Ross D. Petty

11

Women and the Wheel

The Bicycle's Impact on Women

The maiden with her wheel of old
Sat by the fire to spin,
While lightly through her careful hold
The flax slid out and in.

Today her distaff, rock and reel
Far out of sight are hurled
And now the maiden with her wheel
Goes spinning round the world.

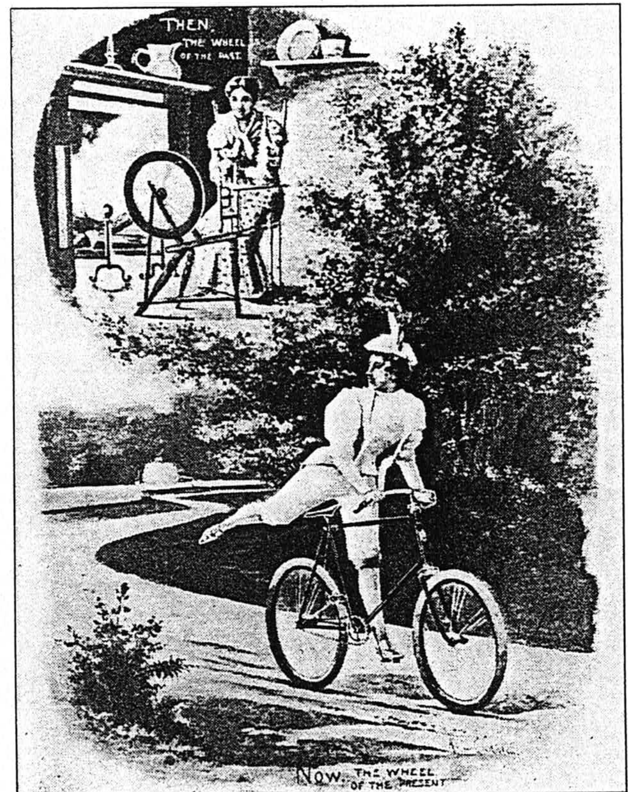
"Wheels and Wheels"
by Madelyne Bridges[1]

Introduction

In the late 1800s, technology had improved women's status in society by not only providing some control over reproduction, but also by making housework less burdensome and time-consuming, thanks to devices such as the washing machine and the ice box, and by creating new employment opportunities that women could fill without much fear of gender bias.[2] Prior to these developments, most women were slaves to strenuous, all consuming housework. Yet many resisted being limited to the household. They sought broader experience. Technological advancements freed single women to leave their father's household before marriage and work and live independently of a family.[3] While many of these young women eventually got married, some did not and instead continued their independent status. Others, though, got married, had the time and money to experience life beyond the traditional roles of wife, mother, and homemaker. These women, who had time because of servants and/or technological time savers, often joined women's groups either for education and individual betterment or to influence social affairs. They also had both the time and money to enjoy riding a bicycle.

The bicycle provided the means for women to see something of the world around them, and to enjoy exercise and recreation, unchaperoned for the first time. They could enjoy a ride in the country by themselves or with friends. For those who were more serious about cycling, they could participate in bicycle races and seek to establish endurance records. This stimulated the acceptance

Fig. 11.1. Bicycle catalogue cover (From Arthur Judson Palmer: **Riding High**, 1956, p. 101.)



of women's athletics in society. Because of the bicycle, women also were more comfortable with both exercise and technology. A less widespread alternative was the use of the bicycle by women in exhibitions and entertainment such as the circus. Lastly, when it became widely available, the bicycle served (and still serves) as a mode of personal transportation for women who could not afford horses (and later automobiles) and who disliked mass transit.

It is important to note that contrary to the modern American perception of the bicycle as a child's toy, it was considered the technological marvel of the time prior to the turn of the century. For example, *Scientific American* proclaimed the bicycle "has put the human race on wheels, and has thus changed many of the most ordinary processes and methods of social life." [4] *Munsey's Magazine* declared: "the bicycle of 1896 is indeed a triumph of mechanical skill, as well as an important factor in the world's civilization." [5] The bicycle became a symbol both of "the new woman" and the woman's suffrage movement. It played a crucial role in the culmination of the stalled "rational dress" movement and in the development of women's bicycle clubs, which served as stepping stone to joining other women's clubs and movements. The freedom brought to women by the bicycle continues to this day.

This paper examines the impact of the bicycle on the status of women in society.[6] The first part examines how the bicycle was designed for and marketed to women. While other consumer durables, such as household appliances, had already been marketed to women, the bicycle was one of the first male consumer durable products to be modified and marketed to women. The next section discusses how women's cycling was:

1. spread by virtue of exhibitions and circus bicycle acts,
2. became competitive in races or speed or distance records,
3. provided outdoor recreation and exercise, and
4. finally evolved into practical transportation.

These four uses of the bicycle by women led to various emancipating effects, which led to both increased opportunities and the increased acceptance of women as equals to men in society.

Marketing Bicycles to Women

Like the later activities of motorcycling and automobiling, the early years of bicycling were dominated by men. Several reasons for this exist: Exercise by women was at best of questionable propriety, particularly in the case of the bicycle, which involved straddling a saddle; women's dress was quite restrictive; early bicycles were heavy and difficult to manage; and, perhaps most importantly, women were not supposed to be assertive and independent. Nonetheless, bicycle riding demonstrated both qualities and almost from the beginning entrepreneurs were designing and attempting to sell machines to women.

Bicycle Design and Designing a Women's Bicycle

Self-propelled vehicles probably date back to medieval times, but the first ancestor of the modern bicycle is the velocipede, also known as the hobbyhorse, draisiene, or running machine. This machine was developed by Baron von Drais of Germany and became quite popular in the 1818–19 period. Whereas von Drais' machine did have a rudimentary steering system, it was Denis Johnson of England who devised an iron version of von Drais's wooden machine that had improved steering, making it easier to balance the machine. This would allow for long periods of coasting without touching feet to the ground . This ultimately led to people realizing that crank-driven machines could be developed once touching the feet to the ground was not needed for balance.[7]

Von Drais, Johnson, and others developed ladies' models. Some had three or four wheels with a seat in the middle, but those were too wide for many paths. Others were two-wheelers with a drop center bar so that a woman's long skirts would not be held indecently high by the cross bar. Although technically the woman rider was

still straddling the center bar, it was down by her feet, and she sat on a bench seat rather than straddling a saddle.[8] Despite the availability of these models which attempted to address both the dress and straddling issues, few women used the hobby horse.[9] The weight of the machine, political issues on where it could be ridden, its lack of comfort and the ridicule of it and its riders in the press caused this fad to be short-lived.

Experimentation with self-propelled vehicles continued, but the next commercial success was the boneshaker—essentially a draisiene with pedals attached to the front wheel. This idea was conceived in 1862 by Frenchman Pierre Lallement. He later came to America and received a patent in 1866. Lallement sold his patent rights for a small fee and never achieved commercial success with his invention.[10] Pierre Michaux in France was the first to achieve commercial success by producing the boneshaker. By 1870, the Pierre Michaux bicycle factory claimed to be producing 200 machines per day and the next bicycle craze was at its peak.[11]

As with the earlier hobby horse, inventors experimented with several alternate designs for women. Three- and four-wheeled models were offered, as were dropframe and sidesaddle machines. A tandem with a sidesaddle rear seat and the possibility of two side-saddle rear seats, one on each side, for driving a single pedal was proposed in 1869. A woman first proposed a side-by-side two-person machine in January of that

Fig. 11.2. Mlle D'Zai poster (John and Alice Durant: **Pictorial History of the American Circus**, 1957, p. 173.)

year. The year 1869 also saw the issue of several patents for ladies' machines with small front wheels, a drop center bar, and driving levers attached to the rear wheel.

In 1870, Rev. Samuel W. Thomas of England patented an offset ladies' bicycle with the frame bent to one side between the front and back wheels so that the front drive wheel was offset from the back seat and back wheel. The operator could then operate the set of side-saddle pedals while sitting forward in a bench seat rather than leaning to one side. [12] Four years later, James Starley, known in England as the "Father of the Bicycle" obtained a patent for a similar design with levers extending the pedals closer to the saddle. Socially acceptable minor changes in women's clothing also were being developed for the bicycle. Short slits in the front and back of skirts could be unbuttoned for cycling and closed for walking.[13]

The craze took its strongest hold in France, where the first successful cycling magazine, *Le Vélocipède Illustré*, began in 1869. Despite debate about the appropriateness of women riding, respectable ladies in France rode in their own riding hall or on the better streets. Less respectable were the women who raced against men in road racing or in their own events in track racing with more leg exposed than was considered proper.[14] In July 1870, the Franco-Prussian War started; the French boneshaker was the first casualty.

