

## The Paris-Brest *et retour* Road Race of 1891, and the New Pneumatic Tire

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Paris-Brest *et retour* in its first edition in 1891 was a test of both man and machine. A race of 1,200 km was an epic challenge for the racers, and it was also intentionally a challenge of machines. At a time when most races were point to point, this race was Paris to Brest *et retour*; from Paris to Brest *and back*, thus doubling the challenge! The challenge of machines was a direct result of the very rapidly changing technology of the bicycle and in particular the new pneumatic tire. The organizing newspaper, *Le Petit Journal*, described it as an *épreuve*, a ‘test’ of the rider and the reliability of his machine.<sup>1</sup> This race was far more than a sporting event, it was also of great importance to the growing bicycle business and the new popularity of the bicycle in society.

While the 1891 running of Paris-Brest *et retour* has received deserved attention as an important race in history for its test of both man and machine, the story of the pneumatic tires used by the racers has fostered assumptions that further research has shown to be incomplete and even incorrect. This paper expands the story of the pneumatic tire’s role in the 1891 Paris-Brest *et retour* race beyond a passing mention and explores the rapid evolution of the pneumatic tire right before the time of the race. The new pneumatic tires used by two of the competing racers have always been characterized in a way that gives a false impression of the state of evolution of the pneumatic tire at that

time and the true practicality of their tires.

There are many elements to the story of the history of the bicycle that came together in the race. These not only shaped the race, but even helped create it. These include: the enlightened vision of acceptance and use of the bicycle by a much wider swath of the population; the perception of the bicycle as a practical means

of transportation that could even be used for very long distance travel; the newly developed understanding of using bicycle racing to sell newspapers; the role of bicycle racing in defining a country’s ability to fight wars; the new phenomenon of a nationally known sports star; the impact of racing success on selling bicycles; and the role of the newly invented pneumatic tire and its acceptance.

Paris-Brest *et retour*, as it was then called, was such an inordinately difficult challenge that it stood alone as one of the great events in not only bicycle racing history, but also in the history of the evolution of the bicycle. A number of accounts of the race have been written.<sup>2,3,4</sup> [Figure 1]

### Background of the race

To better understand Paris-Brest *et retour*

of 1891, it is first useful to understand the history of bicycle racing in the time leading up to the race. The race existed at a time when bicycle racing was becoming the king of sports, and importantly, Paris-Brest helped make racing on the open road an important genre of racing at a time when bicycle racing generally meant track racing. Much of the fascination of the public for this race was because the racing was not only on the open road, but it ran from the center of the great city of Paris, out to Brest at the Atlantic Ocean, the land called *Finistère*. (literally, the end of the Earth), and back! Not only did the racers have to deal with the elements, but also with traversing large distances between cities, quite a change from riding on a closed track in a city. Just as important, all along the route, people could see the racers ride by in person, and even, perhaps, ride with them on their own bicycles. For many people in Brittany, this was the first time they had ever seen a bicycle.

The first long distance road race from Bordeaux



Figure 1. Charles Terront, winner of Paris-Brest *et retour*, *Le Petit Journal* Supplement, Sept 12, 1891.

to Paris organized by the *Veloce-Sport* newspaper took place on May 23, 1891.<sup>5,6</sup> The date of this race is significant because of the rapidly evolving technology of the bicycle in the months leading up to the race and because it took place less than four months before Paris-Brest. This 575 km point-to-point race was thought by some to be the ultimate test of human ability, crossing much of France. Much has been written of this race, but for our interest, what matters is the relationship between Bordeaux-Paris and the Paris-Brest *et retour* race that followed so soon after. In August 1890, Maurice Martin (*Veloce-Sport*) rode a New Phoenix tricycle weighing 23 kg., together with the racer Jiel-Laval and some other cyclists, from Bordeaux to Paris taking 8 days to scout the route for a new concept: a long distance road race sponsored and promoted by a newspaper. Jiel-Laval became the director of the resulting Paris-Bordeaux race, and he later played an important role in the Paris-Brest *et retour* story.<sup>7</sup> [Figure 2]

The declared goal of *Veloce-Sport* for the Bordeaux-Paris race was to "strike the imagination of the indifferent to the velocipedia."<sup>8</sup> UK racers were invited to add prestige to the race, but they were amateurs (gentlemen) who did not want to compete with professionals (working-class men). The organizers gave in to their demands, so French professionals were not allowed. The result was that the first four places were taken by riders from the



Figure 2. Start of Bordeaux Paris race, May 1891.

UK. The English manufacturer Humber was well aware of the publicity value of a victory in this the longest road race yet held in France. Jiel-Laval was both organizer and participant, and his account indicates he was quite pleased to have been competitive with the English racers.<sup>9</sup> French champion Charles Terront, and other well-known professionals who had not been allowed to participate in the race, were hired as *entraîneurs* (pacemakers). Terront also becomes a key player in Paris Brest *en retour*.

The English victory in Bordeaux-Paris helped the English Humber's sales, much to their delight. The Humber Company capitalized by distributing posters and leaflets both in the UK and France, highlighting George Mills' win on their "obviously" superior bicycle.<sup>10</sup> The French manufacturers did not have the money to hire such experienced pacemakers as those used by their British rivals. Public interest in Bordeaux-Paris was so enormous that the non-cycling press woke up to the potential of using the new cycling phenomenon to increase their newspaper's circulation. Henri Desgrange, best known for the Tour de France, will later write, "Bordeaux-Paris in 1891 is the entry into the glory of the bicycle."<sup>11</sup> [Figure 3]

Bordeaux-Paris directly influenced Paris-Brest in a number of ways: The notion, promoted by newspapers, that

the public needed to be awakened to the benefits of the new bicycle; the arousal of French nationalism that was evoked by the UK racers winning the first four places; the demonstration by Humber of the use

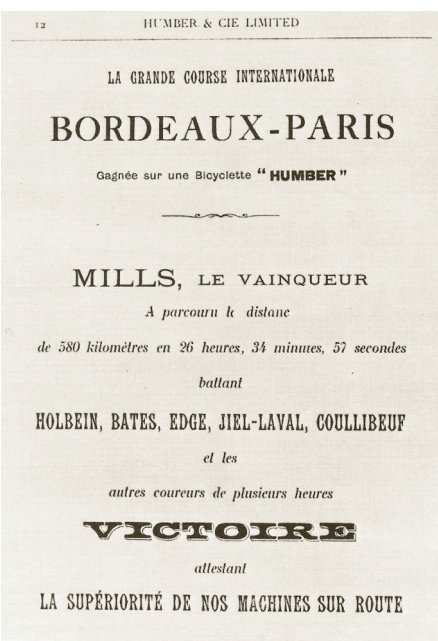
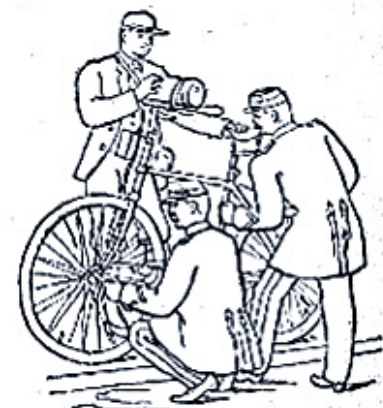


Figure 3. Advertisement for Humber and winner Mills in the first Bordeaux Paris 1891.

