that Micajah was deemphasizing bicycles as his company was directing more attention to its roller skate business.[×]

The Henley Bicycle Company ceased to exist after about 1904 as indicated by the disappearance of the Henley Bicycle Company from any listing in the *Richmond City Directory* after this year – the



Figure 7. An advertisement in The Bearings: The Cycling Authority of America on July 4th, 1895, for Henley Bicycles that would be available in 1896. This ad, or ads that were very similar, appeared regularly in the weekly issues of The Bearings, Volumes XI and XII; and in The Wheel and Cycling Trade Review, Volumes XV and XVI; from July to December 1895.





Figure 8. Studio photos of Henley bicycles for 1896: (top) Henley Lady's Bicycle, (middle) Henley Man's Racing Bicycle, (bottom) Henley Tandem (Lady Front) Bicycle, and (top right) Close-up of the Henley Bicycle Head Badge.



Henley Bicycle Company appears to have been transitioned into The Henley Manufacturing Co. as evidenced by listings in this Directory from 1904 onwards. So, what happened?

Reasons for the Henley Bicycle Company's Lack of Greater Success in the **Bicycle Industry:**

Micajah had been very successful in manufacturing and selling roller skates, and it is virtually certain that he believed that he could replicate this success in making and selling bicycles. Safety bicycles were developed in stages starting in the late 1880s culminating with the development of the pneumatic tired safety in the early 1890s. These safety bicycles spurred a boom in the market for bicycles that grew at a phenomenal rate from about 1891 to 1895.xi Micajah could be described as an entrepreneur, an inventive manufacturer of mechanical products, an opportunist in that he entered businesses that were relatively new and growing rapidly, a brave and confident business man willing to invest in facilities and labor to operate his factories, and a man committed to promoting his products. These character traits, combined with his success in the making and selling of roller skates, lead him naturally in the early 1890s to enter the burgeoning market for bicycles. So, where did he go wrong in the bicycle business?

First, Micajah was truly an entrepreneur: This is clearly evident by his rapid movement from working with his father in the buildings construction trade to



Figure 9a. A beautiful advertising poster for Henley Bicycles from ca. 1896. There were also ads for Henley bicycles that appeared in 1896 and 1897 in trade magazines such as The Wheel and Cycling Trade Review.

becoming a manufacturer of roller skates in the early 1880s when he was only about 25 years old. Micajah's start in the world of bicycles started with a flourish - a complete line of bicycles were developed and the trade was alerted with regular announcements designed to promote these machines for their quality and performance. No problem at this starting point.

Next, Micajah's inventive abilities were evident with his first U.S. Patent granted in 1880 for an improvement in roller skates.^{xiii} His inventiveness is further substantiated by the twenty-two additional U.S. Patents that he was granted between 1880 and 1921 [**Table 1**]. However, not one of these patents was for bicycles or anything closely related to bicycles. This suggests that either Micajah was not totally committed to this very competitive business or that its serious decline just at the time that he entered the field discouraged him from further investment in the bicycle business.

Micajah's dedication to manufacturing is amply attested to by the growth of his manufacturing activities starting with producing roller skates in a shop in the back yard of his parent's home and then progressing to ever larger buildings until 1892 when he had a large building built



Figure 9b. Items for showing or for giving away as souvenirs at trade shows in 1896 and 1897: (l-r; top to bottom) a bicycle bugle owned by M.C. Henley, a Head Badge found on all Henley Bicycles, a personal Card Holder embossed "Henley Bicycles", Henley Bicycles Buttonhole Pin, and an Oiler Can embossed Henley Skates. (Courtesy of Fred Fisk)

near the railroad terminal for his operations [**Figure 4**]. At its peak, the Henley Manufacturing Co. owned by Micajah was one of the largest employers of skilled



Figure 10. The ca. 1896 Henley Bicycle Racing Team in Richmond, Indiana.

workers in Richmond, Indiana; a city that was known for its numerous prosperous industries.^{xiv} However, this building was always adorned with signs that indicated that several products (i.e., roller skates, lawn mowers, and bicycles) were being manufactured inside. So, it was probably easy to divert manufacturing resources from the manufacture of bicycles to the needs of other products when bicycle sales lagged. There was no necessity for Micajah to pursue the bicycle business when the market was contracting.

A maxim for success in business is to be involved with a product that is enjoying an expanding market with distinctive products: Micajah certainly understood this well and he executed his business plans with skill and success as long as the market conditions were favorable for his products. He had started out as a partner with his father in the construction busi-



Figure 11. A float for the 1903 Fall Festival Parade in Richmond, Indiana, with a display of Henley bicycles. Notice a poster for Theodore Roosevelt, who was running for President of the U.S. this year, high on the front of the Henley Bicycle and Roller Skate Works factory.

Article in The Wheel and Cycling Trade Review, Vol. XVIII, No. 13, January 1, 1897, p. 47: PRETTY AS A PICTURE

If there is a more fetching pair of tandems than those pictured herewith, they have yet to be seen. These are both Henley's, the product of the M.C. Henley Bicycle Works, Richmond, Ind. Any one with half an eye can see that they are "charmers" – the very lines show it – but the pictures only half convey the beauty of the wheels, which are reputed as good as they are beautiful. The double drop frame for two ladies is one of the few of its kind. It will list at \$160; the other at \$150. They are splendid types of the Henley line.

Figure 12a. Report on the fine appearance of the new Henley Bicycles that would be offered on the market for the first time in 1896. The Wheel and Cycling Trade Review, Vol. XVIII (13), January 1, 1897, p. 47.

ness: The business had been successful as builders of grand edifices, but strong competition kept the profitability very low. Moving into the business of manufacturing roller skates in the early 1880s provided more opportunity because the demand for skates was growing rapidly, and through innovation (i.e. improvement) and advertising, Micajah was able to create demand for his product. So Micajah's formula for success was founded on (a) manufacturing a product to fulfill the needs of a growing market, and (b) innovating the product (or improving it) to differentiate his product from the competitor's product thereby increasing buyers' demand for his product. This formula had little chance for success after 1896 when the market for bicycles went into a steep decline.

The reasons for Micajah's lack of success in the bicycle business might be summarized as follows: The dramatic downturn in the market for bicycles after about 1896 is certainly a big factor, but the lack of innovation evidenced by no patents related to bicycles **[Table 1]** was almost certainly an important contributing factor to this situation. Henley bicycles were simply "not particularly interesting" which made these bicycles a poor choice for buyers.

The Fate of Micajah C. Henley's Businesses after Bicycles:

THE RICHMOND DAILY REGISTER JANUARY 21, 1897 (p. 4)

THE HENLEY

Has Made a Reputation Both at Home and Abroad

THE WHEELS FOR 1897

Will Surpass Those of Last Year – The Wheels of the Factory Turning Out Wheels – Off for the Chicago Show.

A Register reporter this morning had the pleasure of seeing the line of wheels which M.C. Henley will have on display at the Chicago show. The entire line if fine and it will be hard for any factory to surpass, although there are scores of factories and the majority of them are making excellent wheels. Last year the Hendee made an excellent reputation, not only in the United States but also in foreign countries, for durability, speed, and excellent running qualities. The sale of the wheel was enormous and all the machines gave the best of satisfaction, and very few of them ever came back to the factory for repairs, which is one of the best recommendations a bicycle can have. This year the Henley will be far in advance of other wheels. New ideas and improvements have been added and the wheel will be a joy forever. The Chicago show will open Saturday, and to-day M.C. Henley left for the Windy City with a full line of wheels which will be exhibited at the Chicago, New York, Philadelphia, Baltimore, and Boston shows. The line consists of a triplet, which is one of the finest pieces of workmanship ever shown in the bicycle trade. It weighs 101 ½, twenty-four-inch frame, two inch-tires, double line frame, and has a triple fork crown. While the triplet is not intended for road work, this one will stand the use.

Three styles of tandems will be shown. They are the diamond frame - one of the handsomest wheels on the market, the combination tandem, and the double drop frame. The latter is something new in the tandem line, and will prove a great seller. It is designed especially for ladies, two being able to ride with comfort.

The racing wheel is something that will cause the racing man to dream in his sleep of records and victory if he can own a Henley A. The lines are perfect and adapted to speed. The wheel weighs only nineteen pounds, is geared to 84, and has an entirely new drop [handlebar], and will attract attention. It is made to win.

The Henley A Special is a novelty in the bicycle line. The joints are all made flush, and the appearance is much neater than the way the former joints are made. The regular roadster, one each of the ladies' and gentlemen's wheels, will be shown also. The Henley will use several styles of fork crowns, the arch, the triple fork crown, ad the same that was used last year. The buyer is given the option of several of the best makes of saddles, tires, and other minor parts. The wheels are finished in black, carmine, maroon, royal blue, and robin egg blue. The finish is the finest that is put on any wheel.

Figure 12b. Report describing the line of new Henley Bicycles that would be offered for sale in 1897. The Richmond Daily Register, January 21, 1897, p.4.

The Henley Manufacturing Company manufactured roller skates from the company's beginning in 1880 to long after bicycle production was discontinued in about 1904. Even before Micajah had stopped making bicycles in 1904, he was again emphasizing his Henley Roller Skates as he made moves to capitalize on the public's resurgent interest in Roller Skating.^{xv} Two of several other successful product lines that were important for the Henley Manufacturing Company in the 1890s and early 20th century were (a) machines to stretch wire in making fences and (b) lawn mowers. The wire stretching machines filled a need as more and more fences were being put up on undeveloped land that was being opened up across the United States and especially in the west. Lawn mowers were needed for use to maintain lawns that surrounded the new homes going up in the burgeoning suburbs of cities around the country, and companies (including the Henley Manufacturing Company) in Richmond, IN, led the way in manufacturing these machines.^{xvi} Micajah C. Henley died in 1923 at the age of 67, and he is buried in Earlham Cemetery outside of Richmond, Indiana. Micajah lead a productive life, and he is remembered fondly by the townspeople for his many contributions to the town in which he lived and worked throughout his life.

Acknowledgements:

First, I want to thank Harriet Fell and John Allen for putting a wreck of a Henley tandem in my hands for restoration and creating an interest in this story. Next, I must acknowledge that the paper by Fred Fisk published in The Wheelmen Magazine xvii in 1985 was most helpful, and Fred himself was generous with his time in answering my questions. Two other people gave me much of their valuable time and help in accessing pictures and records that were essential to putting this story together - James D. Harlan, Executive Director of the Wayne County Historical Society in Richmond, IN, and Susan E. King, Archivist at the Morrisson-Reeves Library in Richmond, IN. Without doubt, any richness in my paper comes from the help that these people gave me.

Endnotes

- i Richmond, Indiana, was a prosperous city in the second half of the 19th century with many wealthy citizens involved with banking, retailing, manufacturing of a variety of articles of trade, and all aspects of agriculture; and all of this required fine buildings. Good samplings of the buildings in Richmond at this time are found in *Dalbey's Souvenir Pictorial History* of the City of Richmond, Indiana (1896); Richmond: Postcard History Series by Susan F. King (2005); and Richmond: Images of America by Susan E. King and Thomas D. Hamm (2015).
- ii U.S. Patent No. 234,404; *Roller Skate*; granted on Nov. 16, 1880, to Micajah C. Henley.
- iii James Turner & Michael Zaidman (1997), *The History of Roller Skating*, 111 pp. (National Museum of Roller Skating, Omaha, Nebraska); and Morris Traub, ed. (1944), *Roller Skating through the Years*, 101 pp. (William-Frederick Press, New York).
- iv M.C. Henley (1885), Henley's Manual of Roller Skating, 160 pp. (M.C. Henley; Richmond, Indiana).
- v A brief article on the history of Micajah C. Henley and his roller skates can be found on the internet at http://waynet.org/biography/Henley.htm.
- vi See also *The Evening Item*, Richmond, Indiana, Tuesday, June 4, 1895, p. 3.
- vii *The Richmond Daily Register,* January 21, 1897, p. 4. See also Figures 13a, 13b, 13c, & 13d in this article.
- viii The Henley Bicycle Company exhibited its line of bicycles at the 1896 Cycling Trade Shows in Chicago,



Figure 12c. Picture of the new Henley Tandem Bicycles that was printed with the article shown in Figure 12a. These tandems were described as being "Pretty-as-a-Picture".

Patent Number	Date Granted (Applied for)	Title of Patent
234,404	11/16/1880	Roller Skate
245,950	08/23/1881 (05/23/1881)	Roller Skate
285,484	09/25/1883 (06/30/1883)	Screw Driver
316,226	04/21/1885	Roller Skate
319,712	09/06/1885	Roller Skate
320,352	06/16/1885	Skate Toe Clamp
320,392	06/16/1885	Roller Skate
338,736	03/30/1886 (04/18/1885)	Roller Skate
338,738	03/30/1886 (11/30/1885)	Tension Device for Fence Machine
342,010	05/18/1886	Tension Device for Fence Machine
346,749	08/03/1886	Fence Machine
371,195	10/11/1887	Machine for Boring, Drilling, Etc.
10,892	01/03/1888	Reissue of No. 371,195
383,730	05/29/1888	Machine for Boring, Drilling, Etc.
396,279	01/15/1889 (11/12/1886)	Fence-making Machine
438,156	10/19/1890 (12/19/1889)	Lawn-mower
443,711	12/30/1890	Oscillating Meter
446,448	02/17/1891	Pully-lathe
506,398	10/10/1893 (06/10/1893)	Pulley Lathe
518,670	04/24/1894 (12/15/1883)	Lawn-mower
518,995	05/01/1894 (01/08/1894)	Boiler-tube Cleaner
527,979	10/23/1894	Meter
755,133	03/22/1904 (03/07/1903)	Coliseum Chair
1,366,729	06/28/1921 (04/26/1920)	Automatic Oil-drip Catcher

Table 1. U.S. Patents Granted to Micahah C. Henley
Illinois, and in New York, New York (*Wheel & Cycling Trade Journal*, Vol. XVI (8), p. 36-37; October 11, 1895, & Vol. XVI (10), p. 42-43; Oct. 25, 1895), and again in 1897 (*Wheel & Cycling Trade Review*, Vol. XVIII (23), p. 82-86; , and Vol. XVIII (25), p. 87-91), but this company had no presence at subsequent shows.

- ix Bruce D. Epperson (2010), Peddling Bicycles to America, Chapter 7, p. 105-128 (McFarland & Co., Jefferson, NC, USA); Gary W. Sanderson (2015), The Gormully and Jeffery Manufacturing Co. and Its Founders, Cycle History 26, 224-226 (FFCT, Paris, France).
- x This writer could find no ads for Henley bicycles in the bicycle trade journals at his disposal after 1897.
 In fact, by 1898 the section titled "OF INTEREST TO BUYERS" in *The Wheel and Cycling Trade Review* does not list the Henley Bicycle & Roller Skate Works at all until on October 20, 1898, in Volume

XXII (10), p. 19, the company is again listed not under "Bicycles" but under "Skates". Subsequently, beginning in this trade journal on October 27, 1898, in Volume XXII (11), p. 33, ads for Henley Roller Skates (Figure 8a) begin to appear, and these ads appeared regularly from then on.

- xi See for example the story of the Gormully & Jeffery Manufacturing Company in a paper by Gary W. Sanderson (2015) in *Cycle History* 26, 218-228. (FFCT, Paris, France).
- xii See for example the article "Pretty as a Picture", *Wheel & Cycling Trade Review*, Vol. XVIII (20), p. 47; January 1, 1897; and Figures 10a, b, c, & d. xiii See End Note i.
- i Hon. Henry Clay Fox (1912), *Memoirs of Wayne County and the City of Richmond, Indiana*, Vol. 1, Chapter XXVII, p. 499-521 (Western Historical Soci-

ety, Madison, Wisconsin).

- xvi Articles in *The Cycle Age and Trade Review*, Vol.
 XXIV (5), p. 148, November 30, 1899; and Vol. XXIV
 (9), p. 318, December 28, 1899 tell the reader that the Henley Bicycle and Roller Skate Works is offering a line of very fine roller skates although the company is in no way diminishing its interest in the Henley high quality bicycles that the company manufactures.
 Noticeable is the appearance of ads for Henley Roller Skates even though there is at this time, and in following years, a complete absence of advertisements for Henley bicycles (see also End Note ix).
- xvii Fred C. Fisk (1985). Micajah C. Henley, Bicycle Maker, *The Wheelmen Magazine*, No. 27 (November 1985), p. 10-14, and Annette Zamarchi (1985), Henley Patents, *The Wheelmen Magazine*, No. 27 (November 1985), p. 14-15.



Riders with old bicycles wait with Wheelman Stephen Hartson (on the right) to participate in a ride out of Ansonia, Connecticut, that would trace the first ride on a velocipede in America made by Pierre Lallement in 1867.

The Needham Safety Tricycle

John Malseed, Dedham, Essex, UK



Fig. 1. The Needham Tricycle.

glance at a listing of early patents is a good guide to how the velocipede age took shape. The Abridgements of Specifications of Patents published by His Majesty's Stationery Office in 1904/5 recognized the velocipede as a separate class (Class 136) back to 1855. Only 37 patents or provisional patents for velocipedes were issued in Great Britain during the 12 years from 1855 to



Fig. 2. Front wheel hub and cranks

1866, and several of those might equally be placed in another class, so interest in velocipedes evidently remained at a low level up to 1866. Then the artefact caught the public imagination such that by 1869 - just three years later - 116 velocipede patents were issued, after which interest again dropped off [**Table 1**]. In addition, there were many other velocipede improvements that were not registered at the patent office, including the Needham tricycle that is the subject of this paper and which also is dated to 1869.

Technical Description

The Needham tricycle is a tandem tricycle of an interesting design [Figure 1]. All three wheels are the same size, having iron tyres with a diameter of 36 inches and twelve heavy (0.3") steel spokes. Short cranks (6.25 inches) are attached to the front axle with a square taper pin [Figure 2]. The cranks have two square holes so that the pedals can be set at two different distances. The triangular wooden pedals are 6 inches long, which is unusually long for pedals of the velocipede era. The front pan saddle is clamped on a flat spring just behind the single front wheel. The front rider sits on this pan saddle and drives the wheel directly, as with a boneshaker [Figure 3]. Hock rests at the front allow the front

Table 1: Great BritainVelocipede Patents		
Year	Number of Velocipede Patents	
1855	3	
1856	3	
1857	2	
1858	1	
1859	1	
1860	1	
1861	5	
1862	6	
1863	7	
1864	3	
1865	4	
1866	1	
1867	7	
1868	11	
1869	116	
1870	24	
Total	195	

rider to rest his legs when coasting. Since velocipede driving wheels of 1869 were typically of about the same diameter as the Needham Tricycle, this tricycle is capable of a similar average speed – around 12 kilometers per hour (or 8 mph).

The rear part of the tricycle has a seat and uses treadles and levers to transmit power to the wheels **[Figure 4]**. The rear wheels are connected by a heavy and solid cranked axle 40 inches wide with a throw of 4 inches **[Figure 5]**. A pin and square slot in the hub of the driving wheel transmit power from the heavy axle to the wheel **[Figure 6]**. Two 24 inch long wooden treadles attached to 6 inch risers are attached to this rear axle using a plain bearing **[Figure 5]**. The front of each treadle is connected with an iron plate 12 inches long to the fulcrum of the hand levers which are 29 inches long **[Figure 7]**. The leather straps attached to the centre of the treadles hold the



Fig. 3. Front riding position.

rear rider's feet in place. The frame holding the rear seat is a semi-circle made of heavy gas piping **[Fig. 8]**. The rear driver, who sits on a wooden seat, uses his arms alternately pushing and pulling the two levers, and his



Fig. 5. Rear axle, treadles and rear frame.

legs pressing on the treadles to drive the rear wheels, so it is both a manumotive and a pedomotive machine [Figure 4]. The overall weight of the tricycle is 60 kilos or 132 lbs, the width is 40 inches, and the overall length



Fig. 6. Hub of driving wheel.



Fig. 4. Rear riding position.

is 81 inches. Since the three wheels are the same size, the two riders maintain the same cadence when the tricycle is in motion, even though their actions are different.

It would seem that this is not a tandem tricycle designed to take a lady out on weekend jaunt, as was the case for tandem tricycles of the 1880s. It was announced as a "two-man" machine: both riders were kept busy on this velocipede. The front rider has to pedal as with a normal velocipede, but is also busy steering the machine: given its weight and its length, this requires the helmsman to pay careful attention to turns – it can tip when turning at speed. Meanwhile the

stoker at the rear has to use both legs and arms rhythmically to keep the machine rolling. Given its weight, starting is a slow process, while stopping in a hurry is not recommended.

Invention

The tricycle in not named for its builder, James Day, nor for its

designer, George Scopes, but for the town of Needham Market located about 20 kilometres north-west of Ipswich in the county of Suffolk.

"Mr. James Day, a blacksmith in the town, built the Needham Two-Man Safety Cycle from a design by George Scopes, also of Needham Market. It is believed to be the only one in existence." (HYPER-



Fig. 8. Rear frame and seat.