In the U.S. in 1869, the Sommerville Art Gallery in New York City was converted into a school for ladies. By then most major cities had both schools and rinks, often converted skating rinks. Although some of the fancy riders used to demonstrate this new sport were women and girls as young as 3–5 years old, and although rinks often held events for women, it appears that relatively few women took up this sport in earnest the U.S. In an effort to stimulate interest, a few rinks offered demonstrations by female riders in "French" costume (tights), but this, while attracting male spectators, was recognized as disreputable and did not induce women to ride. By the summer of 1869, the boneshaker fad was over in the U.S. because few people would ride outdoors.[15] Women who took lessons in the privacy of a rink were particularly unwilling to then ride outdoors, in public.[16] Other European countries enjoyed a similar fad, and in Great Britain, the fad lasted longer, but throughout the world the boneshaker proved to be just that: a fad.[17]

Although the Franco-Prussian war may have hastened the demise of the boneshaker fad in France in 1870, the fad was being replaced worldwide by another fad—roller skating. In 1863, American James Plimpton invented a roller skate with "rocking action." This skate had two parallel wheels in the front and two more in the back, connected to the body of the skate by rubber springs. This enabled the skater to lean to one side compressing the wheels on that side, closer together to turn smoothly without needing to lift one side of each skate off the track as previous skates had required.[18] By the mid-1870s, roller skating rinks were well established throughout the world and Plimpton had won his patent infringement lawsuits against numerous copyists. In England, this roller skating boom was called "Rink Mania." Soon Crystal Palace was transformed into a rink. People of all classes skated and even James Starley patented a skate with adjustable rocking action in 1876.[19]

How was the bicycle to compete against this lightweight, less expensive rival that women found easier to use and that allowed men and women to skate together in close proximity?[20] The answer seems to have been to leave the rinks and take to the streets. This would allow varied scenery and provide more speed and excitement than skating around a crowded circular rink could provide. In September 1871, James Starley introduced the "Ariel." This all metal, high wheel bicycle with a speed gear and suspension wheel with adjustable wire spokes represented the bicycle of machinists rather than of blacksmiths and carriage makers.

The high wheel or "Ordinary" bicycle continued to develop with Starley's invention of the modern tangent-spoked wheel in 1874 and the widespread use of ball bearings at this time. The Ordinary was quite popular from 1875–1885. The use of a front wheel of 40–60 inches in diameter allowed both small road bumps to be comfortably traversed and more distance to be traveled for each revolution of the pedals. By 1880, machines averaged about 50 pounds in weight. The development of hollow tubes and forks and

lightweight rims reduced the weight of racing machines to as little as 21.5 lbs. However, since the rider perched nearly directly over the front wheel, a moderate bump, particularly on a down hill run, could throw him over the handlebars into a "header."[21]

While the Ordinary proved very popular with wealthy young men in England and other countries, women riders were very scarce.[22] Even Starley's sidesaddle Ariel, introduced in 1874, did not sell in large numbers. Thomas Sparrow in 1879 devised a machine (the "Amazon Roadster," patented in 1880) with the large driving wheel in the rear with a small steering wheel in front. Because the woman rider would be perched high atop the rear wheel, only a skirt protector over that wheel to prevent the riders skirt from entangling in the spokes was needed to make this bike suitable. The bar between the hub of the rear wheel and the front fork was at the riders feet. A similar principle was adopted in the ladies' version of the American Star bicycle.[23]

Other manufactures experimented with tricycles for the ladies and men who preferred not

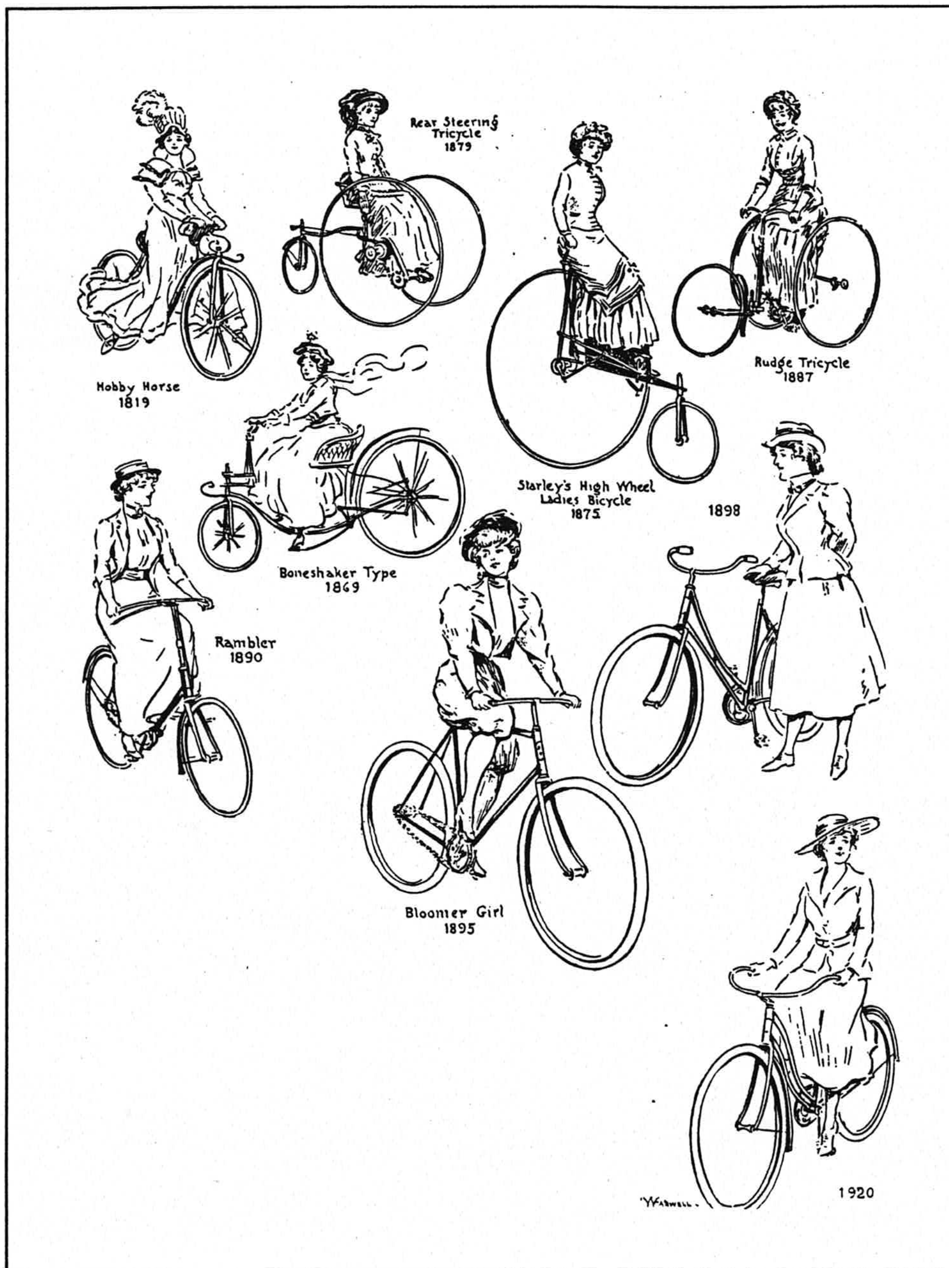


Fig. 11.3. A century of style changes in women's bikes and dress. (**The Wheelmen** No. 43, November 1993, p. 15.)

to risk the Ordinary. The Coventry Lever Tricycle of 1876 was developed from the failed ladies' Ariel and became popular with women. Chain drive was added in a few years and the machine was renamed the "Coventry Rotary." James Starley also designed a bevel gear differential for side-by-side "sociable" tricycling. The differential gear was needed to prevent the stronger cyclist from dominating the direction of travel. The Salvo Quad became the Royal Salvo of 1881 when received by Queen Victoria herself.

However, these machines were large and perhaps three times as expensive as a comparable Ordinary and so only used by those wealthy enough to afford both the purchase and the provision of storage. They also were heavy (80–100 pounds), awkward to mount and dismount, and difficult to brake downhill.[24] Despite these drawbacks, tricycling and tandeming became quite popular in England among ladies and couples who could afford it. At the Stanley Cycle Shows from 1883 to 1886 there were more models of tricycles than bicycles exhibited. Tricycle designs were imitated by manufacturers in other countries and tricycling by women outside of England gained some popularity as well.[25]

In the U.S., women began riding tricycles a bit later than in England in part because of poorer climate and roads. As in England, ladies' tricycle clubs formed in most major cities[26] and men's clubs purchased sociable tandems for use by members with spouse or female guest. Women tricyclists even appeared in a race in Philadelphia in 1884 and by 1885, one commentator noted that prejudice against women tricycling had all but vanished.[27] Because of the expense and drawbacks of tricycles, there were probably fewer than 100 regular women tricyclists in the U.S.[28] Thus, while the tricycle and high wheel bicycle whet the cycling appetite of a select few women riders who were doubtless witnessed by many others, it did not lead to a widespread fad among women.