**LES SPORTS**  
**VELOCIPÉDIE**  
**La course de Paris-Brest**  
Les opérations de plombage des machines ont été menées hier dans la cour du Petit Journal pour les velocipédistes habitant Paris et la banlieue.  
Elles se sont succédé avec la plus grande rapidité. Pour donner à tout le monde les plus parfaites garanties de sûreté et d'habileté, nous les avons confiés à deux domaniers non employés pendant quelques jours par leur administration. L'expérience de ces agents de l'Etat est bien connue et les coureurs parisiens l'ont appréciée à sa valeur.



Le plombage des machines

Figure 4. Machine check before the start of Paris-Brest. Drawing from *Le Petit Journal*, September 5, 1891.

of race results to sell bicycles; the impact of cycle manufacturers on race results that was directly tied to their race budget; and the use of a sporting event to increase an organizing newspaper's circulation, even the circulation of a non-sporting newspaper. In all these ways, this race set the stage for Paris-Brest *et retour*.

By 1891, at least in the cities, newspapers benefited from widespread literacy. Since the sponsoring newspaper had a monopoly on information on the race, readers were drawn to that newspaper. The interest in cycling changed from aristocratic ladies and gentlemen at the time of James Moore's racing in 1869 to 20 years later, in 1889, when working people followed cycling. With the success of Bordeaux-Paris, newspapers' interest in sporting events changed significantly. Sport came to be a factor in building the press, and the four big Paris daily newspapers came to organize events in cycling and later in automobile racing and air races. *Le Petit Journal* saw the success of *Vélocé-Sport* and their Bordeaux-Paris race and sought to one-up it with something much, much bigger. This then was how Paris-Brest *et retour* came to be.

### *Le Petit Journal*

*Le Petit Journal* was a Paris daily newspaper covering a wide range of political, current event, and topical subjects, but it was not a cycling journal. It was primitive by standards of just a few years later, and used drawings, instead of photographs for its illustrations. It was a working person's newspaper (*les petits*, the little people, is perhaps implied). Pierre Giffard, editor in chief, had 'discovered' cycling (riding his new Clément with Dunlop tires) and began writing about it in *Le Petit Journal*. This became the first European newspaper to exceed 1 million in circulation.<sup>12</sup> Giffard announced the audacious Paris-Brest *et retour* in the June 11, 1891, edition, just weeks after the Bordeaux-Paris race.<sup>13</sup> [Figure 4]

Newspapers (or at least Giffard) came to see sport as a way to show national pride, a remedy for military weakness, felt after the defeat in the Franco-Prussian war of 1870, and even lack of physical strength among the population. He argued that the race might someday save *la patrie*, as a French winner meeting the challenge of such a race would demonstrate that a Frenchman was also up to the task of national defense.<sup>14,15,16</sup> As a consequence

of the Franco-Prussian War, French cycle manufacturing had converted to the war effort and the impetus in cycling had moved to England.<sup>17</sup> This is evidenced by the superior resources that Humber was able to deploy in Bordeaux-Paris.

Giffard certainly wasn't going to make the same mistake as the editors of *Vélocé-Sport*, who had given victory to the British riders in Bordeaux-Paris. Victory in Paris-Brest *et retour* would require skills far beyond those used to win Bordeaux-Paris, so by Giffard's logic this implied that only Frenchmen should be allowed to enter.<sup>18</sup> They would have to ride the entire distance using the same bicycle, to truly demonstrate the value of the bicycle as a practical means of transport. The race start was intentionally designed to be like a military formation and much of the pre-race coverage in *Le Petit Journal* dealt with all the rules about this parade through Paris.<sup>19</sup> It is also noted that Paris-Brest was always called the "National Race" in *Le Petit Journal*, a nod to French pride.

### Terront and Jiel-Laval

While there were four pre-race favorites to win the race, it soon shaped up to be a race between two men, two machines, and two different tire designs. Charles Terront and Joseph Laval (known as Jiel-Laval) became the story of the race as they competed head to head against each other, relying on spies, tricks, nails, and teams of



Figure 6. Photo of Jiel-Laval, his *entraîneurs*, and Clément with his race machine, from *Histoire de la Locomotion Terrestre. La Locomotion Naturelle, L'attelage, La voiture, Le Cyclisme, La Locomotion Mécanique, l'Automobile, 1936*.<sup>24</sup>



Figure 5. Photo of Charles Terront from *Aux Origines de L'histoire du Cycle. Used by permission from Claude Reynaud*.<sup>22</sup>

*entraîneurs*. People were captivated by the race and marveled at how the riders could possibly cover such a vast distance using only a bicycle and also their ability to stay awake for several days and keep riding.