Fig. 7. Fulcrum of rear driving levers and treadles.

LINK "http://needhammarket.onesuffolk. net/out-and-about/history/"http://needhammarket.onesuffolk.net/out-and-about/ history/ (accessed 13/3/2016).

Fragments of George Scopes' life can be pieced together from various censuses, directories and magazines. Given the small size of Needham Market (a population of close to 7,600 in 1881) and his unusual name, if seems highly probable that all reports of 'George Scopes' refer to one and the same person. In the *Practical Mechanics Journal* of 1 April 1859 (p.24), George Scopes of Needham Market is listed as applying for provisional protection of a patent for "Improvements in apparatus for

communicating motion to cots, cradles, and other articles for children's use". *The Sanitary Record* of 6th July 1877 (p.16) reports the granting of a "sanitary patent (#2121)" to Alfred Notcutt of Ipswich and George Scopes of Needham Market for "Improvements

to Vermin Traps".

Four years later, on 27 July 1881, the *Commissioners of Patents' Journal* (p.206) states that Notcutt and Scopes received another patent to protect their "Improvements in traps for catching moles and other animals". George Scopes is listed as a mousetrap maker in *White's History, Gazetteer and Directory of Suffolk* (p.764) for 1874, while in the 1881 Census, he is listed



Fig. 9. Announcement in the English Mechanic and Mirror of Science, August 13 1869.

as a vermin trap manufacturer living on the High Street, Barking, Suffolk (the village of Barking is the westward continuation of Needham Market). And in 1883 George Scopes of Needham Market is again listed as a 'vermin trap manufacturer' (*Kelly's Directory of Cambridgeshire, Norfolk and Suffolk, 1883*, p.1208). This suggests that Scopes was an entrepreneurial tinkerer interested in various forms of mechanical devices.[**Figure 9**].

The Scopes family genealogy of Need-



Fig. 10. James Day with his grandson at his smithy in Needham Market c.1888.



Fig. 11. James Day's blacksmith shop in Needham Market c. 1888.

ham Market indicates that George Scopes was born to Steven Scopes and Jane Mount on 22 September 1833, which makes him 36 years old the year the Needham tricycle was invented. Scopes' had two daughters born in Needham Market in 1868 and 1877, and a son in 1878, so this George Scopes was living in the town at the date of the invention, and was almost certainly the inventor of this tricycle. He died in Needham Market in 1913 aged 79. It also seems probable that he was not wealthy, although factors besides lack of

wealth may explain why he did not patent the tricycle design.

James Day is listed in *Kelly's Directory of Cambridgeshire, Norfolk and Suffolk, 1875* (p.889) 1879 (p.952) and 1883 (p.991) as a blacksmith on Needham Market High Street [Figure 10]. He is reported to have settled in Needham Market in 1861. In *White's History, Gazetteer and Directory of Suffolk for 1874* (p.764), Day is given a fuller description as a "general smith, gasfitter and bell hanger". He is also known to have been a whitesmith, indicating that he possessed a wider range of skills than a typical blacksmith, and photographs suggest he



The funeral of Mr. James David Day, the village blacksmith of Needham Market, took place on Tuestay afternoon in last week, the iterment being at the adjacent clurch at Creeting St. Mary, The Rector of that parish (the Rev. H. A. Fleetwood) officiated. The deceased was one of the oldest tradesmen in the town. The chief mourners were: Mr. and Mrs. Ernest Day, Mr. and Mrs. David Day, Mr. and Mrs. J. R. Day, and Mr. and Mrs. F. Day.

Fig. 12. James Day's funeral notice.



Fig. 13. James Day's smithy today.



Fig. 14. James Day's grandson rides the tricycle c. 1940.

did some repairs to bicycles [Figure 11]. When he died in 1919 the *Suffolk Chron-icle and Mercury* published a piece on his life which implies that he was a man of some standing in the community [Figure 12]. His sons continued the business until the blacksmith shop eventually closed around 1940. The contents of the blacksmith shop were then cleared from the premises and taken to the town dump. The blacksmith shop was then converted into a private residence, which it remains today [Figure 13].

Re-Discovery and Rescue

I started collecting old bicycles in 1963 when my father returned from a trip to Ireland with a Rudge 52 inch highwheeler on top of his car. The following year when visiting an Ipswich cycle shop the proprietor made mention of a large tricycle which had hung in a nearby blacksmith's shop for some 60 years, but the smithy had by then been shut for a quarter of a century. About a year later I heard that the tricycle, which had been shipped with the contents of the smithy to a scrap dealer in Ipswich when the blacksmith shop was closed in 1940, had been rescued and was still somewhere in Needham Market. After some footwork and knocking on doors I was directed to the terraced house owned by Mr. Stanley Shepherd. Mr. Shepherd took me to a small shed at the end of his garden in which he showed me some tangled metal and three large wheels. I asked if it was for sale and he replied "maybe, but I need to consult with Mr. Leslie Hales of Ipswich, the co-owner who had helped me rescue the machine from the scrapyard".

Two or three weeks passed and I received a letter stating that the bicycle could be bought for £50. With the help of my father I was able to purchase the tricycle: without my intervention the remains would have probably been scrapped. Mr. Shepherd showed me a couple of photos, one taken at the blacksmith's shop just before it closed with James Day's grandson at the rear [Figure 14]. The other was taken riding the tricycle at a local fair (probably marking the Festival of Britain in 1951). I then worked on restoring and repairing the machine, but I should stress that at this point I did not know it was "THE" Needham Tricycle - for me it was simply a large early tricycle. Its first outing after restoration was the UK National Rally of 1966 where the noted cycle collector, Cyril Mundy, recognised it as the Needham tricycle shown on the front cover of the English Mechanic and *Mirror of Science* of 13th August 1869 [Figure 15]. Having discovered that I had purchased this renowned tricycle, I returned to Needham Market and was photographed on the tricycle in front of the blacksmith shop where it was fabricated 130 years earlier. I found the tricycle difficult to ride at this stage, but when I examined the engraving of the English Mechanic closely I realized that the risers connecting the treadles to the rear axle were missing. Replacing these risers resulted in a much more comfortable ride at greater speeds. The first few years I owned the machine it was rather abused until I realised it should be treated with more respect. I made new wheels as the original wheels (now being restored) were showing their age. In 1980 I entered and rode it in a human powered speed trial over 200 metres held in Brighton where we achieved a top speed of 15.9 miles per hour. After this event and its appearance in the BBC children's television show called Blue Peter, I decided it was time to retire the machine after 111 years service.

But a further remarkable coincidence concerning this machine lay in store for me in 2014. Riding to Hitcham in Suffolk, near Stowmarket, about 15 miles north



Fig. 15. Front cover of the English Mechanic and Mirror of Science of 13th August 1869



Fig. 16. Great-grand children of James Day.

of where I live in Dedham, I stopped and parked my high bicycle outside a derelict assembly hall to take a photograph. A Mrs. Marie Bull pulled up in her car to admire my bicycle. Little did she know that at my Essex home I had stored a tricycle her great-grandfather, James Day, had built in 1869. She said "Lovely sight to see you on your penny-farthing on a Sun*day*", adding that her great grandfather had built a tricycle in Needham Market in 1869. I made the connection, and told her "*it so happens that I own that very* tricycle". She was flabbergasted. We then arranged to meet back in Hitcham with her sister Eve Saunders and their families and took a photo that was reported in the East Anglia Daily Times [Figure 16]. Mrs. Bull added of the tricycle : "I thought it would have been scrapped. I had no idea it was in existence. It was quite a shock – the sheer chance of making that connection bowled me over."

A Mystery

There remains a mystery about this machine. Its invention was accompanied by considerable hoopla, including an engraving on the front page of the *English Mechanic* for Friday, August 13th 1869, this being one of the leading mechanic's journals of that age [Figure 15]. George Scopes had a number of inventions to his credit and had applied for patents or



Fig. 17. The Rantoone tricycle of 1863.



Fig. 18. Jauneau's tandem tricycle c.1868 (Reynaud (2008) p.295).



Fig. 19. Jules Bodson's tricycle (undated) (Reynaud (2008) p.286).

provisional patents for them. Compared to other tricycles available in the late 1860s, the Needham Safety Tricycle worked well and could achieve a fair turn of speed. It later achieved minor celebrity as the image on a cigar wrapper. And a Belgian printer recently made a post-card of the tricycle, embellishing the original engraving with a street scene. So why didn't Scopes follow a normal business model by applying for a patent for his tricycle and attempt to sell a number of them at a time when there was a lot of interest in velocipedes?

The best answer I can suggest is that the Needham Safety Tricycle used technologies that had already been patented and that Scopes and Day feared they would face legal action if they copied these technologies commercially. Lorne Shields (2015) has presented a number of photographs showing that hand levers driving a cranked rear axle were quite widely used with tricycles from the mid-nineteenth century. The Rantoone tricycle of 1863 described by Roger Street (1990) had a manumotive mechanism similar to the rear part of the Needham Tricycle, and this was protected by patent 1280 awarded to J. Goodman in 1863 [Figure 17]. Moreover, the mechanical arrangements of the Needham Tricycle appear to have been independently developed in France, witness 2 machines illustrated in Claude Reynaud's Le Vélocipede

Illustré (2008), albeit with wooden rather than steel construction [Figures 18 & 19].

Conclusion

In 1869, the Needham Safety Tricycle was one of the most advanced machines on the road, yet to my knowledge, only one was ever made. It survived by a thread not once but twice, and by another unusual coincidence it was re-united with the descendants of the original maker 145 years later. So what is the future of my beloved tricycle? I am 71 years of age and have a daughter in her twenties who liked riding old bicycles when she was younger but now has many other interests so I can't be sure whether she will eventually renew her interest in old bikes. So its future is uncertain, but I think it can still be ridden with care and respect.

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Street, R. (1990), "The celebrated 'Rantoone'", *The Boneshaker*, 122: pp. 9-22.

Cycling and Cycling Advocacy on Commonwealth Avenue

By John S. Allen, Waltham, Massachusetts, USA

his paper gives a history of how cyclists have used Commonwealth Avenue in Boston, Massachusetts, USA, from the 1880s through to the present, and of cycling advocacy as it relates to this thoroughfare.

Origins of Commonwealth Avenue

The Back Bay area of Boston was built on filled land in the mid-19th Century. Back Bay became, and still is, a wealthy neighborhood of brownstone row houses including, in the 1890s, the fancy clubhouse of the Massachusetts Bicycle Club. Commonwealth Avenue is the main east-west street in Back Bay, with a wide central mall. In early illustrations, there is two-way traffic on both roadways. [Figure 1]

An extension of Commonwealth Avenue westward from the original section was at first named Brighton Avenue. A

light rail line opened in 1896 and to this day, runs down the center of this segment.

A third segment designed by the pioneering landscape architect Frederick Law Olmsted, and extending to the southwest from what is now called Packard's Corner, was laid out in the 1880s. The Brighton Avenue segment was renamed. so the name Com-

monwealth Avenue held for all three segments. A streetcar line was added on this segment in 1909.

Streetcars and motorcars 1910-1967

Bicycling for transportation declined



A NIGHT RUN ON COMMONWEALTH AVENUE. (Drawn by H. E. Sylvester.)

Figure 1: A night ride on Commonwealth Avenue in Back Bay, 1885. There is two-way traffic on both sides side of the central mall, and left-side parking.



Figure 2: The Bowker Overpass, looming over Olmsted's park and repeatedly patched.

after 1900 overtaken by streetcars and then the automobile. By the late 1920s, the Commonwealth Avenue roadways in Back Bay had been made one-way. The middle section of Commonwealth Avenue held many car dealerships, and in 1938 became the location of the Boston University campus. Most of the car dealerships have by now moved to the suburbs.

The construction of parallel express highways, Storrow Drive/Soldiers Field Road in the 1930s and the Massachusetts Turnpike extension in the mid-1960s, relieved traffic congestion, although it has picked up again. In 1937, an underpass at Massachusetts Avenue replaced two blocks of the Mall. In 1958 or shortly thereafter, a westbound roadway was added north of the streetcar tracks in the southwest segment, replacing parkland. As a consequence of the Olmsted design and the added streetcar tracks, the middle and southwest sections are asymmetrical: the westbound roadway is narrower than the eastbound. The construction in 1967 of the Bowker Overpass between Storrow Drive and the Turnpike buried Charlesgate Park under a mass of concrete. [Figure 2]

Dr. White's Committee and the Commonwealth Avenue Mall

Cardiologist Dr. Paul Dudley White

(1886-1973), President Eisenhower's personal physician and a pioneering advocate of healthful aerobic exercise, lived up to his advice, continuing cycling past age 80. His choice of equipment identifies him as using the bicycle for short utility and recreational trips. [Figure 3]

In his memoir My Life and Medicine, White identifies himself as an advocate for special paths for cyclists alongside roads. In the 1960s and early 1970s, he headed a Committee for Safe Bicycling which promoted the construction of bikeways in the Boston area. The Committee also supported a revision of Massachusetts bicycle laws and a bikeway plan. It is noteworthy that many of Robert Moses's parkways in the New York City area, laid out in the 1930s, had paths alongside.

By 1970, however, the era of urban highway projects was coming rapidly to an end. Massachusetts Governor Frank Sargent stopped the Inner Belt and Southwest Highway projects, which would have wrought terrible destruction on neighborhoods in Boston and Cambridge. Bikeways in parkland, waterfront and rail corridors could, however, be built.

White's Committee proposed that the existing path in the Commonwealth



Figure 3: Dr. Paul Dudley White and his wife Ina. Source: White, P.D., My Life and Medicine.

Avenue Mall in Back Bay be designated for cycling. A Boston Green Belt Bikeway Ride was held on June 26, 1971. A report on the ride states that:

The major improvement offered by the Greenbelt is a series of ramps down Commonwealth Avenue, which makes it possible to ride down the Mall without getting off your bicycle.

A newspaper article indicates that the ramps had not yet been constructed, and much of the route, which followed Olmsted's Emerald Necklace as far as Franklin



Figure 4: Boston Area Bicycle Coalition mass ride on Commonwealth Avenue, June 3, 1979.

Park, was on parkways which had long since become arterial routes for motor traffic. Paths in the Emerald Necklace have been improved and extended over the years, but very few cyclists used the path on Commonwealth Avenue, though ramps were eventually added. The path did not provide access to buildings along the Avenue, and there were too many obstacles – the several cross streets, and the underpass. Bicycling is still permitted on the Mall, though the Boston Landmark Commission's 1978 report proposing landmark status for it does not mention it as a bicycle facility.

Boston Area Bicycle Coalition

The Boston Area Bicycle Coalition, an advocacy organization founded in February 1977, held early meetings in the American Youth Hostels office at 1020 Commonwealth Avenue. The Coalition gained membership and ran a number of large rallies in Boston, including rides on Commonwealth Avenue. The Coalition represented cyclists with a wide range of opinions -- road riders and path advocates, and could count a number of successes, but not with the City of Boston. **[Figure 4]**

The Coalition supported the designation of the Boston to Cape Cod bicycle route, Massachusetts Bicycle Route 1, in 1978, which paralleled Commonwealth Avenue for several blocks while completely avoiding it.

Boston's Bicycle Advisory Committees

The Boston Bicycle Advisory Committee of 1991 was populated with Bicycle Coalition members, but most of the routes it advocated were on existing paths: none on Commonwealth Avenue..

In 1999, Mayor Thomas Menino established a second Boston Bicycle Advisory Committee. A fatal weakness of the Committee was that representatives of city departments did not attend its meetings. The city published a Bicycle Plan which "made a renewed and formal commitment to improve bicycling conditions in the city" and made a general recommendation for bike lanes or wide curb lanes including Commonwealth Avenue. But the recommendations were not implemented. While advocates made progress elsewhere, they "long ago gave up with the city of Boston," as committee member Doug Mink later stated, and another committee member confirmed. Paul Schimek - holding a doctorate in urban planning from MIT and



Figure 5: Mayor Menino's SUV parked in the bike lane at the ceremony for its opening, August 6, 2008.

a daily bicycle commuter -- had been hired as the City's Bicycle Program Director. He was able to accomplish little beyond the installation of a few hundred bike racks. Eventually, the City let him go: the reason given was budget cuts.

A constant drumbeat during all this time was *Bicycling Magazine's* rating of Boston as one of the worst cities for cycling in the US. That was a deeply unfair assessment, what with Boston's relatively slow traffic and multiplicity of route choices. But Boston's city government took what amounted to an "out of sight, out of mind" approach to cycling.

New-wave advocacy

Massbike's focus on statewide issues, its conservative approach to infrastructure and the increasing ease of communication over the Internet eventually made room for other competing organizations.

The Livable Streets Alliance, founded in 2005, started as a small group of like-minded people, but with time sought out memberships from the public. Livable Streets now claims a "community" of nearly 10,000, though most of these are loosely connected with the organization through signing onto an e-mail list, petition, or the like. Boston Cyclists' Union was founded in 2010 by Pete Stidman and Harvard researcher Anne Lusk, both strong proponents of separated on-street bikeways. BCU takes a populist, community-organizing approach.

Mayor Menino became a convert to cycling in the summer of 2007. Livable

Streets advocates ran with the opportunity this presented. The city hired a bicycle coordinator, Nicole Freedman, and brought in consulting firms. A "Boston Bicycle Summit" was held at City Hall. Following this, *Bicycling Magazine* no longer described Boston as the worst cycling city in the US, though very little actually changed at first other than the stance of the city government.

Mayor Menino officially opened bike lanes on Commonwealth Avenue with an outdoor press conference on August 6, 2008. The Mayor's SUV and several media and food vending trucks were parked in the bike lane. This issue was not unique to the event. Illegal parking was endemic and much of the bike lanes was in the door zone of parked cars. The bike lanes would poorly serve the less confident and unskilled cyclists which they were intended to attract. [Figure 5]

At Kenmore Square, at the east end of the project, the eastbound bike lane would run straight into a traffic island.. Following the opening ceremony, advocates pointed this out to Freedman and the island was cut back. The island was part of a reconstruction of Kenmore Square, a major 5-way intersection, and its transit hub. A landscape architecture publication heaped praise on the firm which did the design but it worked poorly for cyclists. The large, 5-way intersection was still tricky, the trendy block pavers in the street quickly deteriorated, and granite curbstones laid crosswise to the street as borders of crosswalks made for an even bumpier ride.



Figure 6: "Bike Box" at Charlesgate East on Commonwealth Avenue, installed ca. 2010. Bicyclists are expected to follow the path indicated by the arrow to cross from a right-side to a left-side bike lane.

More bike lanes and a bike box

The City went on to install bike lanes on additional segments of Commonwealth Avenue, first on the segment between the Boston University Bridge and Packard's Corner. Students of Dr. Peter Furth, a professor in the Civil Engineering Department of Northeastern University, had proposed bike lanes on the right side of the dual roadways between Kenmore Square and the Mall, and on the left side along the Mall and through the underpass under Massachusetts Avenue. A so-called "bike box" would connect the right-side and left-side bike lanes. This proposal was adopted with minor changes by the professional consultants, the Toole Design Group, and the city. The Boston Cyclists' Union posted praise for the bike box in its blog and Dr. Furth vehemently supported it. After the bike box was installed, I shot a video showing how it performed in reality and prepared a blog post. Confusion reigned: neither cyclists nor motorists were using the bike box as intended. The Boston Globe newspaper offered uncritical support for the bike box. [Figure 6]

A fatality and an attempted fix

There are numerous bicycle crashes along Commonwealth Avenue. On December 6, 2012, a talented Boston University graduate student, Chris Weigl, was killed, run over by a right-turning semitrailer truck.

In 2013, a working group of the city government and Boston University proposed green paint in "conflict zones" and reflectorized markers along the bike lane line. They were installed. The City described them as providing more protection for cyclists. The markers might help to prevent rear-end collisions, if they in fact were a problem. Research would show that they are in fact rare. But the markers also further reinforced cyclists' belief that riding outside the bike lane to avoid car doors, turning vehicles and other hazards, was perilous, and motorists' belief that bicyclists should stay in their place.

Bowker teardown?

On November 18, 2014, the Massachusetts Department of Transportation held a public meeting at the Boston Public Library about the Bowker Overpass. There was strong public support for tearing down the overpass. But this wasn't going to happen, because an at-grade route could not handle the traffic volume, and an underpass would have to go under the river and subway tracks. Entry and exit ramps would be impossibly long. Instead, the overpass was repaired.

Campaign for separated bikeways

From 2013 forward, campaigning went forward quickly, led by Livable Streets and the Boston Cyclists' Union, for barrier-separated bikeways to be included in a plan already underway for reconstruction of the segment of the Avenue between the Boston University Bridge and Packard's Corner. Advocates disavowed the bike lanes which they had advocated only a few years earlier. "Ambassadors" for the separated bikeways stood at intersections where cyclists were waiting, handing out pamphlets.