In the mean time, ball bearings had been adapted to roller skates by Levant M. Richardson in 1884 and later the Raymond skate with cup and cone bearings, originally patented in England for bicycles in 1878, was developed. This led to increased interest in skating, which was more affordable than tricycling. In the U.S. by 1885, more than $20 million was estimated to be invested in roller skating properties. These rinks became social centers and women increasingly adopted this new fad.[29] This skating boom lasted into the 1890s when the safety bicycle caused a bicycle boom that was more like an earthquake; the effects of it are still noticeable today.[30]

The origins of the chain-driven, rear drive-safety bicycle of today may date back to a chain and sprocket, rear drive machine allegedly produced in 1869 by Guilmet and Meyer. A similar design appeared in the *English Mechanic* in that year. H. J. Lawson produced a rear-drive safety in 1873–74 and made several improvements on the design, including a ladies' model in 1884. None of Lawson's models was commercially successful.[31] Even before the Lawson 1884 model, W. X. Stevens purportedly made a drop-frame safety for his wife, who was unable to mount it and announced no woman would ever ride it.[32]

James K. Starley, the nephew of James Starley, introduced the "Rover" in 1885. It was designed not for safety but for greater mechanical advantage on hills and became the first commercially successful safety bicycle. In the next three years, many experimented with ladies' bicycles. Dan Albone produced the "Ivel" cross frame bicycle as a racing bicycle, but in 1886 or 1887 he adopted the ladies' design without top tube.[33]

In the U.S., the first women's bicycle was made by W. E. Smith in 1887. In January 1888, the wife of Mr. Smith publicly demonstrated this model by riding down Pennsylvania Ave. in Washington, D.C. accompanied by several men.[34] Later it was noted that Mrs. Smith's original bicycle weighed 60 pounds and she herself weighed only 80, but by 1895 she had gained 40 pounds and her bicycle had lost the same amount "... which says a great deal for the evolution of both women and bicycles."[35] In 1889, the Starley Brothers (sons of James Starley) introduced the "Psycho Ladies' Bicycle" —the first ladies' bike to be mass produced.[36] Shortly thereafter, James K. Starley introduced the "Ladies' Rover."[37] These ladies' models are essentially the same as those that exist today. Instead of the diamond frame with top tube, the top tube is omitted or dropped to allow bicycling in a skirt. Of course, many women ride a

"men's" or diamond-frame bicycle. Today Terry Precision Bicycles in the U.S. specializes in diamond-framed bicycles that are proportioned correctly for a woman's shorter waist, arms, and hands.[38]

The sexual propriety of women straddling saddles was addressed first by bench seats on tricycles and then by technological innovation to create so-called "hygienic" saddles. These saddles had little or no substance in the area where the female genitalia would rest thereby preventing either deliberate or unintended sexual stimulation. One advertising slogan summed up the solution: "You do not straddle the Duplex saddle." To further address the problem of sexual stimulation, women's bicycles also had high stems and upright handlebars. Drop, racing style, handlebars appeared to exacerbate the problem.[39] Other women's accessories included the obscure "Cherry's Screen" which obstructed the view of a lady cyclist's ankles and feet and prevented her skirt from blowing about.[40] Skirt protectors were very popular and mounted over the rear wheel to prevent entanglements.[41]

By 1890, the manufacture of high wheel bicycles had ceased. By 1892, nearly all bicycles used the newly redeveloped pneumatic tire.[42] Cycling had finally become sufficiently easy and comfortable that millions of people decided to try it. This trend grew into a fad in 1895—the result of the perfection of bicycle design as well as the promotion of cycling to both men and women.

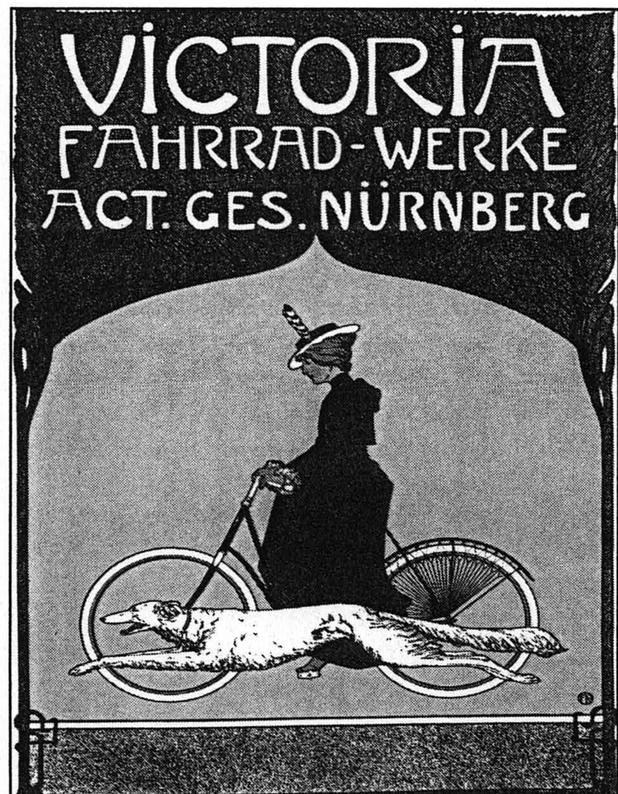
Promoting Cycling for Women and the Women's Bicycle

The bicycle industry did much to promote general bicycle purchase and use. It fought road use restrictions and lobbied for better roads. It sponsored clubs, races, racers, and magazines. It used both magazine advertising and the new medium of color posters to advertise the brands. Bicycle manufacturers spent between 6 percent and 10 percent or more of sales on advertising during the boom. This amounted to between $4 and 9 million per year. Retailers spent another $1 million. Some estimate that ten percent of all newspaper and magazine advertising was for bicycles during the height of the boom.[43]

The industry also did much to promote bicycling to women. It encouraged articles encouraging cycling by women.[44] The Pope Manufacturing Company, among others, issued a booklet entitled "Cycling for Ladies." *Cycle Age* magazine referred to itself as a journal devoted to "Wheelman and Women,"and included a woman editor on its editorial board and a feature entitled: "Woman-A-Wheel." [45] In the U.S., there was even a magazine entitled *Wheelwoman*, published from 1895–1902. It was edited by two women and featured articles from other magazines.[46] In England, the Chaperon Cyclists' Association was established in 1896 for the benefit of parents concerned about cycling daughters.[47] Also in that year *The Lady Cyclist* was one of five weekly bicycle journals in England.[48]

Lastly, as historian Ellen Gruber Garvey has shown, women's magazines in which bicycles were heavily advertised also contained fictional stories involving the courtship of women cyclists,

Fig. 11.4. Victoria advertisement. (Jack Rennert: **100 Years of Bicycle Posters**, 1973, p. 75.)



who behaved in socially proper ways. These stories, typically involving a middle class couple who meet and marry because of the bicycle, were intended to allay fears that the independence of women cyclists would lead to their disregard of their traditional role as wife, mother, and homemaker. The stories portray women who adopt these roles, even though they also cycle.[49]

As the bicycle developed, so did printing. Early bicycle advertising images were black and white woodcut printings. By the mid-1890s, color printing had developed and bicycle companies hired famous artists to create images to sell their wares. For this reason, many of the ads showed attractive, stylish images of women cyclists. The bicycle industry was recognized as a leader in using artistic poster image advertising throughout the world.[50]

While some advertising, particularly in France, still used semi-nude female goddesses to promote bicycles (likely to men), advertisements in all countries included images of the "new woman" confidently riding or alongside the bicycle.[51] For example, one illustration from circa 1910 shows a very prim and proper woman so properly clothed that her feet are barely visible, showing that cycling is possible in traditional garb.[52] Note how the absence of visible spokes, and the dog in mid-run, give a sense of speed to this Art-Deco-style poster. In contrast, the Falcon ad of about 1895 also emphasizes speed, but shows a young woman dressed in a classical Greek style with uninhibited hair and clothes. The Humber advertisement of c. 1895 shows a more typical, confident "new woman" effortlessly leading a pack of cyclists for a ride on the seashore. She controls the bicycle easily with one hand. As these last two posters illustrate, it was common to show cyclists enjoying rides in the country.

In addition to riding alone or with friends, the "new woman" cyclist may go on an outing with her family as shown (c. 1895). Note that the little girl can lift her lightweight bicycle with ease. Pryor Dodge notes that another poster shows a women riding while breast feeding.[53] Finally, the illustration of c. 1898 that presents an extreme view of the "new woman" contemptuously lauding her superior choice of a chainless bicycle over a frustrated man. While the preceding illustration showed a subtle image of superiority of women cycling ahead of men, this one is explicit.