Terront was a long-time professional cyclist, very experienced in riding 6-day races on tracks in France, England, and the United States. As example, in a 6-day 'world championship' G. Waller covered 1,401 miles, and Terront 1,390 miles.<sup>20</sup> In another race, at Agricultural Hall, Islington, England, Terront won with 1,272 miles.<sup>21</sup> [Figure 5]

Jiel-Laval was quite unlike Terront. He raced as an amateur and budgeted his training time with the time he spent as a businessman. He was the only French rider who was able to stay with the UK riders in Bordeaux-Paris, and this gave him the confidence to ride Paris-Brest. As noted, he was also one of the organizers of the Bordeaux-Paris race. He developed a methodical training plan that was remarkably advanced for the day and also a timetable for reaching the controls in Paris-Brest. His coach was Dr. Philippe Tissié, who wrote a number of training books on cycling in the years after the race.<sup>23</sup> [Figure 6]

Jiel-Laval was also a leader, as president of the Vélocé Club Bordelais in 1885. VCB was the first club in France with a 300m track. As an entrepreneur, he began selling cycling clothes, later owned a bike shop in Bordeaux and then a bike shop in Paris, located next door to *Le Petit Journal*! At one point in his career, he set the 50 km world record on a tandem Rudge tricycle weighing 40 kg in 2hr 4m 10s!<sup>25</sup> Jiel-La-

val is perhaps the most accomplished, least appreciated rider of his day, and his life's story is worthy of a closer examination. He is often remembered simply as the one who finished second in Paris-Brest *et retour*. His account of the race can be found in his 1892 book.<sup>26</sup>

### Humber and Clément

The person most aware of the importance to the cycling trade of a race like Paris-Brest was the well-connected H.O. Duncan. His reflection on Paris-Brest, from his book *The World on Wheels*,<sup>27</sup> is perhaps the most insightful available. He writes, "From a cycling trade point of view, perhaps the most important safety-bicycle race ever organized was the first great road race from Paris to Brest and back, a distance of 1,200 km. It was promoted by my old friend Pierre Giffard,



Figure 7. Clément and Dunlop poster by PAL, from *La Petite Reine Le vélo en affiches a la fin du XIXeme*, by Musée de L'Affiche, 1979.<sup>34</sup>

the leading editor of *Le Petit Journal*, one of the largest circulating daily newspapers in France. This wonderful contest was announced on the front page in leading articles and aroused considerable interest not only in France, but throughout the world. It practically meant a fortune for the cycle firm whose bicycle was 'the winner'." Duncan was the one person best able to appreciate the value of Paris-Brest as a vehicle for profits for the cycle trade. He was involved in all the key elements necessary for success in the cycle business: a former

high-wheel racer, author of a book on training for cycling,<sup>28</sup> manager of a team of racers, manager of the Humber bicycle business in France, and close friend and business associate with the most well-known journalist of the time.<sup>29</sup>

Terront rode on a custom English-made Humber and Jiel-Laval rode on a French Clément in Paris-Brest. The stories of these two great companies and the men who started them are most interesting and represent the powerful forces at work by the cycle trade in winning market share and selling to the public based on race results. Humber saw the impact of Bordeaux-Paris on sales and wanted to repeat that result with Paris-Brest. Clément also saw the race as a means to increase sales.

As to the actual bicycles, or bicyclettes as safety bicycles were called in France at the time, Terront's Humber was stolen not long after the race from one of the many banquets where he was honored. Apparently, he took his machine to the banquets so people could see it first-hand. Jiel-Laval's machine still exists and was last shown in public in 1906. It now resides at the Conservatoire National des Arts et Métiers (National Conservatory of Arts and Crafts) in Saint-Denis, France.<sup>30</sup>

The cycle trade's involvement is described by H.O. Duncan thus: "de Civry, my old racing and trade rival, had entered Jiel-Laval to ride a Clément bicycle fitted with Dunlop pneumatic tires stuck around the rim with canvas. This firm went to enormous trouble and expense to do everything in the interest of their tire. The fact was that during the previous year, 1891, the custom-house duty on cycles to France had been considerably increased and all the English manufacturers had flooded the French market with cycles of all grades and descriptions."<sup>31</sup>

Adolphe Clément had moved to Paris where he opened a cycle workshop. From this beginning he became the great cycle manufacturer of Paris. Clément's business sense enabled him to see the potential of Dunlop's invention - the pneumatic tire, and he acquired exclusive sales rights for France.<sup>30</sup> In 1894 he founded the Société des Velocipèdes Clément, which he merged the following year with two other great cycle brands of the period: Humber and Gladiator.<sup>32</sup> Clément began to prosper at a time when the Peugeots were already well-established in France.<sup>33</sup> [Figure 7]

In Paris-Brest there was a range of machines represented from the differ-

ent cycle companies: Clément had 30 machines, Peugeot 18, Humber 15, Rover 10, Rochet 8, Rouxel & Dubois 8, Michaux 1.<sup>35</sup> Within this group of machines there were some with the new pneumatic tires, but many were safeties with solid rubber, or cushion rubber, tires; and the Michaux velocipede, if it were a later model, probably at best had solid rubber as tires. This wide range of machines and generational development of tires on the machines clearly illustrates the tremendous rate of evolution of tire technology right at the time of the race. This range of tire types is also the result of factors such as patent and customs protection, the range of support of the riders by sponsoring manufacturers, and the desire by some to resist the latest fad. Racers had clearly demonstrated in the two years before the race that the pneumatic tire gave racers a clear advantage over the solid-rubber tire as races were won and times in races improved. However, much of this knowledge about pneumatic tires was widespread in England but not so in France.

One account<sup>36</sup> of the tires seen on machines in Paris-Brest illustrates this: "Some of them were equipped with tires (tire with air chamber inflated), others, more numerous, were furnished with hollow rubber, whose vogue, very ephemeral of the rest, was in full swing. The tires entertained the onlookers: it was agreed that they gave the bicycles an unsightly appearance. Consider that a few months before, the ideal for any cyclist who respected himself was to ride a machine with solid rubber tires with the smallest diameter possible; if the size of the tire was like a thread, it was the supreme chic."

### Advent of the Pneumatic Tire

Although there have been many histories written of the invention and early development of the pneumatic tire, it is perhaps useful to provide here a short history that led up to the rendezvous of two competing tire designs in Paris-Brest. The years 1890-1891 saw rapid changes in tire designs as the pneumatic tire became one of the great change-agents in the history of the bicycle.

The story of the pneumatic tire begins in 1845, when Robert William Thomson invents the pneumatic tire and receives patent number 10,990. The complete patent and his description of the invention and its uses can be found in *Modern Cycles: A Practical Handbook*.<sup>37</sup> He titles his

invention “An Improvement in Carriage Wheels, Which is Also Applicable to Other Rolling Bodies.” He writes, “The nature of my said Invention consists in the application of elastic bearings round the tires of the wheels of carriages, for the purpose of lessening the power required to draw the carriages, rendering their motion easier, and diminishing the noise they make when in motion. I prefer employing for the purpose a hollow belt composed of some air and water tight material, such as caoutchouc or gutta percha, and inflating it with air, whereby the wheels will in every part of their revolution present a cushion of air to the ground or rail or track on which they run.” He also mentions that his “elastic bearings” would not only be good for carriage wheels, but could also find application for rocking chairs and for use on rollers for moving heavy objects.”<sup>38</sup>

His lengthy description clearly shows that he had not only an understanding of the purpose of the pneumatic tyre, but also the material and design of its construction. He built a number of tires and mounted them on carriage wheels. They were successful, but his business did not take off. The carriage already had large diameter wheels and leather or metal springs to isolate the occupants from the vibration of the road, and there was little concern about the power required to pull the carriage, as the power came from horses. The patent and Thomson’s efforts were soon forgotten, even though he had accurately described and demonstrated the effectiveness of his invention.