Paul Schimek, former Boston Bicycle coordinator, continued to be active in cycling affairs. In September 2014, he published a study which identified the major causes of car-bicycle crashes on Commonwealth Avenue. Very few were rear-enders. Most involved crossing and turning, which separated bikeways would only make more complicated, or doorings, which they might prevent, though at the expense of increased conflict with pedestrians and increased space requirements. Schimek proposed improving the bike lanes with a buffer between them and parked vehicles.

I sent a letter in support of Schimek's proposal and suggesting routes using parallel streets and connecting paths as a better option for local trips.

On November 22, 2014, new Boston mayor Marty Walsh took a ride on Commonwealth Avenue with advocates and on December 9, 2014, the Boston University student group BU Bikes hosted a meeting at an auditorium on the campus at which representatives of several advocacy organizations spoke. Boston's Deputy Traffic Commissioner, James Gilooly, spoke but did not make a design commitment. In March, 2015, the BU student newspaper announced that the barrier-separated bikeways would be installed, and would protect cyclists from Commonwealth Avenue traffic. At an October, 2015 conference, Gilooly gave a presentation with more detail about the planned reconfiguration. [Figure 7]

Plans for the southwest segment

By 2015, shared-lane markings had been installed in the frontage roads of the southwest segment between Packard's Corner and Cleveland Circle. As of this writing in August, 2016, plans are underway to redesign the frontage roads with bike lanes and at least one block where a frontage road is converted to a pedestrian plaza with a bikeway.

Alternate routes are not as practical in this section as in the others, as there are no parallel streets and the main roadway does not provide local access. Here the frontage roads, with long stretches between intersections, may be the most practical option. There have, however, been crashes including fatalities at intersections. Separate signal phases for the frontage roads could



Figure 7: One block of the planned redesign of Commonwealth Avenue middle segment with barrier-separated bikeways.



Figure 8: Proposed reconfiguration of Commonwealth Avenue southwest segment.

reduce the risk, though at the expense of increased delay for both cyclists and motorists. **[Figure 8]**

Where do we go from here?

Commonwealth Avenue offers a case study in the drift of public opinion. Advocates' recommendations have shifted reflecting what was politically achievable, and, as I hope I have shown, have repeatedly failed to focus on optimal long-term goals, and reflected popular misconceptions about safety. Media coverage has been unquestioning and supportive, as with The Globe's bike box picture and other recent articles, but on the other hand, in July, 2011, The Globe published a column from columnist Brian McGrory advocating banning bicycles everywhere in Boston. McGrory soon thereafter became The Globe's editor in chief. What unites these two seemingly contradictory positions is a failure to address bicycling seriously.

The other major Boston daily newspaper, the tabloid *The Boston Herald*, more consistently gives voice to backlash about bicycle projects, as in an article citing a Boston City Councilor's ire about the loss of 73 parking spaces to the separated-bikeway project.

How will Commonwealth Avenue perform with the new configurations? Crash numbers cannot be measured until the new installation is in place, however competent studies of similar installations show unpromising results. Due to the need to cross the avenue and backtrack to use the one-way bikeways, it is predictable that wrong-way travel and sidewalk cycling will continue to occur.

At some time in the future, perhaps the streetcar line on Commonwealth Avenue will be put underground, making more travel space available. That would not, however, solve the issues with local bicycle travel, and the tunnel would risk flooding, especially considering sea-level rise.

Schimek's Commonwealth Avenue study and his more recent Boston-wide research paper provide baseline data for comparison with future crash numbers. I have collected the more than a dozen videos I've shot while riding on Commonwealth Avenue over the past decade, as a baseline for comparison of bicycle travel times. I expect that for cyclists who wait for the traffic signals, travel times will double. That is my experience with similar installations.

Comparisons will also be interesting due to some very major changes underway in road traffic. Electrically-assisted bicycles are gaining in popularity. They are easily capable of 20 or more miles per hour, a poor fit in the narrow channels of the planned separate bikeways. Robotic crash avoidance for motor vehicles is already appearing, and within a couple of decades, completely robotic operation will be ordinary. Crash types which result from driver inattention and task overload will become much less common, but on the other hand, interaction with humans not in motor vehicles will be fraught. The political consequences are unpredictable. Bicycles might be either banned from major urban roadways due to slower speed and lack of robotic control, or be more welcome, due to the crash reduction.

This paper, then, tells an incomplete story. I hope to be able to answer some of the questions I've asked with a follow-up paper after a few years.

Acknowledgements

I wish to acknowledge Anita Brewer-Siljeholm, Lorenz Finison, Jessica (formerly Doug) Mink, Tom Revay, Paul Schimek and David Gordon Wilson for providing items used in this paper and its preparation; Beth Emery and Harriet Fell for their logistical support as I attended the 27th International Cycle History Conference; also the conference organizers; and my wife, Elisse for her indulgence in my pursuit of research. ●

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"An Autobiography between the Lines": Karl Kron's *Ten Thousand Miles on a Bicycle*

By Dave Buchanan, Edmonton, Alberta, Canada

en Thousand Miles on a Bicycle is surely one of the strangest books in the annals of cycling literature. When it appeared in 1887; three years later and 500 pages longer than originally planned; many readers and reviewers were puzzled, unsure of what to make of it or its author, one Karl Kron, the pen name of Yale graduate Lyman Hotchkiss Bagg, a journalist, librarian, and author of Four Years at Yale (1871), born in West Springfield, Massachusetts, in 1846.ⁱ Kron, as the title of his book suggests, was an avid cycle-traveler, one of the first to travel extensively by bicycle in North America. In the late 1870s and early 1880s, he rambled awheel all over the northeastern United States and Great Lakes region, venturing as far west as Ohio and Kentucky, up into parts of Canada, and even visiting Bermuda. Kron's book not only describes these many adventures, it provides an exhaustive, encyclopedic survey of early cycling culture, unlike any other cycling book I can think of. Some of Kron's original readers found it tedious and frustrating; others saw it as the curious masterpiece of an "eccentric genius." "

The first thing readers notice about the book is its sheer size: 675,000 words, 900 pages of small type. It's so large that one reviewer remarked, "If carried with you on a bicycle, it would be impossible to take anything else." iii Not only is it an imposing object to pick up (the tome weighs in at about two pounds), it's literally hard to read-its tiny type can be taxing on the eyes. Upon the book's publication, the reviewer for the Irish Cyclist & Athlete announced: "This work of years has at last assumed enormous dimensions of closely printed matter." iv Another critic from Pittsburgh's Bookmart admitted with some exasperation, "Of course, I haven't read a fortieth part of it. Nobody ever will or can."

The second striking feature is an un-

usual proportion of text dedicated to tables of contents, indexes, and addenda, and that the indexes (all 76 pages of them, as Kron proudly points out), are placed at the beginning of the book rather than at the end, where we might expect to see them.^v Kron foregrounds this aspect of the book in a way that may strike readers as odd, as if he is emphasizing the significance of the indexes over the actual text of the rest of the book.

The book has no illustrations either, which is unusual for a cycling book in the 1880s. This was the great age of illustration, when it was common for books and magazine articles to feature accompanying drawings or early photographs. Almost all the other cycling books from this period that I can think of (texts by, for instance, the Pennells, Thomas Stevens, George Thayer) feature illustrations. But Kron's does not-at least not the way we might expect. The book does contain two illustrations at the very beginning, in the book's front matter, but they have nothing to do with cycling: one is a portrait of Kron's bulldog, Curl, across from the title page. (The book is, in fact, dedicated to the memory of his "bull dorg," as Kron liked to call him.) The other is a small image on the Subscribers' Autograph page of the New York University Building on Washington Square in Manhattan where Kron lived while he was writing the book.

The two curious illustrations lead to the next curious feature of the book: in the middle of the volume, there are two long chapters with almost no connection to cycling. One is a sweet tribute to his aforementioned deceased dog and the other an homage to his favorite building. Kron says in a footnote that he's including the first of these, if not the second, as a kind of concession to the "general reader," who may find the cycling focus of the rest of the book arcane.^{vi} Contemporary reviewers generally praised the Curl chapter, in particular, though most noted its out-of-placeness.

The contrast between these two chapters and the rest of the book is merely the most extreme example of its genre-defying, hodge-podge of styles. Some chapters, especially the early ones, are conventional essays about the early cycling experience—Kron explaining the appeal of cycling, what clothes are appropriate to wear, his personal evolution as a cyclist, the viability of winter cycling, and his general philosophy of cycling and cycle touring. These are probably the most accessible parts of the book.

Kron mixes in a handful of poems, especially in the early parts, often placed between long chapters, in the style of magazines of the day. Some of these are imitations or parodies of other poets' works (for instance, Thomas Love Peacock and George Arnold) while others are original pieces by Kron, such as his prefatory poem, "May Fourth, 1887." Elsewhere in the book, Kron occasionally includes excerpts of classic poetry by writers such as Robert Herrick and Samuel Taylor Coleridge.

A large portion of the book, however, consists of itineraries and meticulously detailed road reports of Kron's many cycling trips. These chapters tend to be rather listy and dry, providing specific distances traveled, road surfaces encountered, and bits of advice for route finding. Here's a typical example from the chapter "Around New York," where Kron is recounting an 1879 run to White Plains:

I found a discouraging amount of sand alongside the park [Jerome Park], on the single occasion, in August, when I ventured beyond its lower border. Between there and Central Bridge, a distance of about three-and-a-half miles, the avenue may be ridden without dismount, in both directions; though there are two or three short grades whose ascent is apt to be made difficult by sand-ruts, while the general looseness of the surface, and the general presence of many drivers of fast horses, combine to render the course rather unattractive for bicycling.^{vii}

This kind of detail certainly could have had practical value for the prospective cyclist in the 1880s (though some of it may well have been out of date by 1887), and it is helpful to historians interested in nineteenth-century road conditions, but, in general, it makes for tedious reading.

The middle of the book features three much more personal chapters, an autobi-

ographical one called "Boneshaker Days," about his recollections of the velocipede craze of 1869, and the personal ones about his dog and building. These are the most conventionally autobiographical parts of the book, full of anecdotes and emotion, and the contrast with the arid itineraries is striking. Here, for instance, is Kron's poignant account of Curl's demise, which interestingly, occurred just before Kron's first encounter with a velocipede in 1869:

I think that his [Curl's] resentment of the notion of my pushing about a velocipede or bicycle . . . was so extreme that he decided he would not live to witness the shameful sight. So, alone in the cold and darkness of a winter's midnight, he dragged his tottering limbs out from his snugly sheltered den, and, . . . dropped down dead in the snow.^{viii}

The second half of the book is largely taken up with second-hand accounts of routes, statistics, and "records" of other cyclists from the United States and around the world. The main mode here is summary. Kron reports on and quotes from his extensive correspondence with other cyclists, recounting their riding accomplishments. These chapters are heavy on numbers (dates, miles traveled) and names (of riders and places) but some of Kron's running commentary on these reports is entertaining. For example, he says Charles E. Pratt only replied to his request for Pratt's "statement of fact" about his cycling life once Kron threatened to "destroy him with dynamite unless he forthwith contributed something for this chapter." ix When summarizing the globe-circling cycling adventures of Thomas Stevens, Kron cheekily sees them "having a sort of kinship with my own desperate struggle to push this book around the world." x

The final 150 pages of the book contain a miscellany of material: chapters exploring logistical, political, and institutional issues, such as "The Transportation Tax" and "The Hotel Question;" opinionated overviews of groups such as the League of American Wheelmen and the England-based Cyclists' Touring Club; and a long bibliographic chapter, "Literature of the Wheel," in which Kron provides a kind of annotated inventory of almost all known cycling literature, both books and periodicals, up to 1887. The final non-poetry chapter is "This Book of Mine, and the Next," a lengthy blow-by-blow account of how Ten Thousand Miles on a *Bicycle* came to be published—the various

negotiations with prospective publishers (including Colonel Albert Pope), and the subscription method Kron ended up using, whereby he sought out 3000 subscribers, asking each to pay \$1 in advance (and another on the book's arrival)—and the scheme for his second volume, to be titled *My Second Ten Thousand*, which never materialized.

Many of Kron's contemporary reviewers were, not surprisingly, confused. Some praised the book's thoroughness and originality. One reviewer called it "the first classic of cycling literature . . . [it] should be owned by every wheelman" (Wheeling, London). Australian Cycling News said it was a "monument of cycling." The Wheelman's Gazette (Indianapolis) called Kron's massive tome "the first great work on the subject of cycling, becoming to all wheelmen that relation that Isaac Walton's The Complete Angler bears to fishing."

But almost as many found it baffling or even downright infuriating. *The Army & Navy Journal* called it "a curious hodgepodge of a volume." *The Philadelphia Press* dismissed it as the "most ridiculous book of the season." *Bicycling News*, London, laughed it off as "an egotistical non-entity, a gigantic sham." And *The Boston Herald* scoffed that it was "one of the most worthless volumes ever written: the work of an idiot, not a sane man."

This radical split in critical reaction was, to some degree, the result of uncertainty about how to read the book. In the opening paragraph of the preface, Kron claims that his book is "designed less for reading than for reference." He says its model is that of a "gazetteer, a dictionary, a cyclopaedia, a statistical guide" where one can seek out specific "special knowledge," rather than the kind of book one might pick up and read cover to cover.xi But the book is also, as Kron says a few pages later, "a sort of autobiography," in that it also tells some of the story of his life, touching occasionally on "its trials and troubles" as well as his "amusing experience[s]." xii As a result, the book is a curious hybrid of reference guide and autobiography, and the tension between these genres tended to create problems for readers unused to such blurring of generic lines.

My initial experience of trying to read Kron's book is probably typical. I breezed through the first seven chapters or so, but then, when I hit the road-report chapters, quickly lost interest, found myself skimming and skipping ahead. Eventually I gave up. I missed the narrative pull and personal elements of the early chapters, and found myself wanting to hear less about road conditions and more about Kron himself. We get glimpses and flashes of his personality early on (for instance, his predilection for cold baths; his obsession with cyclometers; his almost pathological hatred of cyclist "scorchers" and back-trackers).^{xii} But these telling autobiographical tidbits disappear for long stretches before they re-appear mid-volume. Feeling exasperated, I put the book back on the shelf.

But as frustrating as it was at times reading the book, I found myself drawn back to it, intrigued by the presence of Kron. As a literature scholar, I sensed something quite sophisticated going on in the book in a literary sense. (This despite Kron's insistence that he has no time for "literary men" and that his goal was clarity rather than "verbal attractiveness," as he puts it.xiv In fact, he warns in the "Preface" that he has made no effort whatsoever to make his touring reports "readable." xv Many readers would say Kron succeeded on that front.) The way Kron's character is gradually revealed over many chapters reminded me of the kind of incremental revelations of a first-person narrator in a long, sprawling novel, such as, say, Laurence Sterne's unwieldy Tristram Shandy. And, as in that strange work of fiction, the portrait of the narrator that emerges is eccentric, complicated, and compelling, full of contradictions, frustrations, surprises, and humour.

I think Kron's book has been misunderstood, and somewhat unfairly treated by the majority of both his contemporary critics and later cycling historians. It's generally been seen as an oddity, a monstrous anomaly that contains some useful data in its highly subjective inventory of 1880s cycling culture (about how far and where cyclists rode in the high-wheel era, what they thought of road surfaces, what kind of cyclometers they liked to use, etc.), but that overall is just weird, dry, boring, and baffling, overburdened with lists and statistics. I'd like to propose a kind of re-evaluation.

Glen Norcliffe's assessment in *The Ride to Modernity* is representative of how cycling history has tended to view Kron's book. He describes *Ten Thousand Miles on a Bicycle* as "possibly the most boring book ever published." ^{xvi} However, he admits that despite the book's "excruciating" details, it is "a priceless document" because of the way it provides some of the clearest, most detailed accounts of roads and road conditions in North America in the 1880s.^{xvii} Norcliffe goes on to praise Kron's detailed account of Canadian roads in 1883 (159-63), but Norcliffe's take on Kron's book is typical of how most cycling historians have treated it: as having purely practical value, with no artistic merit.

Robert J. McCullough, on the other hand, has recently offered a different view of the significance of Kron's book in cycling history. He argues that the few historians who have seriously considered Kron's book have missed its other important contributions, and failed to appreciate "the substantive value of his narratives." xviii I agree with McCullough, though I have a different focus. McCullough, a landscape historian, is interested in Kron's descriptions of American landscapes and his general awareness of surroundings, both of which have been ignored. I, meanwhile, am intrigued by how the literary aspects of Kron's book have been overlooked.

I would argue that Ten Thousand Miles on a Bicycle is more literary than it's generally been given credit for, though not necessarily in conventional ways. It is both literary and anti-literary at the same time, a hybrid of narrative and reference, manifesto and minutiae impossible to categorize simply, to pin down in any one particular genre.xix Yes, long sections are dry and even boring, but to my eye, there's something artful and post-modern about Kron's use of what we'd today call pastiche (a mish-mash of genres) and paradox (in the conflicted persona of Karl Kron). The book is not an easy read, to be sure, but neither is Joyce's Ulysses or Sterne's Tristram Shandy.

Ten Thousand Miles on a Bicycle is surprisingly personal in places and this literary aspect of the book most interests me. As Kron tells us in the preface, the book is, in addition to being a "gazetteer," also "a sort of autobiography," if not obviously, then certainly "between the lines." ^{XX} I'm interested in this self-fashioning aspect of the book, and how it's possible to trace, amidst the road reports, distance logs, and endless indices, a fascinating self-portrait of a solitary, eccentric, obsessive, strong-minded, funny, and passionate cycling enthusiast. Although *Ten Thousand*



Figure 1: The title page from J.S. Phillips's article in Outing and The Wheelman from January/February 1884 about a cycling trip in Maine that Karl Kron took part in. The group-photo illustrated features the bottom of Kron's feet instead of his head. These feet are shown here encircled in red (not on the original magazine cover) just below the head (of another person) shown below the front wheel axle.

Miles on a Bicycle is "a book of American roads," ^{xxi} it is also a book about a fascinating and most unusual American man.

A portrait of Kron slowly emerges over the course of the book, revealed directly through what he tells us about himself and indirectly through the way he writes about cycling. I will focus on three specific features of Kron's personality that come to define his personality, with the aim of illustrating the eccentric and complex nature of his persona, one worth getting to know.

First, Kron is a loner, a solitary figure by choice, who prefers to live alone (he never married) and to cycle by himself (he never joined any cycling organization, preferring to remain "unattached," as one observer put it).^{xxii} This was unusual in an age of cycling clubs, when cycling was seen by many as a highly social activity. But Kron explains several times that he's always preferred "solitary" athletic pastimes, that cycle touring is for him the perfect solitary activity, and that, as Kron puts it in verse, "The lonely tour hath more to please." xxiii He was notoriously shy, according to Emil Rosenblatt, and disliked having his likeness taken. Still, it's remarkable that for all his travelling in an age of prolific illustration and photography, there are few surviving images of him on or off a bicycle.^{xxiv}

Kron cultivated the image of outsider. A good example of this can be seen in an image that he talks about in the chapter "In the Down-East Fogs" but does not include one that accompanied a piece by J.S. Phillips in *The Wheelman's* January/February issue of 1884. Phillips's article describes a large group cycling trip through Maine, one that Kron, uncharacteristically, took part in. When an English illustrator, who travelled in a carriage behind the group of 36 cyclists, was composing a

the group of 36 cyclists, was composing a "group photo," so-to-speak, Kron convinced him to insert an image of the soles of Kron's shoes (with his name inscribed on the soles) instead of his face. ^{xxv} See **Figures 1 and 2**. As this image suggests, Kron liked to position himself as different, as his own idiosyncratic man, one who stands apart from the crowd—even when he's in the middle of it.

Not surprisingly, Kron seems more comfortable around things than people. He claims to love the isolation of his "Castle Solitude" on Washington Square because of the way it allows him to minimize human interaction.xxvi He much prefers the company of books, bicycles, and dogs (or, at least, his dog), to members of his own species. Two of the most memorable chapters in the book, "Columbia, No. 234," and "Curl, the Best of Bulldogs," are about Kron's emotional connections to his first bike and his first pet. Nowhere in the book does Kron mention a human relationship that possesses for him anything close to the same intensity.