These various advertising themes appear intended to appeal to a broad cross-section of women—from those seeking love, marriage and family to those seeking independence from and superiority over men. The importance of these advertising and poster images of women awheel in creating acceptance of cycling as a woman's activity cannot be overstated. A near contemporary of artist Charles Dana Gibson (creator of the "Gibson" girl) stated: "The Goddess of the Wheel, as Gibson and many another artist now drew her was ... a pretty American girl speeding joyously along on a bicycle. On that simple machine she rode like a winged victory, women's rights perched on the handlebars, and cramping modes and manners strewn on her track."[54]

Women's Cycling

Bicycle designers and manufacturers were not the only ones attempting to persuade women to bicycle. As noted above, bicycle-riding-hall owners sponsored exhibitions by women in an effort to induce women to patronize their businesses. These efforts were successful but for only a short period of time. Exhibition riding may have been the first form of women's cycling. Some women took very little persuasion to take up riding. They had seen fathers, brothers, and husbands enjoying the activity and were envious. A few simply enjoyed athletic endeavors despite their questionable propriety. Athletic riding arguably was the second most popular form of female riding. Finally, encouraged by the relatively few women cyclists in these first two categories and the perfection and marketing of the machine itself, large numbers of women began riding recreationally during the bicycle boom in the late 1890s. As this fad faded at the turn of the century, some women continued to ride for recreation and basic transportation.

Exhibitionists and Cycling Sirens of the Circus

Not all early female cyclists were exhibitionists in the tawdry sense of exposing flesh purely for its own sake, although French dance halls often featured female cyclists solely for this purpose. It is likely true that revealing costumes, part of the attraction even at legitimate exhibitions, were made socially acceptable by the more proper purpose of demonstrating athletic prowess and skill.[55] Thus, husbands could bring their wives to these demonstrations and women were not universally offended by costumes that otherwise would be deemed too revealing.[56] Furthermore, in riding schools and halls exclusively for women, women were less concerned with the appropriateness of the apparel.

Some of these exhibitions were sponsored by those in the bicycle business such as bicycle sellers and owners of riding schools and riding halls. In 1869 Mademoiselle Zoe Pauline of the Paris theaters was advertised to appear at the opening of a rink in Detroit. Other rinks opening in the U.S. had other female experts including Carrie Moore, who also was a champion female skater.[57] An English boneshaker rider, Madame Franzina, visited Adelaide, Australia, in 1876 and gave demonstrations.[58] In 1898, Mademoiselle Serpolette, "the champion lady cyclist of the world," toured Australia for six months providing demonstration rides under the sponsorship of Gladiator bicycles.[59] Others were sponsored by the entertainment industry. Some women cyclists performed in theaters in acts that later would be known as vaudeville. Others performed in circuses that traveled to towns too small to have theaters. The latter demonstrate the importance of these exhibitions both in encouraging women to ride and in enhancing the social acceptability of female cycling.

In order to entertain people, the circus showed them things they would not otherwise see in their day-to-day life. Such things included strange animals, unusual people and the latest technological developments such as the bicycle, electric lights, the telephone and the automobile. Interestingly, while lights, telephones and motorized transportation improved the operations of the traveling circus, the bicycle is the only technological innovation that continues to be a standard part of circus performances.[60]

The bicycle uniquely fits the circus' role of presenting shows that emphasize survival skills such as strength, speed, balance and the control of predators and dangerous objects. Such skills are no longer needed in the industrialized world, but the bicycle, as a product of the industrialized world, bridged the gap to the primitive world symbolized in circus performances.[61]

Consistent with women's greater role in society, the circuses in the late 1800s, the so-called "Golden Age," promoted the expanded role of "new women" performers in their shows, including the first female clowns and "strongmen." These female performers were shown to be equal to men, not mere assistants in a man's act. Unlike both earlier and latter times, the circuses from 1870 through the 1900s were careful to depict these performers as"proper ladies" and not emphasize the revealing nature of their costumes. Men had previously performed all of the stunts

Fig. 11.5. Falcon advertisement. (Jack Rennert: **100 Years of Bicycle Posters**, 1973, p. 25.)

performed by women, but the woman performers displaying survivalist skills simultaneously "exploited and subverted the assumed frailty of the women."[62]

One of the earliest "bicycle belles under the bigtop" was Ella Zuila, shown in an 1881 poster, who cycled along the high wire. However, merely balancing on a bicycle was not as exciting as making one fly. By 1899, Mlle D'Zizi was soaring down an incline and jumping her bicycle over six elephants.[63] By 1910 at the Bosch Circus in Berlin, former world cycling champion Hélène Dutrieu was cycling down an incline and looping-the-loop—one of the few female performers to accomplish this feat.[64]

Other women cyclist circus performers included the female members of family acts such as the Elliots (1880s), the Stirk family (1893) and an all female act, the Eight Kaufmann Girls (1907).[65] [Editor's note: also see Sandra Markham's contribution "Nick Kauffmann—On a Wheel Against Time" elsewhere in this volume.]

More recent acts include Lily Yokoi of Japan, described as the greatest trick cyclist of all time and one of the highest paid performers of the early 1960s,[66] and the award-winning 1987 Cirque du Soleil act of 14 men and women balancing on a single bicycle.[67]

Circuses traveled by train to small-town America where the "Gibson girl" and middle class women cyclists were rare, if indeed there were any. Train circuses helped establish a greater, more independent and more equal role for women in society. In many of these towns, the first woman seen on a bicycle may have been a circus performer.[68]

Competitive Cycling

Riding halls and the entertainment industry were not alone in promoting women's cycling for profit. Race promoters did the same. Many women achieved some level of fame and fortune (less than men) as competitive cyclists, either racing, setting speed or endurance records or long distance rides. As a sport, competitive cycling was unique because it was based in large part on the technology of the bicycle itself. As the bicycle improved, speed and distance records were broken. For example between 1878 and 1896, the mile record was cut in half from 3:57 to just over 1:55.[69] To limit the effect of technological improvements, the Union Cycliste Internationale, the professional body governing cycle racing, prohibited alternative bicycle designs in the 1930s.[70] But just before the turn of the century competitive cycling was a popular sport, the bicycle epitomized the popular imagination's interest in technology.

The first women's race was held in Bordeaux, France, on November 1, 1868, before more than 3,000 spectators. Yet, as noted above, this spectacle and others occurring in music halls may have been enjoyed by male spectators for the risqué costumes rather than the athletic contest.[71] The following year, at least four women entered the first bicycle road race, the 83-mile trek from Paris to Rouen.[72] The fastest woman rider was known as "Miss America;" she came in 29th overall. Her husband was Rowley B. Turner, manufacturer of Coventry's American velocipedes, who finished in 30th place, just behind his wife.[73] Between 1868 and 1870 there were 20 women's races in France and 3 in Belgium.[74] French women competed with men in road racing; in track racing they could as well, but often had their own events at the end of the program.[75]

French women racers were honored for their accomplishments. For example, in 1895 Hélène Dutrieu was recognized as the women's record holder for one hour of cycling, having completed over 39 kilometers. As noted above, she was later a bicycle circus performer and perhaps the first female French aviator, for which she was awarded the Legion d'Honneur.[76] Despite the beginnings of women's bicycle racing in France, that country generally encouraged only men to race or participate in any sports through at least the 1930s.[77]

In the U.S., a few women raced the high wheel bicycle in the 1880s. In late 1879, several women raced high wheel bicycles once a day in California as part of a four day men's event. Lizzie Baymer won all four competitions and later was the first cyclist to race against a horse in 1880. Elsa Von Blumen from Rochester, N.Y. also raced against horses and in 1881 rode 1,000 miles in six days. She was handily defeated in both 2- and 50-mile events by Louise Armaindo in 1882.

Louise Armaindo repeatedly did well racing against John Prince and twice defeated both William Woodside, "champion of Ireland," and William Morgan, "champion of Canada." Von Blumen and Armaindo both had successful racing careers culminating in a six day race in Madison Square Garden against each other and ten other women in February 1889. The event was won by newcomer Lottie Stanley, before a crowd of over 6,000 spectators. Six-day events for high-wheel women cyclists continued through 1890. Jessie Oakes set a new women's record for 54 hours at 669 miles and 3 laps in new York in May 1889, and Helen Baldwin defeated Hattie Lewis and set a new indoor record for women of 340 miles 3 laps in 24 hours in St. Joseph, Missouri, in June 1890.[78]

Other countries also probably had a few competitive female cyclists at this time. For example, in 1885 a 4,800 meter women tricycle race was included in a championship meet in Adelaide. The first track race for women only was held near Sydney, Australia, in 1888. This 3,200 meter event was won by Dot Morrell.[79]

The demise of the high-wheel bicycle and the popularity of the safety bicycle led to a substantial increase in the number of women in competitive cycling. Some of Hélène Dutrieu's career has already have been described above. She was crowned the official Women's World Champion in 1897 (Ostend) and 1899 (Berlin). Another famous French cyclist was Lisette (Amelie le Gall) who won the French version of the World Championship in 1896 but was beaten by 16 year old Monica Harwood in the 1896 London version of the World Championship.[80] Lissette was considered an almost invincible sprinter. With the aid of a 4 kilometer head start, Lissette even defeated the legendary Albert Champion in a 25 kilometer race.[81] Louise Roger, yet another French woman, won the world championship in 1898.[82]

Other countries were well-represented with women racers. Clara Grace of Scotland won the National Championship of England in 1895 and set numerous distance records and Ida Steiner was the national champion of Germany. Johanne Joergenson and Susanne Lindberg raced in Denmark, breaking a number of records set by men.[83] Mrs. Andrews of England was the last Women's World Champion in 1913 until the UCI re-established recognition for women in 1958.