### Dunlop

John Boyd Dunlop was a Scottish veterinary surgeon who one day noticed his son Johnny riding his tricycle with its narrow solid rubber tires that left deep tracks in the yard.<sup>39</sup> At first, he thought that simply having wider tires would solve the problem, but then thought that having hollow rubber tires filled with air would be even better. This was 1887 or 1888, twenty years after he had established himself as a successful veterinarian. [Figure 8]

He initially fashioned an air tube out of sheet rubber and attached it to a wooden disc and held in place with a piece of linen. The air chamber was then inflated through a piece of tubing. To test the idea, he rolled the wheel across the ground and compared its efficiency with the wheel from his son’s tricycle. His pneumatic-tired wheel was

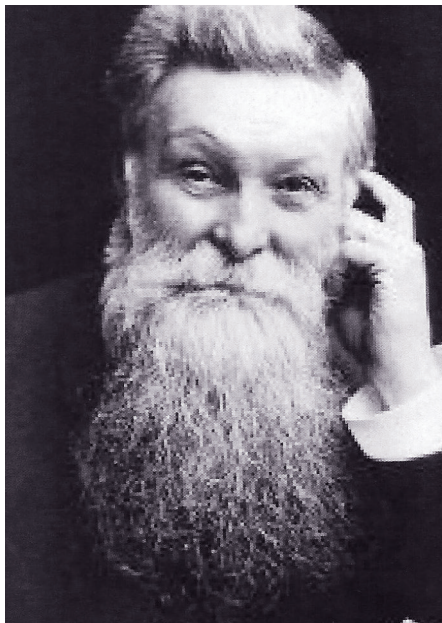


Figure 8. John Boyd Dunlop, from *Aux Origines de L'histoire du Cycle*.

superior, so he made more wheels with the new air-filled tires. Now Johnny had the smoothest, fastest machine in town.<sup>40</sup>

Dunlop’s patent was for “an improvement in tyres of wheels for bicycles, tricycles, or other road cars.”<sup>41</sup> He described it as, “A hollow tyre or tube made of indiarubber cloth, or other suitable materials, said tube or tyre to contain air under pressure or otherwise, and to be attached to the wheel or wheels in such a method as may be found most suitable.”<sup>42</sup> This was dated July 23, 1888, patent No. 10,607.

In his patent specification he writes, “My improvements are devised with a view to afford increased facilities for the passage of wheeled vehicles, chiefly of the lighter class, such for instance as velocipedes. . . to avoid the sinking of the wheels of vehicles into the ground when travelling over boggy soil or land; and likewise for the tyreing of wheeled vehicles generally, in all cases where elasticity is requisite and immunity from vibration is desired to be secured, and at the same time ensuring increased speed in travelling owing to the resilient properties of wheel tyres according to my invention. In carrying out my invention, I employ a hollow-tube tyre of indiarubber surrounded with cloth, canvas, or other suitable material adapted to withstand the pressure of the air introduced. . . said hollow-tube tyre is secured to the wheel felloes—say by a suitable cement or by other sufficient means, and is inflated with air or gas under pressure.”<sup>43</sup>

After his invention became known, he responded to an article that appeared

in *Cycling*, called “The Romance of the Pneumatic Tyre.” In the article it was stated that he invented the pneumatic tyre in order to overcome vibration and not to make for a faster wheel. He responded, “I cannot understand how any sane man could imagine that another sane and busy man would dream of constructing an air tyre merely to overcome vibration, knowing that the air tyre would be clumsy, ugly, a mud slinger, difficult to construct to contain air, and liable to puncture. Every person who knows anything of the history of the cycle trade is aware that there were several effective devices on the market for insulating the rider before the advent of the pneumatic tyre.”<sup>44</sup>

Thomson had clearly invented the pneumatic tyre in 1845 and Dunlop re-invented it in 1887-8, without any knowledge of Thomson’s work. Thomson had the original idea and a clear vision of its advantages, but not the proper application (carriage wheels and rocking chairs, according to his writings) and his work fell into obscurity. Dunlop had the same idea, but this time he had timely circumstances including the new safety bicycle. The right application at the right time made all the difference.

Soon, bicycles were being made by R. W. Edlin and Finlay Sinclair, cycle agents in Belfast, Ireland, using the new tires.<sup>45</sup> They called it the Pneumatic Cycle. In late 1888, Dunlop invited some racers to try out a pneumatic tired safety on the track. The testing was not a complete success, but the success of pneumatic tires was assured in May 1889 when the racer W. Hume using a pneumatic tired machine won four races on the track against notably Alfred, Willie, and Harvey du Cros, Jr. (known as the Invincibles). This was the first use of pneumatic tires in a race.<sup>46</sup> As is typically the case with new inventions, Hume was derided by some for his large-tired machine.

### The Dunlop Pneumatic Tyre Company

The next important step in tyre development was the involvement of Harvey du Cros, Sr.<sup>47</sup> He was the chairman of the Irish Cyclists’ Association and had made his fortune in the cycle trade, and he trained and coached his cycling sons. Their defeat by the new pneumatic-tired machine aroused an interest in him that combined his sense of competition and knowledge of the cycle trade. He and his sons were convinced that they had seen

the future of the bicycle the day Hume had ridden his pneumatic tires to victory. Du Cros decided the best way to get into the game was to obtain control over the invention by purchasing an option on the patent rights. Du Cros was another part of the success of the pneumatic tire that Thomson didn't have: someone with an established business sense using the best application of the invention. [Figure 9]

Dunlop was a veterinarian and not a businessman in the cycle trade. It was when Harvey du Cros, Sr., took control of the invention that it could become successful. There was much to be done to make the tire at least somewhat practical for the bicycle and overcome the natural resistance of people to something new. Moving quickly, Du Cros purchased the rights for £500 in cash and £3,000 in shares in a new company he was creating, the Dunlop Pneumatic Tyre Co.<sup>48</sup> In this case, while Dunlop received a small sum for the patent, his shares in the company would become worth a fortune. While it might appear that Dunlop all but gave away his invention, he was not in a position to create a company to capitalize on his invention and du Cros was. Du Cros' sons were also instrumental, as they demonstrated the tires in races on the track.