Kron was probably what we today would call obsessive-compulsive; his desire, even need, for compiling and organizing data was extreme. Indexing was a great passion for Kron. As an undergraduate, Kron worked for the *Yale Literary Magazine*, putting together an index for the first 33 years of the magazine—"a monumental compilation" he calls it, which would also be a fair description of his cycling book.^{xxvii} In fact, Kron tells us that he almost didn't graduate from Yale because he had been "kept out of college" for a term, a result of him being so engrossed in his index work that he failed his exams. When he fell for velocipeding



Figure 2: Close-up from Figure 1 showing the bottom of Kron's shoes.

in 1869, Kron recalls that his enthusiasm for it was so powerful that, for a while, he was even distracted from his beloved "index checks." xvii When Kron rediscovered cycling in 1879, after a 10-year hiatus, he soon conceived of a way to combine his two great passions, bicycles and indexes, by writing Ten Thousand Miles on a Bicy*cle*. While pushing to complete the book in 1885, Kron seems to have developed a repetitive-strain injury (severe "writer's cramp") from over-work. He taught himself how to do his "pen-pushing" with his left hand so he could continue nonetheless. xxix Kron's obsessive impulses are also evident in the "relentless persistency" with which he pursued subscribers for his book.xxx Kron was proud of being able to circumvent the usual machinery of publication (bookstores, agents, advertising), but his subscription method took an enormous amount of time, effort, and moxy. He boasts that he "carried on an enormous correspondence, in attracting 3,600 advance subscriptions, from every part of the globe, and in arranging agencies in more than 150 principal towns." xxxi For such a purportedly shy man to approach thousands of people, most of them strangers, asking for a one dollar advance on his curious project, given "the human animal's indisposition to pledge money for anything unknown," seems a perverse thing to do. xxxii But once committed to the scheme, as with all his endeavours, Kron was indeed relentless. In typical

Kron fashion, not only does he list all the subscribers in alphabetical order at the end of the book, he also includes each's "order of enrollment upon the subscription list." ^{xxxiii} Finally, Kron exhibits an unusual fascination with numbers and numerical coincidences. There's a math-

> ematical aspect to his book, at least in the compiling of numbers, and the discussion of the significance of particular numbers. For instance, the number 46 comes up frequently. Kron talks about how his 46" wheel was "unusual and distinctive" even old-fashioned in an age when many rode much larger wheels.xxxiv He says he likes the number for "sentimental reasons," having been born in 1846.xxxv Kron also talks a lot about his Columbia No. 234 bicycle. He claims, somewhat facetiously, that this number was significant because it was not

only the serial number of the machine but also the cost of the bicycle—if, he reasoned, one counted what he paid—plus the surgeon's bills for a repaired elbow, following a tumble on the inaugural ride. ^{xxxvi} Then in the chapter "My 234 Rides on 'No. 234'," Kron also claims that on December 30, 1882, ^{xxxvii} his last day of wheeling that year, he realized that 234 was the exact number of days that he had "mounted the wheel" in 1882. Such numerical coincidences and patterns (however forced some of them may seem) abound in the book.^{xxviii}

Readers today might recognize in these three qualities of Kron's persona some of the classic indicators of Asperger's Syndrome: limited social interactions, a tendency to focus on the self rather than others, and an obsession with specific, unusual topics. Indeed, Karl Kron may well have had a high-functioning form of autism or some other psychological condition. It would explain a lot of the oddness of his book. But ultimately we can't know for sure how much of the Karl Kron that comes through in the book is the real Lyman Hotchkiss Bagg and how much is a literary performance of semi-autobiographical character.

In any event, the "many queer autobiographical details" ^{xxxix} in the book (*Buffalo Courier*) bothered some critics, who felt that personal information about Kron was inappropriate in a book that claimed to be, primarily, a "gazeteer" of American roads. The word "egotism," meant pejoratively, comes up a lot in the reviews. London's Pall Mall Gazette called the book "a masterpiece of egotism Hardly one page have we been able to refer to without reading something about the author." Bicycling News, also London, went even further: "The Ego is omnipresent [in Kron's book] to the exclusion of all else. In fact, the printers must have wanted a fresh supply of capital I's." Kron, however, anticipated this line of criticism, and in the preface, he vigorously defends the "egotism" of the book, describing it as "scientific and unobtrusive," and necessary to illustrate "the enthusiasm of the wheel" that he sees all around him.^{xl} Interestingly, Kron contends that it's impossible to wholly eliminate the personal from even the most clinical accounts of road surfaces and routes: simply "reporting the roads of a continent," Kron explains, will, on some level, reveal and "reflexively exhibit the reporter's habits and character." This is not a bad thing, Kron argues. The book's "vitality would be destroyed if 'the personal equation' could be eliminated," he claims.^{xli} I completely agree. Kron's book does possess a unique "vitality" which comes almost entirely from its autobiographical elements. Kron's characterquirky, biased, meticulous, self-involved, stubborn, self-deprecating, funny, and passionate-emerges gradually between the lines, amid the miles, indexes, and lists. Over the course of a very long journey, readers come to know the habits, best qualities, annoying tics, and pet-peeves of this fascinating and strangely likeable travelling companion.

Cycling historians should re-visit Karl Kron's curious, sprawling, Tristram Shandy of cycling literature with new eyes, and re-consider it as more than just an odd "gazetteer" of American roads. For it is nothing less than a singular autobiocyclopaedia, strange, personal, literary, and rich. I give the final word to the reviewer in The Hartford Courant: "The book would be as dull, prosaic and borous [sic] as the author aimed to make it, if he had been able to live up to his ideal. Luckily, he couldn't. His individuality has asserted itself. He himself has crowded in,--among the three-cornered stones, the up-grades and the pauses to oil the machine,--and some of his literary *excursions are exquisite.*" ^{xlii}

Notes

- ¹ The pseudonym "Karl Kron" came from Bagg's weekly column for the New York World, "College Chronicle," in the 1870s. Bagg used the abbreviation "Coll Chron" and eventually adopted it, with altered spelling, as a pen name to protect his family name from "notoriety" of publishing, as he put it. Karl Kron, Ten Thousand Miles on a Bicycle, (New York: Karl Kron, 1887), 280. Bagg used the name Karl Kron for his cycling writing, so hereafter I will refer to him by that pen name.
- ² Spirit of the Times review quoted in Karl Kron, "Notices and Subscriber Opinions of Ten Thousand Miles on a Bicycle." Pamphlet. (New York: Karl Kron, 1888). Kron compiled all the book's reviews into a 116-page pamphlet, which he circulated as a somewhat curious attempt to promote further sales. Kron included all reviews, even the negative ones. All quotations from reviews that follow are taken from this unpaginated pamphlet.
- ³ The Pall Mall Gazette review quoted in "Notices."
- ⁴ In his mock "Obituary Notice" of 1890, Kron proudly quotes a letter from an admiring reader who wrote, "As I am careful of my eyes, and rarely read by gaslight books in smaller than long primer type, it is significant that your smallest type [nonpareil] did not tire my eyes. . . . But almost unquestionably it [the small type] repels buyers,--especially those not particularly bookish in their tastes." Elsewhere in the same letter, the writer admits to having read "perhaps a third of your book." Lyman Hotchkiss Bagg. "Obituary Notice of 'A Yale Graduate of '69.' Written by Himself. (New York: Karl Kron, 1890), 4.
- 5 Karl Kron, Ten Thousand, viii.
- 6 Kron, Ten Thousand, 407.
- ⁷ Kron, Ten Thousand, 71.
- 8 Kron, Ten Thousand, 424.
- ⁹ Kron, Ten Thousand, 504.
- ¹⁰ Kron, Ten Thousand, 483.
- ¹¹ Kron, Ten Thousand, iii.
- 12 Kron, Ten Thousand, viii.
- ¹³ Kron says he's been a proponent of cold baths for 18 years (Ten Thousand 61). He valued most "distinct miles," as he called them (51). His favorite fabric for cycling clothes was velveteen (19).
- 14 Kron, Ten Thousand, iv.
- 15 Kron, Ten Thousand, iii.
- ¹⁶ Glen Norcliffe, The Ride to Modernity: The Bicycle in Canada, 1869-1900. (Toronto: U of Toronto P, 2001), 157.
- 17 Norcliffe, Ride to Modernity, 157,159.
- ¹⁸ Robert L. McCullough, Old Wheelways: Traces of Bicycle History on the Land (Cambridge, MA: MIT Press, 2015), 93.
- 19 Kron, "Notices" find name of reviewer
- 20 Kron, Ten Thousand, vi.
- 21 Kron, Ten Thousand, iii.
- 22 He was, for instance, present in Newport at the founding of the League of American Wheelmen in 1880, but did not become a member. Kron, Ten Thousand, 24.
- 23 Kron, Ten Thousand, 61, 256, 34.
- ²⁴ Kron explains, "I always turned the back of my head to the camera whenever I had any volition in the matter of defending myself from its deadly aim." Kron, Ten Thousand, 280.
- 25 Kron, Ten Thousand, 279-80.
- ²⁶ "It is tacitly understood by all that the object of a man's making his home in such a place is not to form new acquaintances, but to escape from those already formed." Kron, Ten Thousand, 462.
- 27 Kron, Ten Thousand, 392.

- 28 Kron, Ten Thousand, 393.
- 29 Bagg, "Obituary Notice," 5.
- ³⁰ Kron, Ten Thousand, 392.
- ³¹ Bagg, "Obituary Notice," 4.
- 32 Kron, Ten Thousand, vii
- ³³ Kron, Ten Thousand, 734. Kron's subscription approach was only partly successful. According to an obituary from 1911, "The book was not a success financially, and this was owing to the erratic course taken by the author in bringing it out. Postponement succeeded postponement until those who had subscribed for it got tired and quit." "Karl Kron is No More," 136.
- ³⁴ Kron, Ten Thousand, 61. Kron was 554" tall, which also explains why a smaller wheel suited him (59).
- 35 Kron, Ten Thousand, 23.
- ³⁶ Kron, Ten Thousand, 35.
- 37 Kron, Ten Thousand, 49.
- ³⁸ Certain dates seem to hold special significance to Kron as well. For instance, he riffs on the importance of May 29 being the date of both his inaugural ride on a high-wheeler in 1879 and of the "memorable mustering of the clans" of wheelmen at Newport, and the founding of the League of American Wheelmen in 1880. Kron, Ten Thousand, 24.
- 39 Review in The Buffalo Courier.
- ⁴⁰ Kron elaborates: "It is not because I think myself a great man, that I feel free to give an abundance of personal details, which, if I were one, would interest the great world outside. It is rather because I think my personality of absolutely no account to that outside world,--because I think my details too tedious to be worth outsiders' studying, even as a basis for sarcasm and ridicule,--that I feel free to reveal myself unreservedly to the little 'world on wheels'" (v).
- 41 Kron, Ten Thousand, vi.
- 42 Kron speculates that the author of this anonymous review was C.H. Clark, of Yale '71. Bagg, "Obituary Notice," 3.

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The Future of Transportation: The Bicycle Railway

By Dennis McDonald, Medford, New Jersey, USA

he Burlington County town of Smithville.

16.

New Jersey, in the late 1800's was a hotbed for innovators. Woodworking inventor and New England factory owner Hezekiah Bradley Smith bought the dilapidated town of Shreveville, New Jersey, encompassing 45 acres, in 1865 for \$20,0001 and proceeded to set up a model company town with his own money. He built a central public park with a gazebo



Figure 2: Arthur E. Hotchkiss, inventor of the Bicycle Railroad (cyanotype print; courtesy Burlington County Board of Chosen *Freeholders/Division of Parks.*)

for performances, a dormitory for single workers that also contained an opera house and library, and a public schoolhouse within his walled residence. His benevolence for his skilled workers extended beyond the factory when he selected workers with musical skills and formed a band that performed statewide. Smith made sure





Figure 1: H.B. Smith Machine Company Factory as seen from the top of the observation tower in the farm complex. Clapboard worker's cottages on right side of image; Mechanics Hall/House at center right (undated photograph; courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)

that fresh vegetables were available for his workers and their families from a farm he owned nearby. The unconventional businessman also surrounded himself with creative people both in his company and on the Board of Directors.

Even after H.B. Smith's death in the late 1880's inventors still came to Smithville because the H.B. Smith Machine Company continued to be run by those imagi-

working machines, bi-

cycle related designs, and engines.2

William S. Kelley, formerly of the Philadelphia-based woodworking machinery maker Richards, London and Kelley, who took over the company after Smith's death, held patents for improvements to the Star Bicycle, Bicycle Saddles, Bicycle Wheels, and a Sandpapering Machine.³ Board member Joseph J. White of Whitesbog



Figure 3: A. E. Hotchkiss Patent No. 488,200 for an Elevated Railway, December 20, 1892 (courtesy United States Patent Office website.)



Figure 4: A. E. Hotchkiss Patent No. 488,201 for an Elevated Railway, December 20, 1892; details of the ratchet mechanism used to propel the device (courtesy United States Patent *Office website.*)

Village (Pemberton, N.J.) and cranberry fame was an important inventor for the H.B. Smith Machine Company. He started out as a mechanic and later became general manager of the company.4 He invented a Belt Shifting-Pulley that was advertised in the Smith Machine Company catalog of 1902. He also held patents for a Chain Making Machine, a Tenoning Machine, and a File and Rasp Cutting Machine.5

An early example of an outside inventor coming to Smithville occurred in 1880 when George W. Pressey of Hammonton, New Jersey, patented a velocipede6 chang-



Figure 5: Mount Holly and Smithville Bicycle Railroad tandem and single rider vehicles (undated photograph; courtesy Michael Lewis, Faison-Pierson-Stoddard Professor of Art History at Williams College in Williamstown, MA.)

ing the traditional high-wheeled bicycle layout with the small wheel in front. He brought his idea to H.B. Smith, and Smith agreed to manufacture the new American Star Bicycle. With this agreement the Smith Machine Company now expanded into a field where they had never manufactured a product such as this before. The company seemed able to adapt to new ideas when they saw the chance to grow.

So it was in the early 1890's that accomplished inventor Arthur Ethelbert Hotchkiss of New Haven, Connecticut, and an 1864 graduate of Phillips Academy in Andover, Massachusetts,⁷ approached the H.B. Smith Machine Company of Smithville, NJ, with a revolutionary idea for a new transportation system.⁸ Hotchkiss had submitted a patent for an elevated railway



Figure 6: Mount Holly and Smithville Bicycle Railroad Company \$10 bond with coupons, issued July 1892 (courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)

where a rider could power a single or tandem bicycle-type vehicle along a fencelike structure for either transportation or pleasure.⁹

William Kelley, the President of the H. B. Smith Machine Company, along with their board of directors and Hotchkiss entered into talks about working together on the idea. Soon afterwards the *Mount Holly Herald* reported that "arrangements have just been made for the construction of a bicycle railway between Mount Holly and Smithville, which will be the only one of the kind in this country, and in its way a decidedly unique affair."¹⁰ The idea came at a time when the bicycle craze was sweeping the country. "The bicycle was seen as a revolution in personal transportation that affected many aspects of life...¹¹

Hotchkiss's idea was that a rider could travel from one town to another using this unique mode of transportation and that it would revolutionize transportation nationally. He hoped that the H.B. Smith Machine Company, which already had success building the American Star Bicycle, would build a prototype of the vehicle and also build the monorail track. There was even talk that possibly "*electric bicycles will eventually be run on the Mount Holly and Smithville Bicycle Railway, as exper-*



Figure 7: Aerial map of the Bicycle Railroad looking east from Mount Holly towards Smithville, NJ, showing the Smith Company's Upper Village, Mansion, and Lower Village with baseball field, 1892 (from William Bolger. "Smithville: The Result of Enterprise, 1980; courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)



Figure 8: Mount Holly and Smithville Bicycle Railroad Route Map (courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)



Figure 9: Dual track section of Mount Holly and Smithville Bicycle Railroad bridging Rancocas Creek; view towards Mount Holly, N.J. with still-standing steeple of Saint Andrew's Episcopal Church in background (undated photograph; courtesy Michael Lewis, Faison-Pierson-Stoddard Professor of Art History at Williams College in Williamstown, MA.)

iments are now being made with that idea in view." ¹² "The operator would sit on the new machine that included handlebars, a saddle, pedals, a braking system and a ratchet mechanism, similar to the Star Bicycle. It has been proposed to erect an umbrella top for the machine, which can be put on in rainy weather." ¹³ The rider would do the work by pumping the pedals up and down providing the power to drive the machine. The vehicle's grooved wheels were placed in front and behind the rider and he sat between them, similar to today's bicycles but unlike the high wheeled bicycle of the day where the rider sat above a big wheel. The track, according to a Scientific American article that appeared on April 16, 1892,

"rests upon a foundation of cross ties 3



Figure 11: Bicycle Railroad sign on a pole near Pine and Mill Streets in Mount Holly, NJ. (undated photograph; courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)



Figure 10: Building the Mount Holly and Smithville Bicycle Railroad (undated photograph; courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)

x 6 in. by 4 ft. which are placed at intervals of every 6 ft., and upon them rest wooden posts ordinarily 3 ft. high. These are secured to the ties by bolts and angle irons. Narrow wooden stringers connect the posts, and the top stringer has a T-shape rail fastened to it on which the bicycle runs....Two tracks will be constructed so that the road may be operated in both directions at the same time. Side tracks will be placed at suitable intervals, at which the bicycle will be stored when not in use and at which point passengers can be supplied, leaving the machines at any station where they would wish to disembark "

The H.B. Smith Machine Company agreed to invest in the idea and set up a board of directors for the Mount Holly and Smithville Bicycle Railroad Company. The board was mostly made up of H.B. Smith Machine Company managers and also included Arthur E. Hotchkiss. In January, 1892, the Mount Holly and Smithville

Bicycle Railroad Company began to offer the public \$10,000 in stock and \$5,000 in bonds to build the prototype vehicles and a dual track railway. "Within a month, employees of the H.B. Smith Machine Company had subscribed to \$1,000 worth of the bonds."¹⁴ Before the end of May, twenty-four Mount Holly merchants put up \$50 each for bonds. For testing purposes, the H.B.

Smith Machine Company also built a two hundred foot long track beside the factory where the vehicles, about fifty of them, would be built.

Upon the completion of the bond sale, land between Smithville and Mount Holly was purchased from nine landowners.¹⁵ Grading began so the fence-like structure could run as straight as possible from one town to the other with very little altitude change. The elevated bicycle railroad required building ten bridges over the northern branch of the winding Rancocas Creek for the 1.8 mile line. Overpasses and gates also had to be built so farmers could access their fields where the rail line bisected it.

Hotchkiss also wanted the Mount Holly and Smithville Bicycle Railroad to be a demonstration site for national and international investors to come and view the new railway when completed. His railway would be perfect for the workforce at the H.B. Smith Machine Company factory because about half of them lived in the town of Smithville and the other workers had to commute to the machine shop by train or by foot from Mount Holly. The new commuter line would make the travel between the two towns much more convenient and quicker. The Roanoke Times in Virginia wrote that "One of the most unique ideas in railroad construction is about to be put into practice between two New Jersey towns



Figure 12: Bicycle Railroad advertising poster, 1892 (from William Bolger. "Smithville: The Result of Enterprise, 1980, p. 208; courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)





Figure 13: "The plug-hatted gentlemen pictured above are said to be Mount Holly residents bound for Smithville where they operated shops," circa 1893 (Mount Holly Herald, January 4, 1946; courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)

Figure 14: Riders, with women sitting side saddle, on the Mount Holly and Smithville Bicycle Railroad two-track segment, near Rancocas Creek, circa 1893 (from advertisement for the Hotchkiss Bicycle Railroad; courtesy Burlington County Board of Chosen Freeholders/Division of Parks.)

– Mount Holley (sic) and Smithville – and if everything is true it will revolutionize short distance travel. Every passenger runs his own train, doing away with the expense of engineers, conductors, brakemen, and firemen." ¹⁶

After many delays during the summer, excitement was building for the opening of the one-of-a-kind commuter line. Finally the opening took place on September 13, 1892, the second day of the Great Mount Holly Fair, one of the largest fairs of its type in the state. The company placed an advertisement in the *Mount Holly News*, *"The Mount Holly and Smithville Bicycle Railroad will be open to the public today, and will hereafter be in operation every night and day except Sunday."* ¹⁷ The price of a round trip excursion fare was 10 cents ¹⁸. Unfortunately only one lane of the dual track was completed, but still a resident of Smithville could jump on the bicycle line, pedal the vehicle to the rear of the Relief Fire Company on Pine Street in Mount Holly, and walk to the fairgrounds faster than ever before. During the first three days that the bicycle railway was open posters were printed and nailed to poles announcing the fact that over two thousand people enjoyed riding the new transportation system. The roadway was illuminated at night and each machine was provided with a front light to avoid collisions and "ample guards have now been provided over the wheels to prevent the throwing of water formed by dew set-



Figure 15: Hotchkiss Bicycle Railroad Amusement Ride, Atlantic City, New Jersey, exact location unknown, circa late 1890's (courtesy Atlantic County Historical Society)

tling on the track in the evening." ¹⁹ The new attraction was almost as popular as the yearly fair. On September 24, 1892 the *Mount Holly Herald* stated:

"That the bicycle railroad is a success goes without saying. It is the biggest and most complete success Mount Holly has had for a long time, as the crowds that gather nightly will testify. Fully five thousand people have been carried since the road was opened last week, and the cash receipts have been sufficient to pay one year's interest on the bonds. At this rate the road will be one of the best dividend earners in the country. Every night there is a crowd of people at the depot waiting their turn for a ride, and the machines are kept busy until eleven o'clock at night. In a short time the double track will be extended to Smithville. To say that Prof. Hotchkiss is delighted at the success of his invention does not half express it. The failure of the road was predicted by so many people, and it was ridiculed so on all sides that an ordinary man would have lost heart, and given up in despair, but Prof. Hotchkiss in this respect is no ordinary man."