Six-day races for women continued to be popular on the safety bicycle, but women could ride only four hours each day.[84] In 1895 and 1896, Frankie Nelson, "the Queen of the sixes," won the women's six-day in New York. She captured numerous titles, including the U.S. Women's Professional Champion, as did Helen Baldwin who began on a high wheel bicycle. The Olympia track in England hosted two women's sixes in 1896 with Lissette winning one and Monica Harwood the other. Many other women participated in six day races in the U.S. and abroad.[85]

Women's racing remained controversial. In 1896–97, the League of American Wheelmen, which sanctioned races in the U.S., black-listed tracks that permitted Sunday or female contests.[86] The British cycling magazines refused to print results starting in 1898 even though the lay press reported them.[87] In Australia, two women were

Fig. 11.6. Humber advertisement. (Jack Rennert: **100 Years of Bicycle Posters**, 1973, p. 40.)

barred from racing against male cyclists in their clubs after winning several events.[88]

Many women also sought to establish new distance records either in terms of time for a particular distance or distance traveled. For example, Miss Jessie Choice rode 113 miles in one day on a tricycle in 1883.[89] Ten years later, sixteen year old Tessie Reynolds set off a debate in the British cycling press when she rode from Brighton to London and back, completing the 110 miles in 8 hours 30 minutes. Columnists discussed the propriety of the fact that she rode a men's bicycle at this rigorous pace, wore trousers and was paced by men.[90] This record was later bested by Mrs. Grace (7 hours, 14 minutes), Miss Reynolds (7 hours, 6 minutes), and Maggie Foster, paced by tandems in 1897 (6 hours, 45 minutes). Foster set several other British distance records and completed over 30 miles in a paced hour of riding in 1902.[91]

In Australia, Mrs. E. A. Maddock began the women's long distance cycling efforts. In 1893, she cycled from Sydney to Bega, a distance of 500 km, averaging about 100 km per day. The next year she set the first Sydney–Melbourne women's record of nine days and in 1895 she cycled 2,600 km from Sidney to Brisbane and back. The Sydney–Melbourne record was cut by Mrs. H. P. Nicolls to 6 days 13 hours in 1897 and 6 days 7 hours in 1898.[92] In the U.S., Mrs. Jane Yatman cycled 700 miles in 81 hours 5 minutes, and a few months later Mrs. Jane Lindsay rode 800 miles in 91 hours 48 minutes, both setting world records.[93]

In addition to these timed long-distance rides, some women simply went for total distance. The Century Road Club of America, which specialized in one hundred mile rides, had a few active women members. In 1894 Mrs. M. J. Kelly of Chicago was the first women to complete two centuries in one day. Her 20 centuries in that year were second only to 28 completed by Mrs. C. M. Fairchild.[94] By 1896, Mrs. A. E. Rhinehart set a Colorado state record by cycling over 17,196 miles, including 116 separate century rides and ten consecutive daily centuries, and Mrs. G. Bunker of Chicago almost matched this accomplishment with 15,515 miles and 78 centuries. The accomplishments of these two riders, along with several men, were featured in advertisements for Palmer tires. Of the six women who rode more than 5,000 miles that year, all were married but only two had husbands who also accomplished that feat.[95] Mrs A.M.C. Allen, an invalid in 1893, did 10,287 miles that year, but returned in 1897 to ride 21,026 miles, on a bicycle 266 days of that year, setting a new women's record.[96] In 1899, the Century Road Club stopped recognizing female consecutive century records.[97]

Despite these turn-of-the-century accomplishments of competitive women cyclists, as noted above, the UCI refused to recognize women's cycling records from 1914 through 1958, In more recent years things have improved somewhat. In the U.K., the Women's Road Records Association was formed in 1934 to encourage and document long-distance records attempts. In 1938, Margueritte Wilson began riding. Her prowess on a bicycle caused the WRRA to distinguish amateurs from professionals.[98]

In the U.S., bicycle racing success came to women long before men. In 1954, when Nancy Neiman Baranet won the U.S. National Girls Championship for the second time, she requested the name be changed to Women's Champion and it was. She went on to become the first U.S. rider, male or female, to compete in a European Stage race and also tied the would record for 200 meters in track racing.[99] Later, Audrey McElmury's surprise 1969 World Road Championship win, the first cycling title for American since 1912, helped stimulate financial support for American women racers. In 1973 and 1975, American's Sheila Young and Sue Novara won the world spring championships.[100] In 1984, Connie Carpenter and Rebecca Twigg won the gold and silver medals in Olympic road racing. The Tour de France Feminin began in 1984 with Marianne Martin, the last member selected for the U.S. team, winning the tour.[101]

These names represent just a few of the many competitive women cyclists. They achieved some level of recognition for their accomplishments, but also helped further establish the propriety of women cycling. Elsa Von Blumen, the noted women's high wheeled cyclist, understood the pathbreaking role she was taking on behalf of all women. In an 1881 interview she stated: "In presenting myself to the public in my bicycle exercises, I feel that I am not only offering

the most novel and fascinating entertainment now before the people, but am demonstrating the great need of American young ladies, especially, of physical culture and bodily exercise."[102]

Recreational Cycling

Estimates vary as to how widespread women's cycling became during the bicycle boom of the late 1890s. By 1891, it was estimated there were 5,000 women cyclists in the U.S.; 1,000 ladies' bicycles were sold in that year alone.[103] Dunham and Beeley state that one third of all riders and bicycles were female by 1896.[104] Sewall, based on casual observation, estimates that nearly half of all riders were women.[105] McGurn estimates that Britain and France each had about one million cyclists, Germany had 500,000 and the U.S. had from two to four million.[106] Britain and France had between 300,000 to 500,000 women cyclists, Germany had 160,000–250,000 and the U.S. had from 600,000 to 2 million women cyclists. Thus, there were between 1.3 and 3.25 million women cyclists in these four countries in 1896 and more worldwide.

There is little doubt that most cycling by these two million or more women cyclists at this time was recreational in nature: cycling around town or touring in the country. Merington notes that "the woman of affairs has learned that an hour, or even a half hour, may be stolen from the working day, with profit to both the woman and affairs."[107] Philip G. Hubert asserts that he knows "there are thousands of city men and women who delight in spinning along the asphalt pavement of the Boulevards after the day's office work is done."[108]

Touring in the countryside also was popular.[109] Touring, as well as riding in general, was encouraged by the formation of clubs. The high wheeler clubs were virtually all men; they wore military style uniforms. With the advent of the safety bicycle, women were still largely excluded from clubs. For example, in 1893 only 1,162 of the 35,000 members of the League of American Wheelman were women.[110] In 1896, about 500 bicycle clubs were estimated to exist in the U.S., but it is not known how many admitted women or were exclusively women's clubs.[111] Similarly, in France most bicycling clubs refused to accept women; those that did rarely had more than a handful of women members.[112] For example, in 1891 the newly-founded Touring Club de France had only 14 women out of 1,138 members. Two years later, in the summer of 1893, a survey noted that only 192 out of 5,653 bicyclists leaving Paris were women.[113] Similarly, in Canada

Fig. 11.7. Crown advertisment. (Jack Rennert: **100 Years of Bicycle Posters**, 1973, p. 81.)

the Calgary Cyclist Club only admitted a few women as honorary members. Other Canadian clubs allowed women members as early as 1892.[114] In England, the Cyclists' Touring Club began admitting women as members in 1880, just two years after it was formed. In 1882, the CTC started publishing its *Gazette* which included a ladies' column.[115] became commonplace in clubs after World War I when barriers against them broke down and eventually allowed the wearing of shorts.[116]