Dunlop's design was incredibly difficult to repair when it had a flat. The canvas outer covering was cemented to the rim and had to be removed before the inner tube could be repaired. This was a several hour process due to the drying time when done

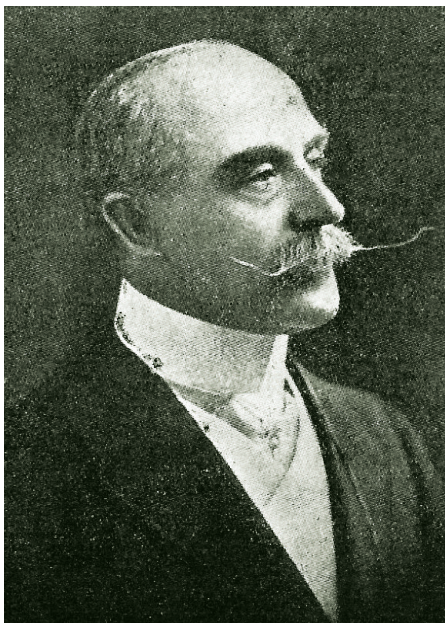


Figure 9. Harvey du Cros, Sr. from *The World on Wheels*.

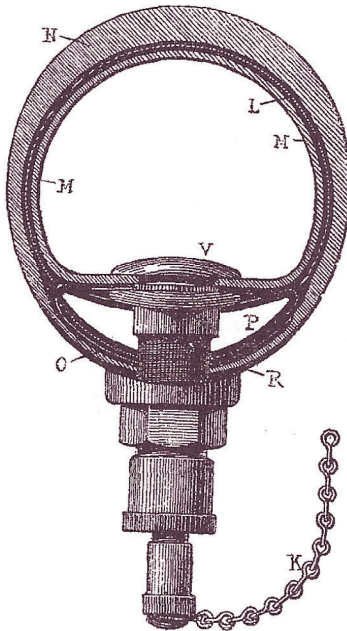


Figure 10. Cross-section of Dunlop tire from *Le Cyclisme Theorique et Pratique*, page 314.

by an experienced person. Many riders were quite disheartened by the difficulty of making repairs to their Dunlop tires.

The du Cros managed company began making the pneumatic tires in a remarkably short amount of time after obtaining control of the patent. By August 1890, it had become clear from racing results that pneumatic tires were faster than any other tire available at that time, and this was quickly noticed by the cycle trade. At the Stanley Cycle Club show in January 1890, there were a number of vendors with bicycles fitted with the Dunlop tires.<sup>49</sup> The London manager of Humber bicycles was greatly interested in the new tire. Soon, bicycles by Humber were being shipped to France, and H.O. Duncan was one of the first to try one. With these newly arrived tires, it was not clear as to the pressure that the tires should be pumped, and there was a real fear of over-inflation and having them explode.<sup>50</sup>

Based on the success of the Dunlop Pneumatic Tire Co., imitators, including Rudge, soon appeared making cushion tires, which were not pneumatic tires at all. Dunlop was quickly developing a monopoly with their patent and aggressive expansion of manufacturing.

Du Cros opened a factory in Coventry in September, 1890, only one year before the Paris-Brest race, to address the large English market and cycle trade. They were soon able to turn out 1000 tires per week.<sup>51</sup> By April of 1891, the business

was growing rapidly. Output was factory capacity limited. By the end of 1891, the Dunlop Pneumatic Tyre Co. was producing 3,000 tires per week.<sup>52</sup>

In September 1890, it seemed that the future of the pneumatic tyre industry would be turned upside down when a Midlands, England, newspaper *Sport and Play* published an article "A Startling Discovery" after it learned that the Dunlop company had recently been made aware of the Thomson patent.<sup>53</sup> Some carriage wheels were then found in a coach works, providing physical evidence of Thomson's work. This becomes the classic case of the discovery of prior art voiding a patent and why today an accounting of prior art is disclosed in a patent application. At the time of the founding of the Dunlop Pneumatic Tyre Co., a patent search was made by the patent agency Haseltine, Lake & Co., but they did not find Thompson's earlier 1845 patent.<sup>54</sup>

At this point, it would seem that the Dunlop Pneumatic Tyre Co. was out of luck, because their all-important patent was now voided. However, by this time they had such a substantial lead in manufacturing their tires and had established relationships with the cycle manufacturers, that they could continue to dominate the market for the foreseeable future. As proof, at the Stanley Show in January 1891, new tires other than Dunlops were in the minority.<sup>55</sup> The Dunlop tire was seen in most exhibits at the show: 65% of the machines were equipped with Dunlop tires, 30% still had hollow rubber (cushion) tires and 5% had solid rubber tires. The following year 1892, out of 1,346 machines exhibited, the pneumatic tire was on 80% of the wheels.<sup>56</sup>

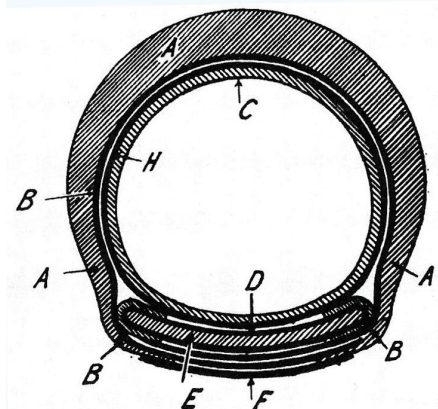


Figure 11. Drawing of Dunlop tire from *American Bicyclist and Motorcyclist*, December 1899, p. 153.

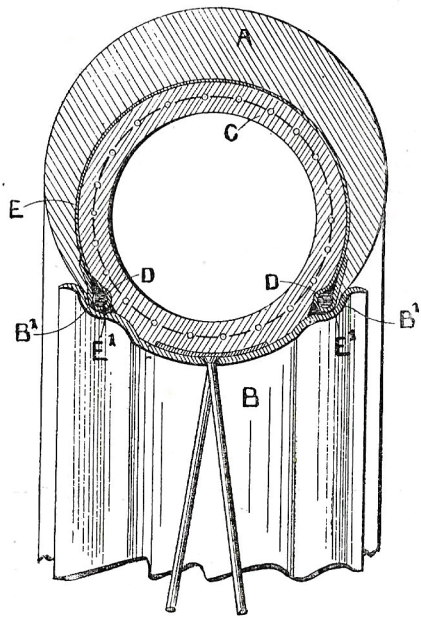


Figure 12. Cross-section of Welch wired-on tire design from *Modern Cycles*, page 122.