After the excitement of the opening of the Bicycle Railroad, the rail line was seen as a way for Mount Holly residents to easily commute to their jobs at the H.B. Smith Machine Company. A monthly pass on the rail line was \$2.00.²⁰ About half of the company's 250 employees lived in Mount Holly and had to commute to their factory jobs. The Pennsylvania Railroad ran trains through both towns but the Smithville station was about a half mile from the factory in the opposite direction. The Mount Holly and Smithville Bicycle Railroad station began and ended at the company doorstep. A headline in the *Mount Holly Herald* also claimed that "(Mount) Holly Shop Owners Reached Smithville by Bikeline in 1890's" ²¹ where they operated stores in Mechanic's Hall. The only other way to get to work at the H.B. Smith Machine Company factory was to walk over rough and often muddy roads.

Riders were able to travel up to 18 miles an hour on the 1.8 mile track- a revolutionary speed. It was faster than any other means of transportation at the time other than trains. The whole trip could take as little as six minutes for a young, male factory worker. *The Mount Holly Herald* reported that "already many of those interested are urging the extension of the line to Pemberton while others say that a similar road between Mount Holly and Burlington would undoubtedly pay."²² Although one lane of the dual track was completed for the fair the other rail line was not finished between the two towns which made the hoped investors from other parts of the country would travel to Smithville and purchase the monorail for their town. When few did he headed out to the World's Columbian Exposition of 1893 in Chicago, Illinois, to promote his idea and set up a single track exhibit



Figure 16: Hotchkiss Bicycle Railroad Amusement Ride, South Shore, Blackpool, England (author's collection)

of his railway line. He also set up a prototype of another type of bicycle railway he invented for the World's Fair; one with the bicycle apparatus suspended below an overhead rail track. Afterwards he sold the New Jersey and Pennsylvania construction rights to market the "Hotchkiss Bicycle Railroad" to Elsworth H. Burtis and Cap-



Figure 17: Hotchkiss Bicycle Amusement Ride, Southport, England. Date? (author's collection)

commute inconvenient. Pleasure riders still rode the bikeway, but the majority of riders in the winter were the workers at the Smith factory.

At the first annual meeting of the stockholders of the Mount Holly and Smithville Bicycle Railroad Company in July of 1893 it was reported that more than twenty thousand passengers have been carried since its opening the previous September.²³

After the success of the bicycle railroad and the good press Hotchkiss received, he

tain Walter S. French.²⁴ The early success of the railway and the press from Chicago allowed "Professor" Hotchkiss, through his agents, to sell the rights to the bicycle railway to investors in Atlantic City (similar to the Mount Holly and Smithville Bicycle Railroad), Ocean City (built as an overhead, hanging rail line) and Gloucester (unknown type of railway). Most opened as amusement rides not as commuter rail lines. Somewhere in this period Hotchkiss received an offer to build a bicycle

railroad amusement ride at Coney Island, New York, but because the operators wanted to be open on Sunday, Hotchkiss refused the request. He also sold the rights to William George Bean of England who built a few bicycle railroad amusement rides in Norfolk, Great Yarmouth, and Blackpool, England. Unfortunately none of these ventures were for a bicycle railroad commuter line.

The decline of the bicycle railway commuter line between Smithville and Mount Holly came quickly, possibly because Hotchkiss paid little attention to the venture after 1892. ²⁵ By the late 1890's bicycle riders were able to travel on the new safety bicycles wherever they wanted on roads and didn't need to be limited by a track. Also inventor Arthur Hotchkiss was no longer in Mount Holly working to expand the original rail line beyond the opening day footprint. Part of the problem was that the double commuter track was never completed between Mount Holly and Smithville even after all the company promises. The wooden rail track was no longer maintained, accidents happened more frequently and the wooden structure fell into disrepair. According to an account in the Mount Holly News:

"January 19, 1897: Thomas Finley met with an accident on the bicycle railroad on Thursday. While riding toward Mount Holly his bicycle struck the end of a loose rail, which had turned up about two inches. The machine came to a sudden stop, throwing Mr. Finley off, injuring his leg and otherwise bruising him. The bicycle was badly broken, and part of it fell on the young man while he was lying on the ground." ²⁶

In December, 1897 *The Mount Holly News* stated that "*Prof. Hotchkiss, of Boston, is expected here in a few days to take steps to prevent his bicycle railroad from being sold under foreclosure proceedings. The old double track cry has again been raised. It would be much better if the interest on the bonds for the past two years were paid, instead of suggesting further improvements on a venture that has already failed to pay expenses.*"²⁷

In July, 1898 "Arthur E. Hotchkiss, of Brooklyn (New York) was in town (Mount Holly) last week looking after the bicycle railway. That enterprise certainly needs some attention...."²⁸ After looking over the railroad Hotchkiss and the press concluded that:

"The Mount Holly and Smithville bicycle railway is practically a thing of the past. The road has been abandoned and all bicycles of any value have been sent away. The track in several places is dangerous for travel, owing to inattention. The stockholders of the company have not found their investment very profitable." ²⁹

And so the United States' and perhaps the world's first bicycle commuter railroad came to an end almost six years after it opened to great fanfare. The only sign of the bicycle railway today is a signpost describing the invention located along the Rancocas Creek where the Smithville terminal was located. If one walks past the sign, down to the rushing cedar creek, a few eroded wooden pilings can be seen sticking up in the flowing water, perhaps they are old bicycle railway fence/track supports. [Figure 18] Looking across the water you can imagine the revolution in transportation the way Arthur Hotchkiss did as vehicles started down his bicycle railroad on their journey to Mount Holly.



Figure 18: Cedar pilings in Rancocas Creek; likely remnants of the Bicycle Railroad, ca. 2010 (author's collection)

Endnotes

- ¹ Eastampton Township Website, Smithville Park and History
- ² United States Patent Office statistics compiled by VintageMachinery.org
- ³ See also Böttcher, Gerd (2012), Silent Ratchet, Cycle History 24, Proceedings of the 24rd International Cycling History Conference, Lisbon, Portugal, p.50-59 (Cycling History (Publishing) Ltd., Birmingham, England), which describes the patents that Kelly obtained for a rachet for the Star's freewheel clutch.
- ⁴ William Bolger, *Smithville: The Result of Enterprise*, page 34

- ⁵ United States Patent Office
- ⁶ United States Patent Office, No. 233,640 on October 26, 1880
- 7 HYPERLINK "http://www.Andover.edu" www.Andover.edu website (Notable Alumni: Long List)
- ⁸ William Bolger, *Smithville: The Result of Enterprise*, page 209
- ⁹ United States Patent Office, No. 488, 200 and No. 488, 201 on December 20, 1892
- ¹⁰ Mount Holly Herald, 6 February 1892
- ¹¹ HYPERLINK "http://www.fhwa.dot.gov" www.fhwa. dot.gov website (Federal Highway Administration) The Bicycle Revolution
- 12 Mount Holly Herald, 5 March 1892
- 13 Mount Holly Herald, 6 February 1892
- 14 Mount Holly Herald, 18 July 1957
- ¹⁵ Bolger, Smithville: The Result of Enterprise, page 210
- 16 Roanoke Times, 1 April 1892
- 17 Mount Holly News, 13 September 1892
- 18 Mount Holly Herald, 6 February 1892
- ¹⁹ Advertising poster appearing in the Mount Holly Herald, Mount Holly News, Mount Holly Mirror and New Jersey Dispatch
- 20 Mount Holly Herald, 6 February 1892
- 21 Mount Holly Herald 4 January 1946
- 22 Mount Holly Herald, 1 October 1892
- 23 Mount Holly Herald, 22 July 1893
- ²⁴ Bolger, *Smithville: The Result of Enterprise*, page 213
- 25 Ibid. page 214
- 26 Mount Holly News, 19 January 1897
- 27 Mount Holly News, 14 December 1897
- 28 Mount Holly News, 12 July 1898

²⁹ Mount Holly News, 19 July 1898





Robert Sterba from the Czech Republic records a detail on a bike at a museum visited during the bus tour.

local towns.

Pope's Not So Ordinary Legacy: Paving the Way for America's Mobility

By Sam Porcello, West Hartford, Connecticut, USA

riving through Hartford's newly recognized Parkville Historic District to a baseball game last July, Pope Park and some faded banners depicting ordinary, or high-wheel, bicycles caught my attention. I decided to research Pope for a National History Day exhibit. At first I thought my project would center on Hartford's pivotal precision manufacturing role in fabricating Pope's Columbia bicycles. Some deeper digging, though, quickly revealed that Pope's contributions went far beyond bicycle manufacturing. Pope's bicycle industry leadership and tireless advocacy for better roads not only popularized recreational cycling in 1880s America, but more importantly mobilized the country, creating democratized transportation, expanding social freedoms, connecting towns, and inspiring the foundational legislation for modern highways.

17.

The role of women was also undergoing a significant transformation:

The women's suffrage movement was gaining some momentum but still was very controversial. The Woman's Christian Temperance Union was the largest single women's organization. And a growing number of women (middle-class) were gaining access to colleges, universities, and female seminaries which combined some high school and college level education. (Susan Cahn, History Professor, SUNY Buffalo, February 2015 interview)

Women had very few rights, but Susan B. Anthony was beginning to rally women for voting rights, as evident in this November 18, 1872 *Boston Post* newspaper article:

"Miss Susan B. Anthony... presented herself before the register of Rochester, accompanied by eight other equally determined females, and deposited Republican ballots... United States Commissioner Storrs has issued warrants for the arrest



Figures. 1a and 1b: Carriage Stuck in the Mud, Indiana, 1898 (Wisconsin Historical Society), and Muddy Road in Franklin, Vermont, early 1900's (University of Vermont).

Bumpy Roads – Background

The 1870s were a crucial time for America's expansion and development. Precision manufacturing was starting to gain traction thanks to New England's armories, and Connecticut was a Center of precision manufacturing. When Pope went looking for a place to fabricate his bicycles, he settled on Hartford.



of Miss Anthony and her companions, on a charge of illegal voting."

Finally, in 1872 Teddy Roosevelt announced the opening of Yellowstone as America's first National Park. Aided in part by the transcontinental railroad, people started to travel for leisure purposes. This spurred the travel market and Americans' desire to move beyond their Travel options, however, were limited. Trains and boats were bound by route locations and schedules. Horses and carriages were another option, but roads were absolutely terrible, especially in rural locations. Unlike Europe's sophisticated, paved system developed by the Romans thousands of years ago, American roads were primarily dirt or more specifically mud. Government and private road oversight was minimal, and maintenance was left up to local residents. Consequently, roads were frequently impassable, particularly in bad weather.

We used to turn out in the fall of the year, in September or October, when the roads were hard and dry, and pile up clods, sods, and vegetable mold in the middle of the road. If there were any mudholes we would usually haul large stones from adjacent fields and fill them, and that would usually make two mudholes, which were filled in the same way the following year. (Maurice Owen Eldridge, U.S. Office of Road Inquiry)

The poor roads isolated towns, cutting off communication and preventing children from attending school for weeks or months at a time. There are some great Federal Writers' Project interviews which really get at the late 1800s isolation in rural America.

"There wasn't much social life on the farm...most people came to church on foot over the muddy roads." (Nettie Spencer, Rural Life in the 1870s, U.S. Library of Congress)

There were economic impacts as well, as poor roads delayed crops from reaching market [Figures 1a and 1b].

"...how utterly deficient this country is in usable highways...farmers being unable to haul their crops to the railroad." (Stuyvesant Fish, President of the Illinois Central Railroad, May 9, 1892)

Pope Manufactures Ordinary Bicycles

Seeing English bicycles at Philadelphia's 1876 Centennial Exposition, Boston entrepreneur Albert A. Pope envisioned possibilities. He shrewdly acquired European patents and produced Columbia ordinary (high-wheel) bikes at the Weed Sewing Machine Co. factory in Hartford, Connecticut. Awkward and expensive, these high wheel bicycles were used initially by affluent urbanites [**Figure. 2**]. Traffic and accidents increased.



Figure. 2. Louis Dalrymple, The Biggest People on the Road (Puck Magazine, 1896)

Road Sage - Pope's Leadership

Pope was a smart guy. He saw not only the possibility of bicycles, but more importantly the critical role of roads. So he set out to do a couple of things:

• Hit the Road – Inspiring Bicycling &



Figure 3. Exhibition of Columbia Bicycle Art Poster Designs, 1896 (Pope Manufacturing Company).

New Industry: In 1880, Pope generated interest and created a market for bicycles by forming the League of American Wheelman (LAW), "the largest athletic organization in this country" (Overland Monthly, 1896) and lobbying pow-

erhouse. Pope and the LAW worked "to ascertain, defend and protect the rights of wheelmen," (League of American Wheelmen, Connecticut Section Constitution, 1890). The league offered bike lessons, sponsored races with prizes, published magazines as well as maps with possible bike road routes, and cut deals with hotels and restaurants to offer discounts to bicyclists. Pope Manufacturing held a series of contests to design posters for its Columbia

bicycles as a way to advertise and attract artists. This Maxfield Parrish design is an example [Figure 3]. You can also see how Pope appealed to women in his marketing and depicted shorter skirts when riding bicycles.

Pope went one step further by lobbying for bicyclist rights to use the roads. As a result of these efforts as well as the emergence of other strong competitors, bicycle popularity boomed.

· King of the Road Driving Highway Improvements:

Pope and LAW's Good Roads Movement campaigned nationally for better roads. Articulating road importance for

cycling plus trade & rural connectivity, Pope collected 150,000+ signatures from railroad, political, agricultural and other leaders demanding government action. [Figure 4]

He estimated the value of roads to farmers in terms of crops that wouldn't be wasted by spoiling on the way to mar-

Comparison of Bicycle & Tricycle Manufacturing Data in the United States - 1890 and 1900*

	1890	1900
Number of Bicycle Manufacturers	27	312
Number of Wage-earners in Bicycle Manufacturing in the United States	1,797	17,525
Bicycle Production	200,000	1,000,000

*1920 Statistical Extract of the United States

ket, a major issue as mentioned earlier. According to a survey of farmers conducted in several counties in the Midwest, when taking into account time savings from better transportation and reduced wear and tear on carts and carriages, Pope reported:

"It was estimated that each section of land with poor roads represented a loss of \$2,432 per annum." The \$2,432 equates to approximately \$60,000 in current day

> (i.e., 2016) money. Pope further explained that:

"On good roads heavier loads can be drawn. and drawn faster. and the difference between the selling price of produce when carried in a wagon over a smooth road for one hour and the price of the same produce transported over a rough road for three hours is oftentimes the difference between profit and loss." (Colonel Albert A. Pope, Good Roads and the Nation's Prosperity, Harper's Weekly, 1907) Pope bank-

rolled MIT engineering courses, advancing education. One of my favorite parts of the project was traveling to the MIT archives to read the ledgers of the civil engineering department. According to MIT's 1890 Annual Report to the President, Pope basically doubled the number of teachers in MIT's program and paid for equipment

Figure. 4. 1893 Petition for the Establishment of a Roads Department (National Archives)



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Figure 5. Good Roads Day, Beloit, Kansas, 1914 (Kansas Historical Society).



Figure. 6. Year of Passage of First State-Aid Law for Construction and Maintenance of Public Roads

and books. His Good Roads Movement sponsored "Good Road Days" that were dedicated to building and improving road-ways [Figure 5].

Pope also helped establish Federal oversight of roadway improvement by promoting the establishment of the U.S. Office of Road Inquiry in 1893, a forerunner to the 1916 Federal Aid Highway Act and our national transportation system. This paved the way for the automobile age. Pope's contributions were acknowledged by General Roy Stone, Head of the Office of Road Inquiry, who in 1899 declared, "*The League of American Wheelmen has been a potent factor in road improvement.*" [Figure. 6]

• "...Bicycling...has done more to emancipate women than anything else in this world. It gives her a feeling of self-reliance and independence...I stand and rejoice every time I see a woman on a wheel..." (Susan B. Anthony, Feb 2, 1896)

Public Roads Total Cash Expenditures (millions)*

1904	\$59.5	
1916	\$272.6	

*1920 Statistical Extract of the United States

Finally, the most unexpected part of my research was the societal impact of bicycling.

From church attendance to piano sales to cigar consumption, bicycling changed American behaviors and even inspired songs. Dottie Batho-Lasley from New Jersey sent me two CDs of her late husband's digitized bicycle song recordings, which helped me to understand the extent of the bicycle craze. Now men and women could ride together. [Figure 7]

The most significant impact was on women's freedoms. Pope wasn't necessarily motivated by women's rights, but he definitely saw an untapped market. With the advent of safety bicycles, special women's clothing with shorter skirts and split skirts (like bloomers) were developed, and these innovations came to be accepted by society aided by Pope's advertisements that promot-

ed these trends. **[Figure. 8a]** Further, he produced special model bicycles with loop frames **[Figure 8b]** so that women wearing long skirts could mount and ride bicycles with ease.

Some detractors, though, considered bicycling dangerous for women. Statements such as the following were not uncommon:

"Bicycling by young women has helped to swell the ranks of reckless girls...it is the devil's agent morally and physically in thousands of instances." (Charlotte Smith, The Women's Rescue League, 1896)

With more women bicycling and with the affordable travel extended to other groups such as minorities, the bicycling community became more integrated.



Fig. 7. Cyclists in the LA Times Bicycle Club, 1895 (USC Digital Library)

[Figure 9] However, segregation was still enforced with diligence in the South, and the southerners were successful in getting the LAW (the only national bicycle organization in the U.S.A. at the time) to prohibit membership by African Americans from 1894-1968).

Albert Pope's bicycle and road leadership transcended recreational cycling, creat-



Fig. 9. Bicycle Riders, Colorado, 1904-10 (Denver Public Library).

ing a powerful transportation, government, economic, and societal legacy. Pope was America's first dominant bicycle manufacturer, and he used the League of American Wheelmen (LAW) and Good Roads Movement to inspire Americans ranging from





Figures 8a and 8b: Pope Paper Dolls Advertising, 1895 (Connecticut Pope Manufacturing Company), and Columbia Women's Bicycle, 1903 (Connecticut Historical Society).

rural farmers to politicians and business leaders. Pope and theLAW established cyclist's road rights, sponsored races, and published maps to encourage bicycling. America's travel industry boomed. [Figure 10] Pope financed



Figure 10. Three Cyclists on the Cahuenga Pass, Los Angeles, 1897 (USC Digital Library)

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trade, school and mail accessibility. His passionate lobbying drove state laws and the Federal Office of Road Inquiry, establishing foundational government oversight which launched subsequent legislation and the modern highways critical for automobiles. Social norms changed, too. Leveraging Hartford's mass production expertise, Pope's affordable bicycles helped democratize transportation along with other competitor models, propelling independent travel and co-ed interaction. Ladies bicycles and relaxed wardrobes contributed to the advancement of women's freedoms. Pope's vision and leadership truly mobilized America, transforming his ordinary bicycle into a not so ordinary, enduring legacy.

engineering courses and road improvements

which in turn connected towns, improving

"Roads make history...Roads are the connecting links that bind communities together...the ways by which men have advanced and will ever advance..." (Albert Pope, August 31, 1893)

"Roads make history...Roads are the connecting links that bind communities together...the ways by which men have advanced and will ever advance..." (Albert Pope, August 31, 1893)

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GREG SIPLE

Conference Moment



Building a Bicycling History Archive at UMass Boston

By Joanne Riley, Boston, Massachusetts, USA

he University of Massachusetts Boston's urban mission and strong support of community service are reflected in substantial archival collections related to urban planning, grass-roots organizations, social action, alternative movements, and local history related to its neighboring communities. As of October 16, 2013, the archival collections housed in the university's Joseph P. Healey Library have been joined by a rich set of materials documenting the history of bicycling in the Boston area and beyond, to the point where University Archives & Special Collections at UMass Boston is rapidly becoming a research destination for Boston-area and national bicycling history.

In 2013, cycling historian Lorenz Finison contacted me to propose establishing a bicycling history archive at UMass Boston,



Figure 1: In 1891, David Porter Vincent was issued a patent for his invention of a bicycle frame that minimized jostling, which in turn resulted in a sturdier, safer frame. David Porter Vincent patent, July 7, 1891.Collection: League of American Bicyclists Records 1880-1999, bulk 1965-1996 (UASC-SC-0200).

to be seeded with the original materials he was unearthing while researching his book, Boston's Cycling Craze, 1880-1900: A Story of Race, Sport, and Society (Amherst; Boston: University of Massachusetts Press (2014). After completing work on his book, Finison donated several archival collections, various research materials and publications that he'd gathered from groups, organizations, and individuals connected to the history of bicycling in Boston, regionally and nationally. The significance of these acquisitions, their relation to other collections held by the university and the fact that no other repository is preserving this material led UMass Boston to establish the history of bicycling as a formal collecting area, focusing on Boston and the New England region and including coverage of national organizations and initiatives.