Perhaps as a result of exclusion from many cycling clubs or perhaps as an extension of other women's clubs, women began to form their own clubs both for companionship and safety when cycling. It was not unusual for unaccompanied women cyclists to be verbally and sometimes physically harassed. In April 1888, the first women's bicycle club of safety cyclists, the Ladies Cycle Club of Washington, D.C., was formed with 13 members; it quickly grew to its limit of 50.[117] Similar women's clubs such as the Coventry Lady Cyclists' Club (1892) and the Trafalgar Club of England appeared throughout the world. In 1895, the Lady Cyclists' Association was formed to "organize the control of cycling for women and the development of the cause." [118] In Australia, the Sydney Ladies' Bicycle Club also began in that year.[119]

These clubs were part of a larger movement in women's clubs, including those supporting suffrage, temperance and other social causes and those intended for the improvement of women, such as literary clubs.[120] Some political movements formed bicycle clubs, such as the Workers' Cycling Federation in Germany and the Clarion Cycling Club in the U.K. Roughly one-third of Clarion members were women. In the U.S., the Labour Party organized a Socialist Wheelmen's Club.[121] While the relationship between the membership of the women's cycling clubs and membership of other women's clubs and the suffrage movement has yet to be fully explored, there is likely overlap. Frances E. Willard, perhaps the most well-known woman of her time, save Queen Victoria, and a leader in the women's temperance movement, wrote a book, *How I Learned to Ride the Bicycle*. Suffrage leader Elizabeth Cady Stanton simply noted: "Many a woman is riding to the suffrage on a bicycle."[122]

Transportation

The quote from Elizabeth Cady Stanton suggests the bicycle was used for practical transportation as well exhibitions, competition and recreation. Yet the truth of it is unknown and has been debated. Some have suggested that the bicycle was a factor in the early rush to the suburbs; that it was used for commuting and other practical transportation.[123] During the "boom," society mothers used the bicycle for recreational rides and shopping excursions as well. Mrs. Humphrey noted that "West End cabmen complain that they do not get nearly so many fares as they used to."[124] In a streetcar strike in Philadelphia in the winter of 1895:

> Women used their wheels as a means of locomotion, and crowded downtown streets were filled with them.... Clerks in stores, typewriters, and the whole great army of employed women rode their wheels to business; women who came to buy left bicycles in the check rooms of the great shops.[125]

In September 1893 numerous cyclists, including about 30 women, waited for the opening of the Cherokee Strip Indian Reservation, hoping to beat horse riders to obtain a choice plot of land.[126]

By 1900, the bicycle boom had died and bicycle prices for both new and used machines plummeted. Many women who previously could not afford a bicycle could purchase one now, but bicycle riding had fallen out of fashion. As a now mundane activity it was no longer reported upon in newspapers and magazines. In 1900, the *New York Times* noted that even though the bicycle fad was over, the bicycle was still "used as an article of utility, to get clerks and workmen to and from their business." It further noted that "shopboys, newspaper carriers, carpenters, and other tradesmen use the bicycle in business."[127] Clay McShane was able to locate the only early traffic count in the U.S. to include bicycles. In Minneapolis in 1906, bicycles accounted for 20 percent of all traffic—more than four times as much as cars.[128] Although this evidence does not mention women specifically, it seems likely that at least some women used the bicycle for practical transport, much as many do in Europe today.[129]

No one knows why the bicycle craze ended. The automobile is often blamed, but by 1900 only 8,000 passenger automobiles were registered in the U.S.[130] While this descendent of the bicycle may have captured the imagination of the public and been used by the select few, it did not simply replace millions of bicycles overnight. Roller skating, cycling's long time recreational competitor, again became popular at the turn of the century. In 1902, the Chicago Coliseum and in 1908 Madison Square Garden in New York both opened to skating. In 1909–1910 hundreds of new rinks opened throughout the U.S., and England also enjoyed new interest in roller skating.[131]

The electric trolley also may have contributed to the demise of the bicycle boom. The public's interest in the latest technological marvels had shifted from bicycles to electricity and electric machines. Most major U.S. cities converted their streetcar systems to electricity in the 1890s. Electric streetcars were significantly faster and cleaner than predecessor horse drawn trollies. By 1902, 5.8 billion passengers were carried by street car in U.S. cities; the number rose to 11.3 billion in 1917.[132] All of these factors may have contributed to the demise of middle- and upper-class interest in cycling, despite the decline in prices.

The Bicycle and Women's Emancipation—Freewheeling for Freedom

The Victorian woman was supposed to be a nurturing and comforting wife and mother. She was dressed in tight, heavy and restrictive clothing that prevented all but the most minor physical activity. This restrictive clothing symbolized the restrictions women faced in life generally. Women were dependent on men for many chores and activities in addition to financial support. While society dictated that a woman's place was in the home, gradually women rallied against that dictate. For example, Miss Ann Strong wrote to the *Minneapolis Tribune*:

> I can't see but that a wheel is just as good company as most husbands two years old. I would as like talk to one inanimate object as another; and I'd a great deal rather talk to one that can't answer than one that won't [...] Another great superiority of the bicycle lies in the fact that you can always get off it when you wish. You can roll it in and stand it up in a corner and there it stays. It will neither follow you around or insist on receiving attention at inconvenient moments. When it gets shabby you can dispose of it and get a new one without shocking the entire community.[133]

Part of this debate involved the issue of female exercise. By the 1890s, the majority opinion seemed to have been that moderate exercise was beneficial, but traditional views prevailed that women were incapable of strenuous exercise.[134] Acceptable sports included horseback riding, croquet, tennis (first introduced in the U.S. by Mary Outerbridge in 1874) and archery. By the 1890s, golf and field hockey had gained both acceptability and popularity.[135] Despite these predecessors, Kathleen McCrone states:

Fig. 11.8. Cless & Plessing advertisement. (Jack Rennert: **100 Years of Bicycle Posters**, 1973, p. 64.)

> Whatever the liberating potential of lawn tennis and golf, it was bicycling—not a sport at all in the competitive sense—that provided women with their most significant experience of physical exercise and did more than any other activity to break down conservative restriction... [B]y its very nature, it required muscular exertion and encouraged physical freedom... Because of its public nature cycling was scrutinised closely...[136]

Margery Bulger agrees:

> It was undoubtedly the bicycle craze of the 1890s that caused more people than ever to question the role of women in athletics. Their participation was no longer confined to the privacy of clubs. They came out of the roadways for everyone to see.[137]

That is not to say that bicycling by women was immediately accepted. To the contrary, as already noted above, women's competitive cycling was frequently criticized and debated. Furthermore, commentators opposed cycling for women, fearing such independence would lead to moral indiscretions. Indeed, in parts of Australia the description of "town bike" was applied to a woman who was not discriminating in her sexual liaisons.

Many physicians, despite the lack of scientific evidence, initially opposed women's cycling as well. Too much cycling was presumed to be the cause of "new maladies," such as skeletal deformations, including "bicycle walk," "cyclist's stoop," and "bicycle face." The bicycle allegedly caused hernias, varicose veins, weak hearts, and "cyclists sore throats" and nervous disorders such as "cyclist's fright." The saddle itself was supposed to cause impotence, bladder problems, and for women sexual stimulation leading to menstrual problems. Women were advised not to cycle if they suffered from tuberculous, hardening of the arteries, emphysema, insomnia, asthma, anaemia, epilepsy, rheumatism, obesity, or pelvic disease, and if they were pubescent, menstruating, pregnant or postpartum.[138]

Other doctors, sponsored sometimes by the bicycling industry struck back, urging that cycling could cure dyspepsia, anemia, obesity, curvature of the spine, asthma, varicose veins, heart disease and diabetes. When an 1897 medical study revealed that the death rate from consumption had fallen steadily over the past five years, this was attributed to the healthful exercise of women cycling.[139] Exaggeration aside, physicians developed a consensus that continues to this day that moderate amounts of cycling are healthy.[140]

Dr. Townsend even vindicated the bicycle compared to the sewing machine which also was believed to be unhealthy. He noted that when operating a sewing machine, women sat hunched over, compressing their internal organs and diminishing blood flow, and performed a monotonous task which strained vision and only exercised the lower legs a bit. In contrast, when operating a bicycle, women were outdoors, breathing fresh air and enjoying the scenery while getting vigorous exercise of the legs and the entire body. While cycling, women sat erect so as not to harm their organs, and thus enjoyed improved breathing and circulation.[141]

Thus, the direct result of bicycling was to improve women's physical health by providing much-needed exercise and improve their mental health by providing the freedom to escape the house, see the countryside and ride if they chose with other women or with husbands or other men. Historian Andrew Sinclair put it succinctly:

> The bicycle was the second great giver of freedom to women's bodies. It took them out of the cities and small towns and beyond the eyes of their parents; it gave equality to both sexes in traveling far and together; and it forced the skirt to divide and resemble a pair of flapping trousers.[142]