This was a critical time in the cycle trade, as there were an ever-increasing number of different designs for pneumatic tires showing up at the patent office in the UK. However, having a patent and making product to sell are two different things.

A cross section of the original Dunlop pneumatic tire design is shown in **Figure 10**, and it is described in *Le Cyclisme Theorique et Pratique* by Baudry de Saunier as follows: <sup>57</sup> M is the air chamber, N is the outer cover which is vulcanized to the canvas cover O. This canvas layer surrounds the rim, and it glued to it. P is the hollow rim. R is the fabric covering the edges of the outer cover. This is the design (or close to it) of the tires used on the bicycle ridden by Jiel-Laval in the first Paris-Brest of 1891.

It is possible that Jiel-Laval used the slightly different Dunlop tire design shown in **Figure 11**. In this case the parts are arranged as follows: The rim E is wrapped in canvas D, which forms a surface for cementing unto. The inner tube C, sheathed in a canvas tube H is cemented to the rim. Then the outer tire A with the rubber tread and canvas sidewalls made of canvas B is applied with cement to the rim and lapped over each other. Then, to complete the sealing, a separate canvas strip F is cemented over the canvas flaps.

There is nothing practical about this tire design, nor can the air chamber be reached without un-gluing the outer canvas layer glued to the rim. From this description, it can be seen why Jiel-Laval's sponsor

wanted the race organizer to allow the use of replacement wheels, as repairing the tire itself in a timely manner was not possible. Also, importantly, the Dunlop tire, with all of its cemented-down canvas flaps and impracticality could easily be imagined to be the inspiration for Michelin and others to create a much simpler, demountable tire not relying on cement to hold the tire on the rim.

The main problem of the original Dunlop tyres was solved in C. K. Welch's invention of the detachable pneumatic on September 16, 1890, patent No. 14,563.<sup>58</sup> This patent issued almost exactly one year before the running of the Paris-Brest race. The Dunlop company bought the patent and the inventive Welch became an official of the company. The Welch design is essentially the wired-on tire that we know today. **[Figure 12]**

In the Welch design, the tire A, around the air chamber C is held on the rim E1 by wires that fit into shoulders B1. The wires are held to the rubber tire with canvas layer E. This is a significant improvement over the original Dunlop design. By 1894, most Dunlop tires sold used the Welch design. It is worth noting that the Welch patent was in 1890, well before the 1891 race, yet this very superior design did not factor into the race at all, as the original Dunlop tire design was used on the tires in the race. Had the Welch design been in use at the time, it would have had a profound effect on the race, and the history of the race might have been quite different.

**[Figure 13]**

A similar tire, the 'Clincher', was patented by W. E. Bartlett on October 21, 1890, Patent No. 16783.<sup>59</sup> He was an American living in Scotland, and sold the rights to his patent to the Dunlop company in 1896 for £200,000.<sup>60</sup> Bartlett's patent protected the use of a beaded-edge tire which engaged the edges of the rim. This was a simple edge-lock, held against the rim by pressure. These two tire designs, the Welch and the 'Clincher', were both patented in 1890 and were close to modern tire designs, yet they played no role in the 1891 Paris-Brest race. To this day, many call the modern wired-on tire a clincher, when they are quite different. The origin of the term clincher came from the name of the 'Clincher' tire sold under that commercial name.

It was the Bartlett tire that Charles Terront had on his machine in the months leading up to Paris-Brest in September

1891. He expressed his unhappiness with these tires, as he found that they were prone to coming off the rim on a regular basis.<sup>61</sup> This became a very important factor in what he did to solve the problem and its impact on the future of the pneumatic tire and in particular the fortunes of the Michelin company.

As has been seen, the months leading up to the Paris-Brest race were filled with the rapid advancement and acceptance of the pneumatic tire from invention, to the large-scale production of tires by the Dunlop Pneumatic Tire Co., the voiding of the Dunlop patent, and a surge in patented designs to compete with the Dunlop design. Not surprisingly, the Dunlop pneumatic tire design, with its cemented on outer cover, was to very quickly become outdated by much better designs.

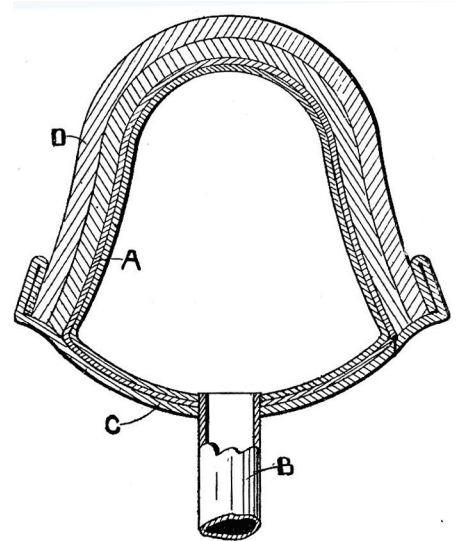


Figure 13. Cross-section of Bartlett 'Clincher' tire design from *Modern Cycles*, page 126.

### Patents and Rights in France

Dunlop pneumatic tires added great value to the bicycle, not only in terms of rideability, but also in the increase in profit to the cycle manufacturer. Pneumatic tires could add 20-25% to the cost of a new bicycle over the cost of a solid-rubber tyred machine. In France, this became quite apparent to Adolphe Clément, and he sought to control the market for Dunlop in France the same as du Cros saw the value of the Dunlop invention and sought to control the rights to it. The Dunlop Pneumatic Tyre Company was not prepared to open a factory to manufacture on the Continent, so they decided to have Mr. Clément do it for them.<sup>62</sup> In the summer of 1891, Clé-



Figure 14. Michelin tire in the Paris-Brest-Paris display at the L'Aventure Michelin museum in Clermont-Ferrand, France. Photo by author.

ment sent out a notice to the cycle trade announcing that he held all the rights for the Dunlop pneumatic tire for France.