The first collection to be accessioned for the Bicycling History Archive were the papers of Ralph Galen (1925-2013), co-founder with Fred Chafee of the Charles River Wheelmen, donated by his daughter Terry Galen and delivered to the university by Lorenz Finison on October 16, 2013. These were followed by records from Phyllis Harmon (1916-2016), known as the "Grande Dame of American Bicycling" for her work with the League of American Wheelmen (now the League of American Bicyclists), and other organizations. Harmon's donation was stewarded by bicycling author and advocate John S. Allen, and the collection was shipped to the university in July 2014. With the ongoing curatorial assistance of Finison and Allen, and through the enthusiastic participation of a number of historians, family members, advocates and cyclists, the holdings have expanded rapidly over the past three years. As of June 2016, the Bicycling History Archive consists of twenty-four bicycling-related collections from twenty-two different donors, stored in 270 linear feet of shelf space, with twenty-five research visits to date from writers, journalists and students. These collections document the multifaceted histories of



Figure. 2: In 1997, Ralph Galen and John Vanderpoel co-created the bicycle safety flag apparatus to enhance visibility of cyclists. Cyclists would wear the flag assembly around their waist either by using the adapted fanny pack, which would have the flagpole rest along the spine, or by using the plate that attaches to a belt, which allowed for the flag to rest vertically or horizontally. Collection: Ralph Galen papers (UASC-SC-0166).

bicycling through photographs, postcards, meeting minutes, letters, publications, scrapbooks and more, and include manuscript collections from individuals, the full proceedings of the International Cycling History Conference, a complete run of *The Wheelmen Magazine*, extensive records of the League of American Wheelmen, and a range of other collections and publications. A few examples of photographs and documents included in the collections donated so far to the Bicycling History Archive are pictured here. **[Figures 1 - 6]**

University Archives & Special Collections in the Healey Library at UMass



Figure. 3: "You Can Count On US, Solider! We'll Keep 'Em Rolling!" In wartime, postcards and other advertising avenues encouraged civilians to save resources - in this case, by using bicycles. Colourpicture Publication, Cambridge, Mass. Collection: Nelson Dionne papers (UASC-SC-0208).

Boston is committed to expanding its bicycling history collections by soliciting donations of primary source materials from collectors and organizations, and through active collecting efforts supported by financial contributions from those dedicated to the growth of the archive. The university is especially interested in adding relevant photographs, negatives and slides, brochures, pamphlets, flyers and other organizational publications, conference and event materials, articles of incorporation, bylaws, founding and planning documents, handbooks and manuals, audio/video recordings, membership lists and rosters, memoranda, correspondence, journals, daybooks, diaries, minutes of meetings, organizational charts, policies and procedural documents. Because our University Archives & Special Collections department constitutes a research archives and not a museum, we are generally unable to accept the types of non-paper realia and memorabilia that require specialized curation and conservation. However, plans are underway to develop a process for accepting annotated photographs of jerseys, pins and badges so that the historical information included on those items can be preserved as part of the Bicycling History Archive.



Figure 4: Boston's Dr. Paul Dudley White with a group of cyclists at an event coordinated by the American Youth Hostels. Collection: American Youth Hostels records (UASC-SC-0195).



Figure 5: 1942 photograph of Water Department employees' mode of transportation after gas rationing went into effect. Collection: Nelson Dionne papers (UASC-SC-0208).

UMass Boston's University Archives & Special Collections (UASC) works to ensure long-term preservation of and access to donated materials through its secure and climate-controlled environment, through the application of processes consistent with standard professional archival practices, and through its public services including reference, exhibit and educational support. As resources permit, UASC digitizes parts or all of selected collections, based on research demand and subject to privacy and permission restrictions. For the benefit of researchers, a descriptive document ("finding aid") is provided online for every collection that has been processed and is thus open for research. See umb.libguides. com/bicycling for more information and to view a list of open collections.

Interested researchers are warmly encouraged to visit the archives, located on UMass Boston's harbor-view campus, which is readily accessible by highway, train, or Logan Airport. The University Archives and Special Collections department is open to the public from 10 am – 4 pm every weekday that the campus is open. Researchers are encouraged to e-mail *library.archives@umb.edu* in advance of a visit; while not required, a few days' notice will allow Archives staff to organize materials for your visit.

To date, the following individuals and organizations have generously contributed to the establishment of the Bicycling History Archive at UMass Boston through their donations of archival materials and/ or by assisting with arrangements and communications for accession of archival materials: American Youth Hostels, Vincent-Louis Apruzzese, John Allen, Suzy Becker, Charles River Wheelmen, Stuart Bradford, Jan Brown, Cathy Buckley, Cy-



Figure 6: A community ride at the Rockport Rally held in Rockport, Massachusetts in 1969, organized by the Charles River Wheelmen under the leadership of Ralph Galen for the national bicycling club, the League of American Wheelmen (now the League of American Bicyclists). Collection: Ralph Galen papers (UASC-SC-0166).

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Fig. 7: The archival storage stacks at the Joseph P. Healey Library, University of Massachusetts Boston.

Lynne Tolman, William Herve Vandal, The Wheelmen. [Figure 7]

Those interested in donating their own original bicycling history-related materials to the growing bicycling history archive are invited to visit blogs.umb.edu/archives or email *library.archives@umb.edu*. Continuing the collaborative efforts that launched the Bicycling History Archives in 2013 will ensure that the collections become increasingly deep and broad and of ever-increasing value to researchers, students, writers, policy-makers, journalists and the general public. ●





"Lady Cyclists": Dress and Dressing in Britain and the United States During the 1880s

Caitlin Starr Cohn, Minneapolis, Minnesota, USA

uring the 1880s, writers in sporting magazines and cycling guides often tried to normalize women riding tricycles, either on a single tricycle or a two person machine, which could be ridden by a man and a woman or even by two women [Figure 1]. My research addresses some of the ways that tricycling was justified as an activity that was acceptable for women in the 1880s, how tricycling could be made safer for women riders, and whether the clothes that fashionable women wore in their everyday lives could worn, with or without adaptations, without compromising female riders' femininity.

During the 1880s, writers in sporting magazines and cycling guides often tried to normalize women riding tricycles. I argue that discussions of dress were one of the ways that these writers attempted to convince their readership that tricycling was a beneficial activity for women. Dress in public was inherently social and women in both Britain and the United States read women's magazines that discussed dress in great detail.1 Writings about dress in cycling guides and magazines were meant to help women make practical decisions about what to wear if they wished to ride a tricycle. Written discourse on tricycling dress also served as a bridge between the masculine world of sports and the feminine world of fashion.

It was understood that if one were writing about women — and particularly about women engaged in any kind of physical activity — that what they wore would be relevant, particularly if they were doing so where men would be present. Starting in the late 1870s periodicals such as *Scientific American* mentioned women tricycling both in private gardens and outside.² Women – and some men – writing in favor of tricycling emphasized that it was a socially acceptable sport. Women who wrote articles about their experiences tricycling sometimes mentioned that they received correspondence from other women who rode tricycles, or were interested in riding, and these correspondents often inquired about correct dress for tricycling.³

Women's Dress in the 1880s

Dress historians often categorize the 1870s and 1880s as the "Bustle Period" because women's fashionable dress usually featured a decorated protrusion known as the bustle which emphasized the rear.⁴ Popular styles during the 1870s and 1880s shapes and sizes available and the most dramatic bustles were worn only for the most formal occasions.⁵

Safety concerns

Bustles and long skirts presented a challenge to women who wished to engage in active sports, and writers did address the dangers of riding in long skirts. Cyclists were well aware that women's skirts could be hazardous. William Keppel and G. Lacy Hillier pointed out that a woman's skirt made it impossible to leap backwards off of her tricycle, which a man could do rather easily.⁶

Although there were tricycles designed with women wearing skirts in mind, skirts remained one of the main dangers for women riding these vehicles. The only truly safe option, which would have been not wearing a skirt, or wearing a skirt shortened to the knees, was never discussed as a possibility during this period, except by those associated with dress



Figure 1: "Cycling in England," Joseph Pennell, Harper's Bazaar, October 22, 1887, Courtesy of the University of Minnesota Library. This image exemplifies the type of clothing that both men and women wore for cycling during the 1880s.

were a dramatic departure from the preceding 40 years. The emphasis was placed on the back of women's costumes with a narrow, long form seen from the front. Skirts protruded in varying ways at the back and were covered in decoration and trim. It is difficult to know whether all women adopted the bustle, and some women may not have worn a bustle with all types of clothing. There was a wide range of bustle reform, whom many people did not take seriously.⁷ The adaptations that women made to make skirts safer for tricycling were as far as one could go and remain sufficiently fashionable.

Instead of doing away with fashionable dress, tricycles were altered in an attempt to meet women's needs. For example, dress-guards were added to keep skirts from getting caught in the wheels. "Daisie" related her friend Maud's experience while cycling alone on a borrowed tricycle that lacked a dress-guard, while she waited for the machine that she had ordered to come in. She would have fallen off of the tricycle when the machine suddenly stopped halfway down a hill "..... had she not been securely held to the saddle by the winding of her dress about the toothed wheel that carries the chain." 8 Granted, the skirt apparently kept her from falling off the tricycle, but she could not get off the machine and was trapped there until two farmers came along and extricated her. If she had been dressed in less cumbersome clothing, she might have been able to leap backwards off the tricycle like a man. Regardless, she would not have been dependent on anyone else to get off her machine. "Daisie" reported that Maud's experience did not keep her from wanting to ride, but that she had decided to get a new riding costume to go with her new tricycle in order to avoid future misadventures.9

Riding Habits

As early as the seventeenth century wealthy British equestriennes donned tailored, woolen riding habits to engage in the sport of riding on horseback.10 Alison David wrote about the paradoxical nature of women's riding habits: "It was a fashionable anti-fashion statement, masculine and feminine, practical yet alluring." The equestrienne eschewed the decorative styles worn by her "pedestrian sisters." Even when women's fashionable skirts were at their widest in the mid-nineteenth century, "the essence of the horsewoman's garb was a lean, understated, and almost masculine simplicity." Riding habits were simultaneously liberating and restrictive. They allowed women the freedom to ride, but only sidesaddle.11

The adaptations to riding habits were made more for the rider to look good on a horse than to make riding a horse easier. The masculine styling of riding habits may have been partially practical, but it was also an aesthetic choice.¹² The nineteenth century sportsman's or sportswoman's understanding of what it meant to practically adapt dress is different from our understanding of what that means. There are parallels between women's riding habits and women's tricycling dress, both in their physical form and in how writers discussed them.

Women's Tricycling Dress

Writers in the 1880s frequently commented that, upon deciding to ride a tricycle, a woman's first concern was obtaining proper clothing. This concern speaks both to the challenge of engaging in sports while wearing socially acceptable dress and to the common association of women with fashion. For example, a contemporary American tricyling advocate, Minna Caroline Smith, emphasized the positive benefits of tricycling and then wrote: "Having determined to ride the first thing a woman will naturally consider is, what must be worn." ¹³

Both women and men wrote articles and guides that discussed women as tricycle users. Some articles focused exclusively on attire while others mentioned dress only in passing. Frequently, dress was integrated into larger discussions about tricycling. Appearance was certainly an important aspect of selecting what to wear, but central to these discussions were safety and health as it was understood at the time. Comprehensive information on women's tricycling dress was available in periodicals, as well as in guides written about cycling. For example women's tricycling dress was discussed in the British magazine The Cyclist and Bicycling and Tricycling Trades Review and in the American Outing. The overall discussions of dress between Britain and the United States were quite similar, although some American articles implied that women would do well to emulate British women.

The clothing that women wore for sporting and leisure was similar in appearance to women's fashionable dress, which some argue is because sports that men and women shared in were used for courting.14 This view is demonstrated in a cartoon from Outing, which emphasizes the women's preoccupation with attracting male attention [Figure 2]. The women in the cartoon appear unable to keep their eyes on the road when encountering men. This cartoon plays off the assumption that women were only interested in cycling as a way of obtaining a mate. However, many tricyclists were married, so while courtship may have been one of the reasons why women played sports in clothing based on fashionable dress, it cannot be the only reason.

Emphasizing the similarities between tricycling and fashionable walking dresses also served to make women, regardless of their marital status, more comfortable with the idea of tricycling. Women, and some men, who wrote about tricycling wanted to demonstrate that tricycling could be an acceptable and even ordinary activity for women of their class. Some writers emphasized that women need not purchase a specialized tricycling garment and that a walking costume - a dress that women wore during the day – was perfectly suitable.¹⁵ Other writers were in favor of women adopting specialized costumes, including knickers worn under full-length skirts, which amalgamated women's and men's dress.16 However, recommending specialized tricycling costumes was criticized by some writers who believed that any emphasis on procuring a new tricycling costume would deter women from riding.

Characteristics of Women's Tricycling Dress

Generally, writers recommended that tricycling suits should have relatively neutral colors and wool was always recommended for health reasons. F.J. Erksine wrote: "With regard to make, two styles are in vogue - the habit style and the pleated skirt and jacket bodice." 17 She found the habit style which was of course based on a riding habit, to be rather plain and thought the pleated skirt better in that it was more aesthetically pleasing and "can (by a simple arrangement for raising the skirt when off the machine) be used also as a walking dress." 18 Detailed descriptions of skirts were given the most space because skirts were the most likely to cause problems for riders. Bustles were not written about frequently, perhaps because some fullness in the back was a given, and judging from images showing the back and sides of women's costumes, there tended to be only moderate fullness at the back. There tended to be less detailed descriptions of jackets than of skirts, presumably because the style of one's jacket was not likely to impact one's safety.

Proper dress had many components that were discussed in excruciating detail. William Keppel and G. Lacy Hillier advised that women should decide for themselves to what degree to follow their suggestions, but emphasized that their ideas had been carefully considered. They listed eight main objects: 1) A "Combination" undergarment, 2) Merino or woolen stockings, 3) Loose knickerbockers or 4) Trousers, 5) A plain skirt, 6) A bodice or jacket, 7) A helmet of "club cloth" or straw hat, and 8) Doeskin gloves.



Figure 2: "The Ladies Club— A Natural Sequence," George Moore, Outing, July, 1886, Courtesy of the University of Minnesota Library.

Specialized and "Masculine" Dress for Women

Some writers made either explicit or implied suggestions that some aspects of men's and women's cycling dress should be the same. For cycling men typically wore pants cut to just below the knee. The two most common forms were knee-breeches. which were tight-fitting, and knickerbockers, which were loose.20 The suggestion was not that women should try to make themselves unrecognizable as women. Rather, some cyclists thought it best to dress specifically for cycling as a sport, which meant adapting every day dress, particularly for women. One aspect of dress that was discussed in detail was what women should wear under their skirts. Even when they could not be seen, any type of trousers was associated with men's dress. Some writers were convinced that women would be better able to ride tricycles if they replaced petticoats with trousers or knickerbockers. These writers were not suggesting that women stop wearing skirts altogether when riding.21 Trousers underneath skirts had already been adopted for horseback riding.22

William Keppel and G. Lacy Hillier recommended adapted dress for tricycling. The authors suggested that women wear a costume similar to that worn by men, with a skirt on top: "Clothing closely resembling the male costume, with a suitable skirt super-added, is most usually adopted...." 23 Keppel and Hillier thought it best that women wear knickerbockers, which were cut to the knee. Trousers were a second choice, but the authors thought that trousers did not work as well as they were believed to be more fatiguing. They recommended knickerbockers, which were to buckle at the knee, made of the same cloth as the outer garments. Assuming that the stockings were either a dark color or matched the dress "and the skirt be cut the right length, it will look well and prove comfortable and be regarded merely as a cycling costume." ²⁴ Unlike trousers, knickerbockers would not have shown underneath women's dresses, although the lack of petticoats might have been visible under some circumstances.

However, at least one woman tricyclist vehemently disagreed that it was acceptable for women to ride with knickerbockers. L.J. Bates, who was president of the Detroit Wheelmen wrote a letter to the editor of *Outing* expressing his wife's outrage. "Mrs. B," as her husband referred to her, apparently had very strong opinions about how ladies should dress for riding tricycles. Mrs. Bates thought that knickerbockers were English and that those living in more "civilized" nations thought English women's dress was "abominable." ²⁵ Xenophobia aside, her point was that specialized garments might drive away women who might otherwise take up tricycling. From her perspective, encouraging women to ride meant that style could not be entirely sacrificed for practicality, otherwise they would not take up cycling.

The most functional garments that could have been worn would have been taken directly from men's clothing, but not even dress reform movements went that far.²⁶ Women who rode and wrote about tricycles were trying to encourage other women to take up cycling, which meant making concessions to fashion over function. The American writer Minna Caroline Smith, for example, acknowledged that practicality had to

be tempered by social standards, writing that the most comfortable dress for cycling would be an adapted "mountain-suit" such as woman or girl would wear in the Alps or the Sierras. Smith explained that such a suit was considered suitable in the mountains, "but civilization in its present state demands a superfluity of petticoats, or at least semblance of such." Yet, Smith seemed to prefer the semblance of petticoats over actual petticoats: "If wide knickerbockers are substituted for skirts, a great advantage will be found in freedom and grace of movement." ²⁷ The concern was not really whether or not women actually wore petticoats, but that it was necessary for others to think that one was wearing petticoats. Some writers, such as Smith, focused on what women could wear to look ordinary both on and off the tricycle.

Style and Dress to Normalize Cycling

Women who rode tricycles in public were highly visible, and because they were cycling, which was not yet a common activity for women, they were all the more noticeable. Instructions on how to dress considered practicality in terms of construction and material, but also emphasized appearance, which was a critical aspect of selecting clothing. In focusing on appearance, the goals were twofold: First, to make women feel that they could ride a tricycle and still be appropriate, and second, to ensure that those who rode would be dressed in such a way that they would reflect well upon women tricycling in general.

As stated, one tactic was to argue that women did not need to purchase specialized garments, which some writers hoped would encourage more women of their social class to ride. L.J. Bates, or presumably Mrs. Bates writing with an introduction from her husband - argued that women should simply wear walking or carriage dresses when tricycling. The letter ended with:

And many ladies who now hesitate to adopt [the tricycle], because of a mistaken idea that they will have to appear odd in dress, or that it will entail special expense for costume, will no doubt join the wheeling fraternity as soon as these errors are dispelled.²⁸

Mrs. Bates framed the idea of peculiar dress as the largest obstacle to becoming a tricyclist. Despite the fact that the cost of a tricycle was prohibitively expensive for most people, Mrs. Bates nonetheless emphasized that a woman could be frugal by wearing a costume she already owned. The importance of being able to wear ordinary dress and appear appropriate whether on or off the tricycle, was central to her argument. Yet, writers who thought women should wear adapted dress also wanted women to appear appropriate and normal when not riding.

Uniforms and Clubs

Another way of normalizing women's tricycling costumes was to suggest that women should wear uniforms when they rode with cycling clubs. The uniform was a specialized costume, the cost of which cyclists like Mrs. Bates feared would dissuade women from riding, as she thought that women would not want to wear a uniform that made them recognizable as tricyclists when they were off the machine. Yet, William Keppel and G. Lacey Hillier suggested that the Cyclist Touring Club uniform would actually help make women look perfectly appropriate, stating: "One reason for the protection which ladies undoubtedly find in the C.T.C. grey uniform lies in the fact that it is so little remarkable, and so closely resembles that ordinarily worn by the wife of the parson or doctor." ²⁹ Linking the ideal tricycling uniform to

a parson or doctor's wife makes both the individual tricyclist and tricycling in general seem more respectable.

Uniforms also were a way to connect women tricyclists as a unit thus providing protection and legitimacy. According to Minna Caroline Smith, the members of the Ladies' Tricycle Club of New York rode in a dark-blue flannel skirt, with "a Jersey" and cap that were also dark-blue, along with a badge.30 Smith also wrote about women's tricycling clubs in New Jersey and in other nearby states, as well as far west as Chicago. The uniform served to emphasize the social nature of women riding together. Women who joined cycling clubs that welcomed both men and women sometimes wore uniforms that coordinated with men's uniforms. The uniform served the same purpose in this case, to make the rider appear to be part of a socially acceptable group.31

Conclusion

While the minutiae described in women's dress and the focus on how women's dress was described may seem trivial today, the level of detail employed emphasizes the degree to which women's ability to engage in tricycling was determined by how their clothing impeded their ability to easily ride a tricycle. Writing about women's dress was intended to draw women into the idea of cycling, as women were accustomed to reading women's magazines that described fashionable dress in great detail. Whether women rode on sociable. or tandems, or alone they needed to choose a costume that was sufficiently fashionable to avoid ridicule and undue attention and sufficiently functional so that riding was physically possible. The tricycle was later seen as a stepping stone to making the bicycle acceptable. One source wrote that the tricycle was "cumbersome and worse than useless." Yet, to women who had no other option for riding, it must have seemed a godsend.

- ² See, for example, "Improved tricycle," *Scientific American* 38, no. 13 (March 30, 1878): 201/
- ³ See, for example, Minna Caroline Smith, "Women as Cyclers," *Outing* 6, no. 3 (June, 1885): 317-321.
- ⁴ Phyllis G. Tortora and Keith Eubank, Survey of Historic Costume, 5th ed. (New York: Fairchild Books, 2010).