This passage also suggests the bicycle's greatest secondary effect for women, dress reform. As noted above, Victorian dress for women was restrictive, with long heavy skirts, tight whalebone corsets, and tight-fitting collars. Hence the distinction between "loose" (uncorsetted) women and those who were "straight-laced." The campaign for dress reform and the development of the infamous bloomer (short, very full pants fastened at the knee like knickerbockers for men) began in the 1850s.[143] At that time the bloomer became a symbol for reform, but the fad faded quickly. The popularity of women cycling in the 1890s gave the bloomer and other forms of modified dress new life. The bloomer itself while

controversial became another fad. The media reported on wearers, on "bloomer dances" on the use of bloomers by some businesses and protests against them by more traditionally minded women.[144]

Perhaps the most famous incident of disagreement over "rational dress" occurred in England when innkeeper Martha Jane Sprague refused to provide lunch in the front dining room of her hotel for Lady Florence Harberton, wife of Viscount Harberton, because of Lady Harberton's form of cycling attire. While a jury ultimately acquitted the innkeeper, who did offer to serve Lady Harberton in the public bar, the case became famous throughout the country in part because the Cyclists' Touring Club had sponsored the prosecution. While the CTC lost the case, it apparently made its point.[145]

In the end, the wearing of the bloomer was ridiculed by the media and many men and women. It was viewed as too masculine. Ultimately, women's dress was shortened to reveal the ankles. Wire and whale bone corsets were replaced by elastic health corsets sometimes referred to as bicycle waists. *The Cosmopolitan* described the bicycle's accomplishment in dress reform in these terms: "What years of eloquent preaching from the platforms of women's suffrage" had failed to accomplish, "the bicycle had in a few months brought into practical use."[146]

While the bicycle clearly stimulated reform in women's athletics and clothing, perhaps its greatest impact was on people's thinking about acceptable behavior for women, including the thinking of women themselves. *The New York Sun* stated:

> The practise [of women cycling] is undoubtedly revolutionizing habits to which women have been tied, and it runs counter to immemorial prejudices as to the sphere within which feminine activities should be confined. It is giving them self-reliance and overcoming the timidity which used to be considered so appropriate to them as beings who needed the shelter or seclusion and the protection of manly courage. It is making them comrades of men in sports and employments from which before they had turned as unfeminine. It is accustoming them to publicity. It is inciting in them the ambition of muscular development.[147]

Similarly, Sylvester Baxter exclaimed:

> The bicycle has given, as nothing else has, the means for a healthful exercise combined with delightful recreation so much needed by the sex. It has gone far towards emancipating them from slavish conventionality in both dress and conduct. [...] It has given them an independence in action approaching that possessed by their brothers. In the parks of a great city, for instance, young ladies may daily be seen by the score, singly, or in groups, speeding freely everywhere upon their bicycles, with the same sense of security, and appearing as much at home as they would be were they walking in the seclusion of their household gardens. It has also imparted renewed strength of the natural associations between the two sexes, so healthfully characteristic of American life.[148]

Lastly, Robert Blatchford, father of the Clarion socialist movement in the U.K., stated:

Fig. 11.9. Mlle Zuila poster. (John and Alice Durant: Pictorial History of the American Circus, 1957, p. 172.)

> Beneficial as women's suffrage has been I should place it second to the pneumatic tyre in the general life of our working people. Yes: I mean it. It is good that men and women should not live apart. When they are deprived of each other's society they deteriorate.[149]

It is no wonder that Susan B. Anthony herself believed that cycling did "more to emancipate woman than anything else in the world."[150] Even scientist W. J. McGee noted in 1898:

> [T]he bicycle has broken the barrier of pernicious differentiation of the sexes and rent the bonds of fashion, and is daily impressing Spartan strength and grace and more than Spartan intelligence on the mothers of coming generations.[151]

Yet women awheel were part of a larger movement of reform and liberation. The bicycle boom died before the turn of the century, but the reform movement it contributed to did not. Advances in exercise, dress, and behavior continued. Women's employment outside the home doubled between 1890 and 1910. Women won the right to vote in Canada in 1918, the U.S. in 1920 and the U.K. in 1928.[152]

Acknowledgment

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Notes

1. *Outing* (Sept. 1893) 460.

2. See generally the essays presented in Martha Moore Trescott (ed.), Dynamos and Virgins Revisited: Women and Technological Change in History (Metuchen, NJ, 1979).
The bicycle, despite initial protests by physicians that cycling might harm a woman's ability to have children (e.g., Sally Ruth Sims, *The Bicycle, The Bloomer, and the "New Woman": Images of American Women Awheel*, 1890–1899 (M.A. Thesis George Washington University. Sept. 1975) 9–11, serves no useful purpose in the control of reproduction. However, one study does claim that by increasing mobility, it did contribute to improved breeding and the decline of the "village idiot problem" in rural England. P. J. Perry, "Working-Class Isolation and Mobility in Rural Dorset, 1837–1936: A Study of Marriage Distances" Institute of British Geographers 46 (March 1969) 121–141. Presumably such a result benefited women as mothers. Furthermore, Social Darwinism as a theory of societal evolution was popular in the 1890s, and the bicycle was often felt to contribute to the evolution of the human race. For example, Sims (p. 18) cites Dr. Neeson who proclaimed: "The future of bicycling for women is even more promising than its present is fulfilling. What is done by the present generation will have its effect on future generations. With healthier women will come healthier children."

3. Susan Kleinberg, "Technology and Women's Work: The Lives of Working Class Women in Pittsburgh, 1870–1900" *Labor History* (Winter 1976) p. 58, points out that working class homemakers had little control over the spending of their husband's earnings, but working outside the home for their own pay increased the power of women in family financial decisions.

4. *Scientific American* (June 27, 1896), p. 391.

5. "The World Awheel," *Munsey's Magazine* 15 (May 1896), p. 153.

6. This paper focuses on women as consumers or users of bicycles. However, women played an important role in the production of bicycles as well. Trescott, p. 28, notes that some bicycle companies of the 1890s had women officials. Bob Goodall, "A Silent Revolution: Working Class Participation in Cycling Before 1914," *The Boneshaker* 13 (Spring 1989) 22–28, points out that low cost female labor allowed British manufacturers to reduce their production costs and lower prices in an attempt to remain competitive with low priced imports from the U.S.A. in 1897. However, U.S. costs were low because of mass production ("the American System of Manufacture"), not cheap female labor. In her seminal study, Helen L. Sumner in *History of Women in Industry in the United States* (Wash. D.C., 1910) discusses several industries where female employment had increased during the late 1800s, but does not mention bicycle manufacturing. Indeed, the employment of women over 16 years

old as wage earners in U.S. bicycle factories rose from 15 in 1890 to 517 in 1900 but decreased to 7 by 1905. In 1890 and 1900 women accounted for less than one percent of the male factory workers, but by 1905 women accounted for only one quarter of one percent. When production diminished, the U.S. bicycle industry retained more men than women. Robert H. Merriam, "Bicycles and Tricycles" in *Bureau of Census, Manufacturers 1905, Part IV Special Reports on Selected Industries* (Washington, D.C., 1908), p. 289.