The action of the Dunlop company and Clément was not entirely motivated by business interests. The patent laws in France at the time dictated that they take this course of action. There was what would today appear to be an untenable patent law in France that mandated that if the manufacture of a patented article is in France, the same article cannot be imported as well. Also, the French patent law required that an article patented must be manufactured in France within two years from the date of the patent or the patent becomes invalid. The Dunlop factories in the UK and Ireland could conceivably manufacture enough tires for export, but these tires could no longer be imported into France. Clément gave orders to stop all pneumatic-tired wheels at the French customs house and English makers were advised to send machines to their French dealers without tires.<sup>63</sup> For a while English machines were arriving at French customs and agents were stripping the tires off the wheels!<sup>64</sup>

### Michelin

All that had happened in the story of the pneumatic tire up to this point helped set the stage for the tires that were used on the machines in Paris-Brest. Now Clément seemed to have a decisive advantage in France with the Dunlop tires. It would take an existing company with resources to find a way to develop a pneumatic tire that could compete against the Dunlop tire. One such company was Michelin.

In Clermont-Ferrand in France, Michelin had long been in the business of

making agricultural equipment.<sup>65</sup> It was suffering financially and under threat of bankruptcy. The owner's grandsons, Edouard and André Michelin knew little about the business that they had inherited. They were working in Paris at the time as a painter and an engineer at an iron works. Seeing that the Clément factory was going to fail, they decided to take an active role in saving it. Edouard returned to take charge in 1883. Andre, while continuing to make iron, supported the new work and later also came to work full-time.<sup>66</sup> [Figure 14]

One of the new products they made in early 1891 was solid tires for bicycles. The story is told of Edouard seeing a cart drawn by oxen approaching the doors of the factory one day. In the cart was an unfortunate cyclist quite helpless owing to a puncture.<sup>67</sup> He asked that his tire be repaired. The wheels of the bicycle were not fitted with the usual solid tires, but with sections of hollow rubber filled with air. They were stuck on the wheels and, when punctured, required four hours of time and very clever workmanship to

repair. This description would certainly fit the trouble of repairing a Dunlop tire of the time, although the Dunlop tire did not have sections. The tire was repaired and Michelin rode the bicycle but a short distance before the tire punctured again. This did not discourage Michelin, but rather convinced him that the right tire would be a success in the market, something easy to imagine after spending hours of hard work repairing a flat on a Dunlop-like tire.

Once again, as with du Cros and Clément, Michelin perceived that there was a great business potential for the tire. After seeing the great difficulty and time required to repair the cyclist's tire, he believed that for a pneumatic tire to be successful it must be detachable in order to allow for immediate repair. This was not a new idea, as the previously patented Welch and Bartlett designs were detachable.

In the months before Paris-Brest the Michelin factory developed their own pneumatic tire design, unaware of the upcoming race or the role that they would play in it. [Figure 15]

Baudry de Saunier describes the Michelin tire in *Le Cyclisme Theorique et Pratique*.<sup>68</sup> The tyre sits on a rim A with a flat center that supports the air chamber C. It has an outer cover B which is thicker at K. Its edges are formed of circular beads b which rest in the matching gutters of the rim and these beads themselves are maintained at their position by two metal rings D of the same diameter as the rim, which weighs on them. These rings are finished by two hooks D which enter with ease in two notches at the rim and which are also maintained by a nut F.

The Michelin design is perhaps the most complicated of its day. It is not only challenging to manufacture, due to its complexity and number of parts, but also challenging for the rider to perform a flat

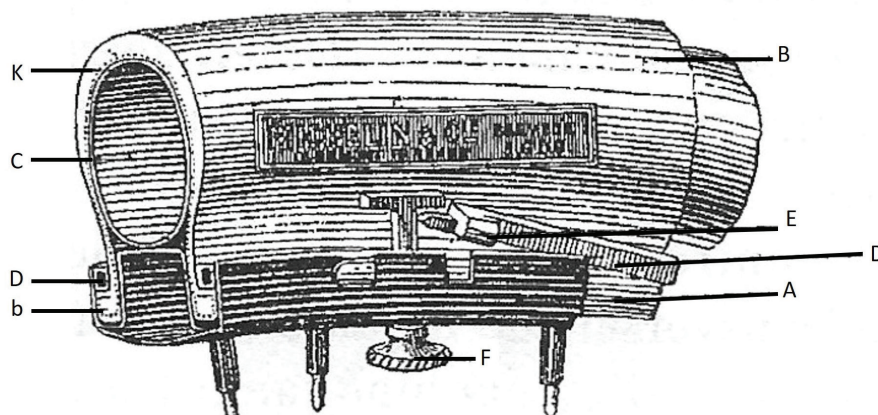


Figure 15. Michelin demountable tire from *Le Cyclisme Theorique et Pratique*, page 138.

tire repair. Not only does the rider need to carry the special tool to loosen the metal hooks, but also some spare parts to replace ones lost on the ground or broken during the repair. If any of the metal parts is covered in dirt or mud, then the difficulty is even greater.

So, the Dunlop tires that Jiel-Laval used were all but non-repairable due to their design, requiring that spare wheels be distributed along the race course so that he could replace a wheel in the case of a flat tire. The Michelin design is demountable, as Michelin had envisioned, but the design is so overly complex that it becomes all but impractical during the race, requiring over 40 minutes of hard effort by the Michelin foreman to repair a flat. To say that the 1891 Pairs-Brest *et retour* race was a demonstration of the latest pneumatic tire designs is not correct, as there were already far superior designs patented, most notably the Welch wired-on tire of the previous year. The tires used in this race were almost entirely a result of commitments to designs that were already obsolete.

### Negotiations before Paris-Brest

The Paris-Brest *et retour* race was first announced in *Le Petit Journal* on July 11, 1891. Charles Terront saw the announcement and immediately sent in his registration, receiving position No. 5 in the starting lineup. His manager, H.O. Duncan, saw this race as a great opportunity for Terront, one rider in his stable of riders to win. He writes,<sup>69</sup> “At the time I was acting as French manager for Humber & Co. Ltd., we had a splendid depot in the Rue du Quatre-Septembre. When I learned all the details of the race, I carefully considered who could ride a “Humber” bicycle over such an enormous distance with any chance of success. My choice fell upon the old French long-distance champion Charles Terront. I wired him to call on me at my office to talk matters over.”

“Well, Charlie, Paris-Brest, that’s your race over a distance of 1,200 kilometers!” I said to him upon his arrival. “Yes,” he replied, “I have hardly slept since the announcement. I really think it is my race.”

“We had several meetings to fix up the details. One thing worried us above everything else—the question of pneumatic tires. The Dunlop, at that time, was stuck all in one piece around the rim. It took hours to repair them and a good night for the solution to dry! Furthermore, our keen trade competitor Clément held all the patent

rights for the Dunlop tire for France.