- ⁵ Joan Severa, *Dressed for the Photographer* (Kent, Ohio: Kent University Press, 1995).
- ⁶ William Keppel and G. Lacy Hillier, *Cycling, from The Badminton Library of Sports and Pastimes* eds., . H. Somerset & A. E. T. Watson (London: Longmans, Greens, and Co., 1887).
- 7 See, Cunningham, Reforming Women's Fashion.
- ⁸ "Daisie," "From a Feminine Point of View," *The Cycle* 1, no. 19 (June 18, 1886), 214.

9 Ibid.

- ¹⁰ Lou Taylor, "Wool Cloth and Gender: The Use of Woollen Cloth in Women's Dress in Britain, 1865-85," in *Classic and Modern Writings on Fashion* (1999), http://www.bergfashionlibrary.com.ezp3.lib. umn.edu/view/CMWF/chapter-FCPS0324.xml; Kylie Winkworth, "Women and the bicycle: Fast, Ioose, and liberated," *Australian Journal of Art* 8, (1989).
- ¹¹ Alison Matthews David, "Elegant Amazons: Victorian Riding Habits and the Fashionable Horsewoman," *Victorian Literature and Culture* 30, no. 1 (2002): 179.

12 Ibid.

- 13 Minna Caroline Smith, "The Tricycle for American Women," *Outing and the Wheelman* 5, no. 6 (March, 1885), 424.
- 14 Patricia Campbell Warner, When the Girls Came out to Play: The Birth of American Sportswear (Amherst: University of Massachusetts Press, 2006).
- ¹⁵ For example, L. J. Bates, "Ladies' Tricycling Costume," *Outing and the Wheelman* 5, no. 4 (January, 1885): 302-303.
- ¹⁶ For example, Keppel and Hillier, *Cycling*; Smith, "The Tricycle for American Women."
- ¹⁷ F. J. Erskine, Cycling for Ladies" *Hints on the Choice and Management of Tricycles with Suggestions on Dress, Riding, and Touring* (London: Iffle & Son, 1884): 17.
- 18 Ibid., 18-19.

- ²⁰ E. R. Shipton, Cyclists' *Touring Club: Uniforms and Regulations Together with Samples* (London: Cyclists' Touring Club, 1888). Via http://www.road-swerenotbuiltforcars.com/tweedrun/.
- 21 Keppel and Hillier, *Cycling*; Smith, "The Tricycle for American Women."
- ²² Juliana Albrecht, Jane Farrell-Beck, and Geitel Winakor, "Function, Fashion, and Convention in Women's Riding Costumes, 1880-1930," Dress, 14 1(988): 56-67; David, *Elegant Amazons*.
- 23 Keppel and Hillier, Cycling, 270
- 24 Ibid., 250
- 25 Ibid., 250
- ²⁶ Cunningham, Reforming Women's Fashion.
- ²⁷ Smith, "The Tricycle for American Women," 424
- 28 L. J. Bates, "Ladies Tricycling Costume," 303.
- 29 Keppel and Hillier, Cycling, 229
- ³⁰ Smith, Women as Cyclers."
- ³¹ See Shipton for an example of coordinating cycling costumes.

Patricia Cunningham, *Reforming Women's Fashion*, 1850-1920 (Kent, Ohio: Kent State University Press, 2003).

¹⁹ Ibid., 18-19.

Nineteen Eighty Two – the Year of the Plastic Bicycle

By Christopher Morris, Vancouver, Canada

n 1982 a most unusual thing happened. Two radical designs of plastic bicycle went into full mass production, in Sweden and West Germany as it was then. The Swedish design [Figure 1], publicly funded, was all-plastic; while the private West German venture used a twin tube flexible steel frame and forks with all other major structural components of plastic [Figure 2]. Earlier, there had been attempts to launch plastic bicycles - the 'sci fi' 1960 Bowden Spacelander (in production for just 2 months) and the 1979 Le Speelo (an interesting prototype though with conventional wheels), even the Elswick Hopper in 1959 (cladding a conventional bike with plastic fairings). But 1982 was most definitely the Annus Plasticus.

The Swedish Itera bicycle was developed initially "after hours" by Volvo staff and stylists in Göteborg (they had earlier



Figure 1: The Swedish Itera all-plastic bicycle. (1)



Figure 2: The German Sprick Active Comfort plastic bicyle (steel frame) (2).



The Ikea furniture concept, so to speak **[Figure 3]**.

The Active Comfort bicycle was manufactured by Julius Sprick GMBH (an existing bicycle manufacturer) in Gütersloh, West Germany. (3) It was created by noted industrial designer, Odo Klose, of the Wuppertal School of Art and



Figure 3; 1982 ad. for the "Eternal Machine".

Design. The unusual twin tube frame was made of small bore oval steel tube, with no seat tube, to provide flexibility (hence the 'Comfort' frame) for absorbing road shocks. This frame concept was reminiscent of the innovative Elgin Twin Tube design of 1938, from the famed industrial designer Juan Morgansky. [Figure 4] (4) Cleverly, there were no holes or brackets on the Sprick twin loop frame for attaching the rest of the bike - save for the rear wheel: the plastic sub-assemblies simply gripped the curved sections from each side of the frame to mount securely, clam-shell style. The forks were curved steel [Figures 2 & 5].

The rest of the bike was structural plastic – wheels, bottom bracket, steering column, seat bracket and luggage box, and – most notably – the innovative handlebar assembly with integrated gear shift, bell and speedo. It was distributed by the Metro department store chain in West Germany, hence the Active name which was associated with their recreational division.

Both the Itera and the Sprick Active



Figure 5: Author's 1982 Sprick Active Comfort.

Comfort were in production for several years, They were usually fitted with 3 speed hub gears (the Sturmey Archer AW for the Itera and the Fichtel & Sachs Torpedo 3 in its coaster version for the Active Comfort). There was a later derailleur version of the Itera with metal handlebars replacing the troublesome over-flexible, twin seat city car, a plastic Mini as it were, using glass fibre reinforced plastic and injection moulding.

In early summer 1978, Volvo decided not to proceed with the project, which would have been assembled in Norway with assistance from the Government there. Two of the principals involved (Jan



Figure 6: Prototype Itera with curved forks - 1980 Swedish patent SE421605.

plastic handlebars.

However, notwithstanding the guesstimated 15-30,000 Iteras made (5), and the ad shown in Figure 3, there are virtually none to be seen in use on the streets today in Sweden or elsewhere (in fact viewable only in bicycle museums). It is possible only half of Itera production was actually sold to customers or dealers at normal retail prices, some of the balance ended up remaindered or on a scrap site outside Vilhemina after the company folded. The Sprick Active Comfort is still a relatively common sight in use in German cities for the urban ride. It has also become something of a cult bike for enthusiasts (confusingly often described as a Colani Bike on eBay.de, since something so attractive from the 1980's must be Italian rather than German). (6) Luigi Colani styled various fashion items, but never a bicycle.

Why such different fates?

Itera development:

In December 1977, Volvo at their head office in Göteborg, Western Sweden, were actively developing a prototype plastic car with the help of Graphic Designer Claes Nordenstam (7) moonlighting from Swedish Television. This was to be a small Olsson, Sales Manager, and Lars Samuelsson, Project Manager, decided to explore building a plastic bicycle instead, on their own time. Claes Nordenstam produced the basic look of what was to become the Itera bicycle with a full size balsa wood model (he was a model plane enthusiast). In October 1978, the STU (Swedish National



Figure 7: Prototype Itera, 6 spoke wheel, now with straight forks.

Board for Technical Development) gave them a grant of SEK 54,000 to continue. Jan Hult (Professor of Materials at Chalmers University in Göteborg) provided materials advice after he joined the team in January 1979. The resulting prototype was demonstrated to the Board of the State-owned PK-Banken in February 1980, resulting in a large loan of SEK 6,000,000 (there were to be several more large loans from the State bank) to manufacture the design. One condition of the loan was that Vilhelmina Plast do all the injection moulding (this plastics company, owned by PK-Banken, was in a depressed area in Lapland). The following month, Olsson and Samuelsson resigned from Volvo, and the company Itera Aktiebolag was formed.

The material chosen for the frame was injection-moulded glass fibre reinforced poyester (PETP). For the wheels, cranks and kickstand, injection-moulded glass fibre reinforced polyamide (PA 6) was used. [Figure 6] Notice that the prototype was meant to use a curved plastic front fork to absorb road shocks, but evidently this could not survive the bending in real life, the production version had a rigid heavy straight fork [Figure 7].

Remarkably little Research and Product Testing was done for such a revolutionary product, despite the solid financial backing from the State and the sturdy automotive background of the designers who came from Volvo. None of the principals had worked in bicyle design before. Instead significant funds were spent on promotion and clever advertising. Lasse Collin, whose own company did a superb job on the advertisng (titling the Itera a Perpetual Motion Machine - as in never rusting out) recounts with some amusement the fiasco of the product launch in March 1982: "Hundreds of bicycle dealers from all over Sweden were summoned (expenses-paid) to Göteborg to be wined and dined with their wives. Some of them even rode the few production models available (Vilhelmina Plast had many false starts and the modified Sturmey hub was initially in short supply) on the cobbled streets of the city - and were not as impressed as hoped - due to the wobbly and harsh ride. The gala was reminiscent of a Volvo new car launch, absent any serious Product Testing before-hand." (8)

In his paper to the ICHC in 1992 (9), Itera material consultant Jan Hult put much of the blame for the subsequent product problems on over-advertising with scarce product, high pricing, and the usual bicycle market demand fluctuations. However by mid 1982, thousands of Iteras were finally rolling off the new German injection-moulding machines in Vilhemina, being distributed to dealers and direct to consumers in large flat boxes. Yet still they did not sell well.


Figure 8: The End – Vilhelmina scrap site – 1985.

The following year was worse, and by 1985 Itera AB was bankrupt. Many bikes remained unsold and were simply scrapped at a yard in Vilhelmina. **[Figure 8]** PK-Banken lost all their investment.

Having bought a second-hand but lightly-used 1982 Itera, and road-testing it in the last two years, I believe the answer lies in a poorly engineered concept with no significant Product Testing to correct the design before mass production. Jan Hult mentioned the spaghetti handlebars, that flex up and down when pedaling truly disconcerting for riders. He argued (10) they were needed to absorb the road shocks from the heavy straight plastic fork (and stiff compression spoke wheels, I would add). The following year they were replaced by conventional metal handlebars, but according to Jan, this only transferred the jarring direct to the riders' wrists. The real solution should surely have been to not use injection-moulded plastic forks in the first place, since they can never flex like a curved steel fork on the road to give a smooth ride.

The hefty main frame itself, an open C-section, was comparatively well done for longevity, as were the injection-mould-



Figure 9: Itera chainwheel, sprocket and crank arm.

ed 'compression spoke' wheels, ignoring their rough ride compared to conventional tension spoke wheels (shades of the Boneshaker era indeed). It should not come as a surprise to learn that the Itera was slightly heavier than a standard roadster Swedish Monark bike of the period. Original claims were that the Itera was'lighter and cheaper'.

Handlebars and stem

On the plus side, the integrated battery lighting was innovative, the Itera must be one of the first bikes to use red LEDs for rear lighting (remember this was 1982), and the rubber multi-adjustable strap for the built-in plastic luggage carrier showed design ingenuity.

Some other less favorable features, from ride testing in Vancouver, include the plastic crank arms (which twist under pedal force to an alarming degree riding uphill under load) and the plastic rim brakes that produce only half the retardation of steel or aluminum rim brakes in the dry. One consolation, from my brake testing paper for the 2014 International Cycling Safety Conference in Göteborg, the home of Itera AB, was that the Itera's braking did not fade in the wet. (11)

Mark Sanders, who designed the revolutionary Strida A frame folding bicycle with plastic wheels in 1986, was evidently aware of this plastic rim brake issue – he used dependable drum brakes instead.

The plastic chainwheel sprocket **[Figure 9]** may actually have worked, unfortunately most Itera bicycles have so small a mileage on them that this is difficult to confirm. Certainly on my example, the sprocket looks like new and the intrinsic lubricity of the plastic chosen may help chain life.

The Itera had 'ugly' styling in the view of some contemporay commentators; but, had it worked, 'ugly' could have made it a cult object – witness the current Honda Ruckus scooter. A related Swedish commently from those times was that the Itera looked like a Crocodile and behaved like an Anaconda. (12)

In summary, the Itera design was never going to succeed: regardless of market timing, missing parts, pricing or premature advertising. Or even the amusing inability to operate traffic lights from a loop under the asphalt, due to the non-metallic frame. The fault may be laid squarely at the door of inadequate engineering, design and testing – before launching an unrideable bike on an unsuspecting (and initially enthusiastic) public. First it has to work. Then the marketing.

Sprick Active Comfort

The Sprick is an interesting contrast to the Itera: privately funded rather than publicl and structural plastic selectively used where it offered advantages in mass-production. The harsh ride from inexpensive compression spoke plastic wheels was partly mitigated by a twin-tube flexible steel frame and curved steel front forks. There was an ingenious aircraft-style plastic handlebar array taking full advantage of injection moulding with an instrument panel built-in, an integrated luggage container, and good industrial styling. The poor performance of plastic rims for caliper brakes was partially offset on the Sprick by using a dependable Sachs coaster brake inside the three-speed hub. Innovative tubeless tires from Continental Rubber were fitted (an early implementation) taking full advantage of the sealed plastic wheel rim (with no through spokes).

The Sprick factory in Gütersloh, West Germany, had started full scale regular bicycle manufacture in 1964, building on an earlier parts business there. Gütersloh was just 10 miles south of the major bicycle manufacturing centre of Beilefeld in North Rhine-Westphalia. This experienced manufacturer teamed up with a leading industrial designer, Odo Klose of Wuppertal, to create the radical design of the Active Comfort bicycle. (13)

The frame, constructed of small diameter twin steel tubes, was deliberately designed to provide vertical flexibility for a good ride with stiff compression-spoke plastic wheels. Thus there was no vertical seat tube tieing the frame together, diamond-frame style. All components with moving parts were attached to the frame using clamshell brackets. **[Figure 10a & 10b]**

The single caliper brake on the front wheel, operated by an ingenious metal loop lever on the moulded handlebars, is no more effective dry than the Itera, due to the coefficient of friction between standard brake blocks and a plastic rim. However, although not wet-tested in the dry West Coast Spring of 2016, it likely emulates the Itera in not suffering wetfade - unlike the conventional chromed steel rim of the era. The rear hub contains a powerful Sachs coaster brake, impervious to the wet.

The handlebar assembly contains a mechanical speedo and levers for the



Figure 4: 1938 Elgin Twin Tube flex frame for comparison.

concealed bell and 3 speed gear shift, all nicely integrated into the assembly with hand grips moulded in. The handlebars overall are firm and reasonably comfortable, unlike the ever-flexing Itera handlebars.

To evaluate a Sprick Active Comfort first-hand, I imported a 1938 model from Bielefeld, Germany, through eBay.de. It had a comparatively low



Figure 10b: Clamshell bottom bracket in place on the frame.



Figure 10a: Clamshell clamping of structural plastic parts to frame (pat. DE8223341).

mileage of 740 km on the odometer and was in good condition. [Figure 5]

Patents for both Bicycles

Odo Klose, the Sprick designer, took out five patents for various aspects of the Active Comfort design. His original twin tube spring frame concept came first, as US 4453730 in 1981. The best patent for understanding the structural plastic connections to the frame is European Patent EP 0095024 from 1983, in German. Other patents deal with the handlebar assembly (EP 0078375, 1982), the plastic chaincase (DE 3231007, 1984) and the plastic luggage box/rack (DE G 8223341), 1982).

For the Itera, Olsson and Samuelsson took out over half a dozen patents on various aspects of the design, principally Swedish but with Finland, South Africa and Australia also included. SE 421605 from 1982 is the core one, showing the prototype Itera, even fitted with a built-in plastic child carrier at the rear. Evidently recognizing the poor braking with plastic rim brakes, they also took out a patent for a mechanical disc brake, although there is no evidence it was ever used. This patent (WO 8203667 in English) shows a not-very-effective force multiplier for the disc pad, through a linkage, rather than the ball screw inclined ramp approach successfully used today on mechanical disc brakes.

Test Rides

The author and friends test rode working examples of both the Itera and the Sprick on local bike routes and roads in Vancouver, including a 7% grade used earlier for brake tests. [Figure 11] In particular, this grade revealed the disconcerting twisting of the Itera plastic cranks under load, and the upward-flexing handlebars at the same time.

Both bicycles were also ridden by the

author on the regular office commute. Trip times for a 10 km trip on an urban route were 34.5 minutes for the Itera and 31 minutes for the Sprick, compared to 33 minutes for the regular commute bicycle, a Moulton TSR2 2-speed with 20" wheels.

Wheels

There are significant differences between the design and performance of the plastic wheels used on the two designs.

The Itera has a very rigid 8 spoke radial wheel with a rather narrow rim. This stiff wheel transmits road shocks readily to the frame and steering column. Indeed, scrap Itera wheels are sometimes used in rural Sweden for small water wheels, so sturdy are they.



Figure 11 : Braking tested on the 1982 Itera, only 0.15g full emergency stop.

The Sprick wheel has 18 rather delicate looking spokes in a tangential layout [Figure 12], this gives the wheel some limited resilience, though there are some German bloggers who say the wheel occasionally fractures near the rim.

Certainly the Sprick has the better ride and handling of the two: the Itera feels very wobbly. Aside from the upward-flexing handlebars, the Itera steering column/forks have a yaw instability that can produce frame whip unless the handlebars are gripped firmly in the steering direction.

Overall gear ratios

Since each bike came fitted with a 3 speed epicyclic hub gear, the overall drive ratios were computed, allowing for the different size wheels (Itera 27 x 1.25", Sprick 28 x 1.375" tires). The Sprick with 44t/19t cogs had useful urban ratios of 46"/64"/87", while the Itera with 48t/18t cogs had rather high ratios of 53"/79"/94". On the streets of Vancouver, Itera top gear could rarely be used.



Figure 12: Sprick 18 tangential spoke plastic wheel, tubeless tire.

Lighting

The Itera used a hidden battery compartment in the 'downtube' portion of the frame to house 4 D cell primary batteries. This 6vDC was fed to a plastic lensed handlebar headlamp and rear fender LED tail lamp via a switch and concealed wiring. For the Sprick, a conventional Union 6vAC 0.5A dynamo was driven off the front wheel, feeding a sealed beam headlight with glass lens in the handlebar console. Using twin wires (needed due to plastic frame components insulating the front fork from the frame) this power was also fed to a tail lamp on the rear fender.

Seats

The bicycle seat can be regarded as a form of tertiary suspension (after the pneumatic tire and the frame resilience), especially when coil sprung for comfort. Unfortunately, given the boneshaker wheels, both manufacturers opted for style over function. An attractive looking but rock-hard unsprung moulded seat is fitted to both the Sprick and the Itera, alas.

Locks

Remarkably, both plastic wheel bicycles were fitted with the same lock,

a robust swing-though bar design from the German company Trelock. This is simple and very effective in use, taking advantage of the widely separated plastic compression spokes. There seems little doubt that each manufacturer was aware of the 'other' plastic bicycle. The Itera was heavily advertised all over Scandinavia, while the Sprick received special mention at the Fall 1982 IFMA trade show (International Bicycle & Motorcycle Exhibition, Cologne). (14)

Tires

The Itera's 27" wheels used a very narrow tire (1.25") for such a heavy machine, not aiding ride comfort or handling. By contrast, the 1.375" width 28" wheels on the Sprick feel about right for the weight, especially in their tubeless OEM form.

Luggage

Both bicycles showed ingenuity in the design of their injection moulded plastic luggage racks, with built-in rubber strapping. The Sprick went one further with a lockable luggage bin as well, suitable for small tools. It was this luggage bin that convinced some Vancouver observers that the Sprick was an electric bicyle with battery compartment.

Instrumentation

The pride and joy of the Sprick is a central built-in VDO eddy current speedometer, with a dial up to 60 km/hr. It is driven by a rotating flexible cable from the right-hand front hub. The needle action is very smooth, an odometer up to 10,000 km is included. The Itera has no instrumentation.

Conclusions

Despite heavy promotion and much initial interest, the Itera was an outright failure in production - for reasons to do with design mistakes and the choice of plastic for everything. This choice was made regardless of whether it was the right material for some of the more critical parts, such as crank arms/axles, handlebars or front forks. The caliper braking was ineffective due to regular rubber blocks being used on plastic wheel rims. The car designers lacked any background in conventional bicycles, which might have helped them avoid the more obvious mistakes. The bicycle can be almost unrideable on an ascending grade, due to crank arm twist. On level city streets, the wobbly steering is noticeable.