7. Wiebe E. Bijiker, *Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change* (Cambridge, 1995) pp. 24–25.
8. E. D. Sewall, "The Women's Bicycle and its Predecessors," *The Iron Age* 49 (May 6, 1897), pp. 6–12.
9. Norman L. Dunham, *The Bicycle Era in American History* (Ph.D. Thesis in History, Harvard University Nov. 1956), pp. 28–34, notes that Charles W. Peale, the noted Revolutionary War portrait painter, became a draisiene enthusiast and his daughters also rode.
10. Charles E. Pratt, "Pierre Lallement and his Bicycle," *The Wheelman Illustrated* (Oct. 1883), pp. 4–13.
11. James McGurn, *On Your Bicycle: An Illustrated History of Cycling* (New York, 1987) p.36 (Pierre Michaux's interest had been bought out by this time).
12. Bijiker p. 43; C. F. Caunter, *The History and Development of Cycles* (London 1955), p. 6.
13. Sewall, pp. 8–9.
14. McGurn, pp. 38–39.
15. Dunham, pp. 146, 174.
16. Dunham, pp.76–109, 161.
17. McGurn, pp. 40–41, 45–50.
18. Scott A. Wilhite, *The Evolution of the Roller Skate: 1820–Present* (Lincoln, NE., 1994) 22–23; Morris Traub, *Roller Skating Through the Years: The Story of Roller Skates, Rinks, and Skaters* (New York, 1944) 14–17; Hans-Erhard Lessing, "Cycling or Roller Skating: The Resistible Rise of Personal Mobility," *Cycle History: Proceedings of the 5th International Cycle History Conference* (San Francisco, 1995), pp. 129–132.
19. Traub, pp. 18–25; Wilhite, p. 43; Marion K. Stell, *Half the Race: A History of Australian Women in Sport* (Melbourne 1991), p. 16.
20. Lessing, p. 132.
21. Caunter, pp. 13–17.
22. Mrs. Reginald de Koven, "Bicycling for Women," *The Cosmopolitan* 19 (Aug. 1895), p. 387.
23. Sewall, pp. 9–10.
24. Karen Knudson, "American Women Awheel" *The Wheelmen* 2 (Summer 1971), p. 11.
25. McGurn, pp. 75–84; Caunter, pp. 26–27.
26. Minna Caroline Smith, "Women as Cyclers," *Outing* 2 (June 1885), pp. 217–221.
27. Dunham, pp. 211–227
28. Minna Caroline Smith, "The Tricycle for American Women," *Outing* 5 (March 1885) 424, refers to "scores" of women riders. In her later article she names the women cyclers in a handful of U.S. cities. See Smith, "Women as Cyclers," pp. 217–221.
29. John Allen Krout, *Annals of American Sport* (New Haven, 1929), p. 179.
30. Traub, p. 27; One contemporary commentator noted: "In the beginning of the year [1895] the women of the leisured classes devoted themselves to skating ... [now t]he cycling mania has taken even a deeper hold..." Mrs. Humphrey, "Women on Wheels," *The Idler Magazine* 8 (Aug. 1895–Jan. 1896), p. 71.
31. Caunter, pp. 33–35.
32. Knudsen, p. 11.
33. Caunter, pp. 33–36.
34. E. D. Sewall, "The Women's Bicycle and its Predecessors," *The Iron Age* 49 (May 13, 1897), p. 8; de Koven, p. 387.
35. "The World Awheel," p. 158.
36. Lisa Larrabee, "Women and Cycling: The Early Years," in Frances E. Willard, *How I Learned to Ride the Bicycle —Reflections of an Influential 19th Century Woman* (Sunnyvale, Ca. 1991), pp. 81, 84.
37. Andrew Ritchie, *King of the Road: An Illustrated History of Cycling* (London 1975), p. 165.
38. Scott Martin, "Cycling Sisters: Meet Four Women Who Shape the Sport," *Bicycling* (May 1996), p. 60.
39. Ellen Gruber Garvey, *The Adman in the Parlor: Magazines and the Gendering of Consumer Culture, 1880s to 1910s* (New York 1996) pp.116–119; James B. Chadwick, "Bicycle Saddles for Women" *The Boston Medical and Surgical Journal* 132 (June 13, 1895), p. 595.
40. "Cherry's Screen for Ladies Bicycles," *Scientific American* 74 (1896), p. 261.
41. Larrabee, pp. 84–5.
42. Dunham, p. 446.
43. Ross D. Petty, "Peddling the Bicycle in the 1890s: Mass Marketing Shifts into High Gear," *Journal of Macromarketing* 15 (1995), pp. 21–46.

44. See e.g., Henry J. Garrigues, "Woman and the Bicycle," *Forum* (1896) 578–587; Marguerite Merington, "Woman and the Bicycle" *Scribner's Magazine* 117 (June 1895), pp. 702–04.

45. Saralee R. Howard-Filler "Woman a Wheel" *Michigan History* 64 (Sept./Oct. 1980), pp. 1234–5.

46. Sims, note 12, p 101.

47. David Rubinstein, "Cycling Eighty Years Ago," *History Today* 28 (Aug. 1978), p. 546.

48. Serena Beeley, *A History of Bicycles* (Secaucus, NJ, 1992), p. 74.

49. Garvey, pp. 123–133.

50. Petty, pp. 36–37.

51. Petty, p. 42.

52. Compare Garvey, pp. 109, 113.

53. Quoted in Nick Sanders, *Bicycle: The Image and the Dream* (Great Britain 1991), p. 125

54. Fairfax Downey, *Portrait of an Era as Drawn by C. D. Gibson* (New York 1936) p. 252, cited in Martha Banta, *Imaging American Women: Idea and Ideals in Cultural History* (New York 1987), p. 88.

55. Women in Berlin petitioned the police in 1891 to cycle in public parks wearing the same silk tights used in cycling schools. The petition was denied. Pryor Dodge, *The Bicycle* (Paris 1996) p. 128.

56. Dodge further notes that only in the circus or music hall could women on bicycles appear in silk tights. Dodge, p. 128.

57. Dunham, pp. 94–97.

58. Marion K. Stell, *Half the Race: A History of Australian Women in Sport* (1991), p. 21.

59. Jim Fitzpatrick, "The Spectrum of Australian Bicycle Racing: 1890–1900" in Richard Cashman and Michael McKernan (eds.), *Sport in History: the Making of Modern Sporting History* (St. Lucia, Queensland, 1979), p. 336.

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111. "The World Awheel," p. 156.

112. Richard Holt, *Sport and Society in Modern France* (London, 1981) pp. 163–64.

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114. William Humber, *Freewheeling—The Story of Bicycling in Canada* (Erm, Ontario 1986), pp. 14, 28.

115. Kathleen E. McCrone, *Playing the Game: Sport and the Physical Emancipation of English Women, 1870–1914* (Lexington, KY 1988), pp. 181–82.

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117. Sewall, pp.8–9.

118. McCrone, p. 182.

119. Stell, p. 21.

120. For a discussion of literary clubs, see, Karen J. Blair, *The Clubwoman as Feminist: True Womanhood Redefined*, 1868–1914 (London 1980).

121. McGurn, pp. 133–36.

122. "The Revolutionary Bicycle," *The Literary Digest* 12 (July 20, 1895), p. 334.

123. Sylvester Baxter, "Economic and Social Influences of the Bicycle," The Arena 6 (Oct. 1892) 580; Dunham, p. 485.

124. Humphries, p. 71.

125. "The World Awheel," pp. 158–59.

126. McGurn, p. 98.

127. "The Decline of the Bicycle" *New York Times* (Sept. 13, 1900), p. 6, c.3.

128. Clay McShane, *Down the Asphalt Path: The Automobile and the American City* (New York, 1994), p. 58.

129. Sims, pp. 49–52, argues that even with bicycle prices at about $15 in the spring of 1898, working class women averaged only about $7–8 discretionary income, and women still could not afford to purchase a bicycle. This argument ignores the continued lowering of prices sometimes below even $10, the glut of used wheels, the distribution of income around the average for working women, and the popularity of installment purchasing. Thus, by 1900, working-class women who wanted them, could afford bicycles.

130. Virginia Scharff, *Taking the Wheel: Women and the Coming of the Motor Age* (New York 1991), p. 25.

131. Traub, p. 32.

132. Brian J. Cudahy, *Cash Tokens and Transfers: A History of Urban Mass Transit in North America* (New York 1990), p. 55.

133. Quoted in Smith, p. 81.

134. Sims, pp. 9–17.

135. Allen Guttmann, *Women's Sports: A History* (New York 1991).

136. McCrone, pp. 177–78.

137. Margery A. Bulger, "American Sportswomen in the 19th Century," *Journal of Popular Culture* 16 (1982), p. 9.

138. McCrone, pp.179–80; James C. Whorton, "The Hygiene of the Wheel: An Episode in Victorian

Sanitary Science," *Bulletin of the History of Medicine* 52 (1978), pp. 61–88.

139. Whorton, pp. 64–5; Garriques, p. 585.

140. Charles W. Townsend, "Bicycling for Women," *Boston Medical and Surgical Journal* 132 (June 13, 1895), p. 593.

141. Townsend, p. 595. It is interesting to note that bicycle manufacturing was undertaken by many sewing machine companies in the U.S., Great Britain and Germany. Dodge, p. 108.

142. Andrew Sinclair, *The Emancipation of the American Woman* (New York 1965), p. 107.

143. Larabee, p. 93, states the bloomer originated in 1848, but Ritchie, p. 149, indicates it was first worn by Mrs. Libby Miller in 1851 while she was visiting Amelia Bloomer for whom the garment was named.

144. Smith, pp. 99–109.

145. "Regina v. Sprague: a report from the Justice of the Peace for 15 April 1899" *The Boneshaker* 8 (74) (Summer 1974) 137–146; Ritchie, p. 162.

146. Quoted in Larabee, p. 96.

147. Cited in "The Revolutionary Bicycle" *The Literary Digest* 11 (July 20, 1895), p. 5.

148. Baxter, p. 583.

149. McGurn, p. 135.

150. Interview for the *New York World*, quoted in Larabee, p. 90.

151. W. J. McGee, "Fifty Years of American Science," *Atlantic Monthly* 82 (Sept. 1898) 311–12. This quote reflects the period belief in social Darwinism. See note 2, supra.

152. M. Ann Hall, "The Role of the Safety Bicycle in the Emancipation of Women," *Proceeding of the Second World Symposium on the History of Sport and Physical Education* (Banff, 1971), pp. 245–49.