The Sprick Active Comfort is a clever design, using a flexible twin tube steel frame to compensate for the plastic wheels. It uses structural plastic where appropriate, rather than being ideological about it. The styling looks fresh even today, many people mistaking it for a modern E-bike during the ride testing in Vancouver. The ride is not as good as a conventional steel bicycle of that 1980's era, but many of the features help compensate, such as the aircraft handlebar console and the built-in luggage 'trunk'. It is reasonably pleasant to ride, unlike the Itera. The front braking is poor, for the same reason as the Itera, the rear coaster brake is the redeeming feature here. The gears are well chosen for the urban ride. It is surprising it was not developed further at the time.

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Bikecentennial 76: America's Biggest Bicycling Event

By Greg Siple, Missoula, Montana, USA

"... get up and do it again. Amen." -Jackson Browne, "The Pretender"

"Had the album it was on been released in May instead of November 1976, Browne's song might well have been rattling around in the heads of a lot of TransAm riders as they made their way across this big country of ours. That's what they did, day after day, week after week: they got up and did it again, reaping a lifetime's worth of memories in the process.

And they clearly weren't pretenders. This was for real; a lot of monotony, an embarrassment of rewards, and a bounty of challenges. Getting bug bit in Buchanan. Wind whipped in Wyoming. Soaked by rain in the Coast Range. Hot weather, flat tires, peanut butter, frigid fingers, friendly townsfolk, cold beer, oppressive humidity, spirit-busting climbs,



honking drivers, stolen kisses, broken spokes, broken hearts, stinking stockyards, chirping crickets, snow and hail, more peanut butter, silky smooth pavement, ice cream headaches, mosquito bites, dangerous downhills, fierce headwinds, good food, unrideable pea gravel, blessed tailwinds, bad food, annoying side winds, saddle sores, sunburns, and thunder and lightning way too close." ¹

n the summer of 1976, 4,100 cyclists,² supported by more than 40 staff members and untold numbers of volunteers, rode in the event known as Bikecentennial. The summer-long ride was a celebration of the American Bicentennial. All of the cycling was along the 4,250-mile,³ Oregon to Virginia, TransAmerica Bicycle Trail [**Figure 1**]. The trail consisted of public roads that had been carefully selected for



Figure 1: The TransAmerica Bicycle Trail

low traffic volume, services, historic points and a variety of geography. It was a rural route where Pueblo, Colorado, home to 120,000 people, was the largest community on the route.

In my previous paper, "The Bikecentennial Summer of 1976" that appeared in the book *Cycle History* 25, I tell the story of how Bikecentennial came to be. In this paper I am focusing on the summer of 1976 itself.

Bikecentennial was grand in every way and the story cannot be told in a few pages. My aim here is to concentrate on numbers to show the scope of the event, and to show that Bikecentennial was, and still is, the biggest bicycling event in American history. In terms of the number of cyclists involved, the number of miles ridden and the ocean to ocean venue, nothing else matches it.

Table 1: Bikecentennial Trip Information Summary⁵

TRIP NAME	TRAILHEADS	DAYS	MILES	COST
Trans-America	Reedsport, OR and Yorktown, VA	82	4250	\$685-\$965
Fast Trans-America	Reedsport, OR and Yorktown, VA	55	4250	\$500-\$695
Golden Spokes West	Astoria, OR and Pueblo, CO	45	2125	\$405-\$555
Golden Spokes East	Yorktown, VA and Pueblo, CO	45	2125	\$405-\$555
Coast Cascades	Astoria, OR and Prineville, OR	12	425	\$165-\$210
Chieftain Trail	Reedsport, OR and Missoula, MT	21	910	\$235-\$315
Lewis and Clark	Astoria, OR and Jackson, WY	35	1450	\$350-\$490
Old West	Missoula, MT and Jackson, WY	12	455	\$140-\$185
Colorado Rockies	Rawlins, WY, and Pueblo, CO	12	375	\$140-\$165
Great Plains	Pueblo, CO and Newton, KS	12	500	\$140-\$165
• Ozarks	Carbondale, IL and Newton, KS	15	610	\$175-\$205
Appalachian Piedmont	Yorktown, VA and Berea, KY	21	795	\$235-\$315
Colonial Virginia	Yorktown, VA and Radford, VA	12	440	\$150-\$195
Opening the Frontier	Yorktown, VA and Ste. Genevieve, MO	31	1340	\$310-\$435
Bluegrass	Ste. Genevieve, MO and Berea, KY	12	485	\$150-\$195

Table 2: Total Miles Ridden⁵

TRIP NAME	Miles Ridden
Trans-America	7,582,000
Golden Spokes East	346,375
Golden Spokes West	476,000
Coast Cascades	786,625
Chieftain Trail	93,730
Lewis and Clark	150,800
Old West	179,725
Colorado Rockies	36,000
Great Plains	11,000
• Ozarks	38,430
Appalachian Piedmont	139,920
Colonial Virginia	188,320
Opening the Frontier	138,020
Bluegrass	105,245
Total	9,564,190

40th Annivesary

2016 marked the 40th anniversary of the Bikecentennial summer. The Adventure Cycling Association, as Bikecentennial renamed itself in 1993, celebrated with a rider and staff reunion in Missoula, Montana, the organization's home, and the publication of a coffee table book, *America's Bicycle Route, The Story* of the TransAmerica Bicycle Trail, that I co-edited with Michael McCoy.

While researching material for the book I ran across some long-forgotten statistical information in the Adventure Cycling archives. The computer had yet to make its appearance in the Bikecentennial office by 1976. Instead the electric typewriter was utilized and paper files in manila folders were how things were stored.

Some of this material was in the form of hand-written lists that were compiled after the 1976 event was over and the last riders were gone from the trail. Placed in cardboard boxes with reams of other paper records, they sat unseen for nearly 40 years. These heretofore unpublished lists are the basis for some of the tables presented here.⁴ I have also drawn from a compilation of Bikecentennial rider survey results that was published in 1977 ⁵ to summarize the Bikecentennial summer.

Table 3: Droj	o Out Rate⁵
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TRIP NAME	# of D	rop Outs	%
Trans-America		149	8.4
• Golden Spokes E	ast	22	13.5
 Golden Spokes V 	Vest	10	4.5
Coast Cascades		9	4.9
Chieftain Trail		3	2.9
Lewis and Clark		6	5.8
Old West		16	4.1
Colorado Rockies	6	4	4.2
Great Plains		2	9.1
• Ozarks		4	6.3
Appalachian Pied	mont	15	8.5
 Colonial Virginia 		22	5.1
Opening the Fron	tier	8	7.8
Bluegrass		9	4.3
То	otal	279	

Most of the 4,100 riders traveled in 286 groups of 10 to 12 people on guided tours with 350 Bikecentennial trained leaders. Long trips also had trained co-leaders. The other riders rode independently. Trip offerings ranged from 12-day trips such as the Old West to the 82-day Trans-America. [**Table 1**] Trip prices ranged from \$140 to \$965,⁶ depending on trip length, optional use of an equipment shuttle, or using indoor overnights instead of camping.

Most of the riders who signed up had little in the way of bicycle touring expe-

Table 4: Reasons for Dropping Out of Group⁵

REASON # of	Riders
Changed to independent	76
• Illness	19
• Accident	9
Lack of Ability	8
Sore knees	7
Family illness/death	6
Incompatible with group	6
Employment (job offer/interview) 3
No reason listed in files	144

rience. Only about 30% had cumulative lifetime bicycling mileages exceeding 700 miles. 64% of the riders were male and 36% female. Trip departures were planned so that groups were distributed evenly across the route.⁵

Big Miles

The total number of miles ridden was recorded at 9,564,190 with the great majority of them on Trans-America tours. **[Table 2]**. I found a record of those who dropped out of their tours **[Table 3]** and a list of the reasons for those drop outs **[Table 4]**. At 82 days and 4,250 miles in length, the Trans-America tour would be expected to have one of the higher drop out rates, but the trip with the highest drop out rate was Golden Spokes East (Yorktown, VA, to Pueblo, CO). Though it was only half the



Arrangements were made through governement agencies to place Bikecentennial route signs on the route.



The short, steep hills of the Ozarks made for more difficult climbing than the Rocky Mountains.

distance of the TransAm tour, it included the most arduous climbing across the Appalachians and the Ozarks.

The most common reason for dropping out was leaving a group to change to independent status.

Cyclists from Everywhere

Another set of numbers that helps define the scope of Bikecentennial is the number of states and countries represented. [Tables 5 and 6] In fact, riders hailed from all 50 states plus the District of Columbia. In addition, 329 foreign riders came from 14 other countries. Surprisingly, no riders from Canada appear in the record while tiny Holland sent 149 riders. Much of this can be attributed to Dutch rider Gijsbert Valstar who learned about Bikecentennial from a flyer given to him by an American visiting Amsterdam, then activily recruited his fellow citizens to sign up. Meanwhile, Canada had its own cross-continent ride, Cycle Canada, in 1976 to the Montreal Olympics.

I have added 1970 state population

Table 5: Rider Sign Ups by State⁴ (Rank in population, 1970 census)

STATE	# of Rider	rs %
1 California (1)	801	19.3
2 Illinois (5)	254	6.1
³ Ohio (6)	239	5.8
4 Pennsylvania	(3) 169	4.0
⁵ New York (2)	169	4.0
6 Michigan (7)	156	3.8
7 Virginia (14)	132	3.2
8 Maryland (18)	125	3.0
9 Oregon (31)	113	2.7
10 Florida (9)	112	2.7
11 Montana (43)	109	2.6
¹² Washington	(22) 97	2.3
13 Texas (4)	96	2.3
14 Indiana (11)	89	2.1
15 Colorado (30)) 83	2.0
¹⁶ New Jersey	(8) 80	1.9
¹⁷ Massachsetts	(10) 80	1.9
18 owa (25)	79	1.9
19 Wisconsin (10	6) 77	1.9
20 Missouri (13)	66	1.6
²¹ Minnesota (1	9) 63	1.5
²² Connecticut	(24) 59	1.4
23 North Carolina	i (12) 52	1.3
24 Arizona (33)	41	.99
District of Colun	nbia 35	.84
25 Hawaii (40)	35	.84

STATE # o	f Riders	%
26 Kansas (28)	29	.70
27 Tennessee (17)	29	.70
28 Kentucky (23)	23	.56
29 Georgia (15)	22	.53
30 South Carolina (26)	22	.53
31 Louisiana (20)	21	.51
32 Mississippi (29)	20	.48
33 Alaska (50)	19	.46
³⁴ Utah (36)	18	.43
35 New Mexico (37)	17	.41
36 Alabama (21)	15	.36
37 Delaware (46)	14	.34
38 West Virginia (34)	13	.31
39 New Hampshire (41)	12	.29
40 Rhode Island (39)	12	.29
41 Nebraska (35)	11	.27
42 Vermont (48)	11	.27
43 Nevada (47)	11	.27
44 Wyoming (49)	11	.27
45 Oklahoma (27)	10	.24
46 Maine (38)	10	.24
47 North Dakota (45)	9	.22
48 Idaho (42)	7	.17
49 South Dakota (44)	6	.14
50 Arkansas (32)	3	.07

Table 6: Foreign Riders⁴

Total	329
Switzerland	1
• Peru	1
• Bahamas	1
New Zealand	2
 Israel 	2
• Denmark	3
• Belgium	2
Germany	5
 Ireland 	5
France	7
• Japan	36
• Australia	39
United Kingdom	43
• Holland	149
COUNTRY	# of Riders

Table 7: Age Range⁵

AGE	%
16 or under	5.9
17-21	27.9
22-26	25.2
27-35	20.7
36-45	7.9
46-55	7.7
56-66	4.0
Over 65	0.5

Table 8: Population of Riders' Home Communities⁵

COMMUNITY SIZE	%
• Rural (under 10,000)	14.3
• Small city (10,000 - 40,000)	16.6
• Medium city (40,000 - 100,00)	14.9
• Large City (100,000 - 300,000)	13.8
Metropolitan (over 300,000)	23.3
Suburban (within 50 miles of metro. city)	16.3



Typicat Bikecentennial group somewhare in eastern Colorado.

rankings to the state list. As expected, California had the highest number of riders at 801 (more than the last 32 states on the list combined). A state's population did not necessarily dictate the proportion of riders that participated in Bikecentennial. For example, Oregon ranked 33rd in state population but ranked 9th in Bikecentennial riders. Alaska, with the smallest population of the 50 states, ranked 33rd in Bikecentennial riders. The most dramatic move up the list was Montana, which went from 43rd in population to llth in the Bikecentennial ranking. This is no doubt because Montana was home to the Bikecentennial headquarters.

Approximately 80% of the riders were

- 113 -

under 35 years old, with most in their early 20s. **[Table 7].** The photos in the Bikecentennial archives also bear this out.

Although the TransAm Trail wound its way through rural America, a majority of the riders came from urban America. [Table 8]

In the Record Books

Certainly, Bikecentennial76 must be the most thoroughly documented cross-America bicycle ride. Hundreds of newspaper and magazine articles⁷ were published, and a large quantity of photographs and documents have been preserved in the organization's archive. And many participants still have their own photographs and journals.

The TransAmerica Trail has been in continual use since 1976. but never with the number of riders seen in that year.

Beyond the Numbers

Of course, the numbers are only part of the Bikecentennial76 story. To balance against those dry figures about the summer, I offer the following more colorful descriptions of Bikecentennial in the form of exerpts from the weekly Trans-America Trail News, a weekly news-

letter distributed to the riders along the trail in 1976:

SHOCKING NEWS FROM WYOMING

Tom Johansing, TAEK615,8 had just crossed into Wyoming and was pedaling peacefully along when a sudden thunderstorm blew down out of the hills. Before Tom had a *chance to seek shelter—indeed, even before* he, his bike, or the pavement had gotten *wet—the bike was struck by lightning.*

Tom was wearing rubber-soled cycling shoes, riding a plastic seat, and had his handlebars wrapped with inch-thick foam. The only shock he received was to his right index finger, which was resting on his brake lever. In slightly more colorful phraseology than is our custom to print, Tom told us that he found the experience unsettling.

PLUM GOOD

At the Wintergreen Campground in Cambridge, Idaho, Haywood Moxley, TAEK602, won a case of beer by eating 50 plums in less than 30 minutes. Haywood



Meeting the locals in Kansas.

has not been seen since, but says he'll be out in a minute or two.

ROADKILL DU JOUR

On two around-the-world bicycle trips, Lloyd Sumner has acquired many survival skills and tricks for economizing. As a Bikecentennial leader, he recently applied his knowledge: Observing a prairie chicken just struck by a passing car, Lloyd packed the bird to camp, plucked and cleaned it, and roasted it over an open fire for dinner. Mmmm.

BIKECENTENNIAL STOWAWAY

Liz Snyder of Cincinnati, Ohio, writes that "conscience forces me to report a stowaway in our group. This passenger did not hide out in a pannier or a handlebar pack, and its true identity will not be known until the end of November. What I'm reporting to you is this: I started the Appalachian-Piedmont trip a little over three months pregnant." Liz tells us that she really enjoyed her trip, and that "we" encountered no problems that couldn't be overcome. She's now wracking her brain,

trying to come up with some bicycling baby names—any suggestions?

BUILDING CHARACTER

• "We have had over 200 stop and we have nothing but praise for these folks. We have yet to see one smoke, drink, or use harsh language, and we have never met a finer, nicer bunch of young people. Bicycling is such a clean healthy recreation and keeps a lot of the young folks out of trouble, and they learn a lot about their country and the kind of people in it."

-June Haven Curry, Afton, Virginia • "Doug returned home a more mature, self-reliant young man. Being the youngest of three children, we had hoped Bikecentennial76 would do just this for him. We are delighted!"

-Marueen and Al Dymock, Oroville, California

• "I began and ended my last trip with a visit to my aunt in Portland, Oregon. At the finish of my trip, I asked her if I looked any different, expecting to get a compliment on my tan or something along those lines. She gave me a very strange look and said, 'I don't see any changes. Was it something important like losing your virginity?""

-Claudine Campbell, Houston, Texas • "It's young people like you that make America good. We need strong people to run things after I'm dead." -Missouri farmer

HOME HOSPITALITY

• Just 1 and 1/2 days' ride east of Reedsport, Oregon, the Waggener family has set up a stand offering lemonade, iced tea, cookies, information, and sympathy to riders finishing the grueling, waterless Oxbow Burn climb. "I honestly don't know why I'm doing this," Pat Waggener told



TransAm riders celebrate a birthday in Eads, Colorado.



Several Bikecentennial groups joined up to ride the final miles of their journey.

us. "It's a nuisance and an expense, but ... well, there's a need, and the enthusiasm of these people is catching. Besides, I wasn't going to let half the world pedal past my door and not say hello to them."

• The Norman Parker family of Hebron, Colorado, described in a letter from TAEK516 as "very fine people," have also been providing cookies, iced tea, and comfort. We just got this note from them: "We're very sorry to be writing this to you. All the bikers are terrific! We are starting the put up hay and the whole family is needed in the hayfield. Please ask bikers to continue to stop and sign our book. The water pump is in front of the house and the outhouse is behind the pink building. When possible, I will have cookies and tea set out for all bikers."

• Naturally, hospitality is a two-way affair. On the way through Montana, Yvonne Revy donated two pints of blood—one to a hospital, she reports, and one to the mosquitoes between Wisdom and Jackson.

HILL REACHES VANCOUVER

British cycling bronze medalist [at the 1936 Olympics] Harry Hill, who rode the TransAmerica Trail from Yorktown to Missoula in 29 days, writes from Vancouver, British Columbia, that he reached the Canadian border just five days later. "I have been very well received all along the route," Harry tells us, "and the enthusiasm of the people has been amazing."

RECORDS SET

The Mongolian Mountain Mongers (TAWK615) have been scouring the land for beer cans, and have picked up 679 so far. Mike Brian holds the one-day record with 120 cans. During their search, the group also came up with what they claim to be the little toe bone of a Sasquatch, Montana's version of the abominable snowman. The toe, measuring 16 and ¼ inches in length, is now used to prop open the window in the Bikecentennial riders' lounge in Missoula.

Other groups across the country are setting records. Two groups passing through Wisdom, Montana (TAWB602 and OWWF619), together polished off eight whole pies. In Carbondale, Illinois, an unidentified group finished eight large pizzas and 15 pitchers of an effervescent beverage.

S'NO JOKE

Unseasonably heavy snow fell on portions of Wyoming and northern Colorado, slowing or halting the progress of about five groups of cyclists, June 13 and 14. Some riders "holed up" in Bike Inns⁹ and other facilities, and one group was shuttled ahead for safety reasons; others, however, pressed on like the proverbial mailman, negotiating snow depths of up to 15 inches on Togwotee Pass. A JULY FOURTH FEAT OF EATING In Scott City, Kansas, a young woman rider won \$75 by eating 17 hotdogs (with buns, yes) in a five-minute period. With the prize came the stipulation that the money be spent locally. No stores were open, so the group celebrated with—you guessed it—a huge dinner, followed by a visit to the Dairy Queen. Then they went bowling. Aaugh!

STILL SWEATING

Washington Post reporter Cynthia Gorney has finished her 35-day, 1,400-mile ride from Astoria to Jackson, and is back in DC, where from she writes:

"It would warm your collective hearts to see all the bikers whizzing around Washington here. Already I am told that the *Series* [of articles she wrote for the Post] inspired three reporters' spouses to go out and buy 10 speeds. I have a nice bunch of letters from bikers and non-bikers alike, full of encouraging words for all the Bikecentennial people; many phone calls from parents of TransAm trippers; notes from old bedridden ladies and all manner of people. The paper's big cheeses are happy, the bike shops are happy, and I would be happy if only I hadn't had to come back to the dingy Turkish bath that is Washington in the summer. Alas."

¹ Used with permission from Michael McCoy, America's Bicycle Route, The Story of the TransAmerica Bicycle Trail, Adventure Cycling Association, Missoula, MT, 2016.

² BikeReport, Dec. 1976, Vol.2, No.4, "The Numbers".

- ³ The 1976 TransAmerica Trail maps set the full length of the trail at 4,246.8 miles, but the rounded-up 4,250mile figure was more commonly used.
- ⁴ Staff Report by Carla Melvin post event summary sheets, 1976, unpublished.
- ⁵ Bikecentennial's Rider Profile, An In-Depth Study of the men and Women Who Rode the 4500 Mile Trans-America Bicycle Trail During Its Inaugural Year. (April, 1977, Bikecentennial, Adventure Cycling archive).
- ⁶ Bicycling! magazine, March, 1976, pp. 33-77, "A Guide to the Trans-America Trail", text by Dan and Lys Burden, edited by Ed Volk.

7 BikeReport, March 1972, Vol. 3, No.2, publicity.

- 8 Groups were assigned 'trip codes', a short hand way to identify them. In this case TAEK615 means TransAm group, eastbound, that is camping, that departed on June 15.
- 9 Bike Inns were indoor overnight facilities, arranged by Bikecentennial for the summer, spaced across the trail approximately a day's ride apart. They consisted of high school gymasiums, college dorms, VFW halls, churches, etc.

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