“It was useless to think of starting upon cushion tires—made with hollow rubber and cemented to the rim. We also learned that Clément was starting the race with Jiel-Laval, another champion cyclist, and had received a stock of new Dunlop tires from England with which they had made up a large supply of spare wheels.”

“In view of the difficulty of repairing pneumatic tires on the road, the right to change wheels had been authorized by *Le Petit Journal*. But I considered it would be a long job even to change a rear wheel. It almost necessitated the competitor carrying on his back a spare pair of wheels which, naturally, was out of the question. We discovered, however, that our opponent intended having sets of wheels placed at numerous points on the route.”

Right at this time, Michelin had their prototype tires ready, and they were looking for a way to demonstrate it when they learned about Paris-Brest *et retour*. The Michelins saw the race as providential.<sup>70</sup> H.O. Duncan continues with his version of events,<sup>71</sup> “A few days later, I was invited by André Michelin to call at his Paris office “to inspect an important invention which might interest Terront for the Paris-Brest race! When I met Michelin, he began to explain in a most mysterious manner that he had “a pneumatic tyre that could be detached from the rim in a few minutes and the tube changed without any repairing necessary!”

“If that is the case, I hastened to state, we have already won the race.”

“After having the good luck to inspect the famous pneumatic and see it detached in about five minutes by an expert from Michelin’s Works, it was quickly agreed that Terront should use the tire in the Paris-Brest event. Michelin was naturally anxious to compete against Dunlop and, so as not to spoil the surprise, the detachable tire was kept a secret until the day of the race.”

“It was arranged that Michelin should place a number of competent men in certain towns along the route. They were to take the train wherever possible to follow Terront in case of puncture. Terront carried spare tubes and a key to remove the nuts.”

There is a different version of the Michelin’s first encounter with a pneumatic tire and his arrangements with H.O. Duncan and Terront. This comes from the book *Paris-Brest et retour*, by Déon, whose view of Michelin was quite differ-

ent than Duncan’s. Déon<sup>72</sup> writes, “One afternoon in 1889, a bicycle dealer visited the Michelin factory to ask whether they could repair one of his pneumatic tires. These new-fangled tires were glued to the rim. They tended to blow out frequently, each time requiring half a day of work to repair them. The Michelin mechanics obliged, and once the bicycle was back in working condition, Edouard Michelin tried it in the courtyard of the factory. The tire lasted only 100 meters, but it gave Michelin an idea. “The future belongs to air-filled tires,” he told his assembled engineers. “I want a tire that can be removed and put back in less than fifteen minutes.”

“For many months, the engineers occupied themselves with research and testing. Two years later, Edouard Michelin took out his first patent on a removable pneumatic tire. The inner tube was completely independent of the tire, but his tires were too heavy and complicated. It would not be offered for sale. Edouard Michelin continued development of the new tires. Three months later he came up with a new design that took only a few minutes to change. From now on, a flat tire no longer is a catastrophe, but just a minor incident.”

“Around the time *Le Petit Journal* announced its great bicycle race from Paris to Brest and back to Paris, and confident in the superiority of his new removable pneumatic tire, Edouard Michelin realized that winning this race would be a perfect introduction of this invention. However, the tire was not yet in production, and there wasn’t much time until the race. Quickly, a few tires were made by hand, and a bicycle was equipped as a demonstrator.”

“Who would use the tires in the race? Edouard Michelin and his brother André visited Jiel-Laval, one of the favorites in Bordeaux. Alas, the racer already had a contract with another tire manufacturer, Dunlop. The Michelins had come too late. They were running out of time; the start of the race was approaching.”

“The Michelins turned to another favorite, Charles Terront. His manager, Duncan, was not impressed by their proposal: “You are crazy. You can’t change random things on the bike just four days before the race.”

Undeterred, the Michelins turned to Terront himself. They invited him for lunch. During the meal, they asked him about the equipment he was going to use during Paris-Brest. The racer was not satisfied with his “Bartlett” tires that he

had to use in the race. Terront explained: "They come off the rim without warning." After the meal, Terront accepted the invitation to try out the demonstration bike that the Michelins brought along. One hour passed, then two, three... the Michelins began to worry. What could have happened to the bike, this tire, or to Terront himself?"

"Finally, he reappeared, beaming with satisfaction. He wanted to try the new tires for a longer period of time. He found them as comfortable as he could wish, and most of all, they seemed to hold the road well. The Michelins placed a contract in front of him, ready to go... and Terront signed it."

When Terront's manager Duncan found out, he berated his protégé, but Terront was so convinced by his new tires that he didn't reconsider. When his pacers saw the bikes with the new and complicated rims, they burst out with laughter. One of them expressed the opinion of the group: "If you think you'll find people to buy that, you are in for a surprise."

"Edouard Michelin had similar doubts, but for now, he had to focus on winning the race to launch the new *pneu* demontable Michelin. Later, he could figure out how to improve the tires further before producing them in large quantities and introducing them to a wider audience."

### Paris-Brest et retour, the race

In the August 2nd edition of *Le Petit Journal*,<sup>73</sup> rules were published: "The course will have to be done on the same machine whose trademark will be indicated in the individual notebook of the velocipedist. All partial repairs required by road accidents are allowed, but it is formally forbidden to change wheels. Moreover, to ensure the sincerity of the race to the limits of the possible, the body of the machine as well as the wheel hubs will be sealed by the Race Committee within 48 hours of the start of the race. This operation will be done 4 and 5 September in the courtyard of *Le Petit Journal* and following an order that will be determined later. The only machines that will be allowed to race will be those that have the lead seals intact on arrival." It seems that this rule "forbidden to change wheels" came to be changed, probably at the request of Adolphe Clément, who saw the impossibility of using Dunlop tires, given that a repair took hours to complete.

The race began on September 6, 1891, in front of the offices of *Le Petit Journal*

at 62 rue Lafayette in Paris and traveled across Paris, through the Bois de Boulogne, over the Suresnes bridge, and on towards Versailles.

"This parade through the Grands Boulevards, the Place de la Concorde, the Champs-Élysées, and the Arc de Triomphe was a success. The crowd of pedestrians followed the racers, constantly cheering them on. Music played at every corner, the excitement was growing because, despite the early hour, the crowd continued to



Figure 16. Advertisement for *Les Memoires de Terront*, 1893 from *Géants de la Route*.

grow on the sidewalks and balconies of buildings bordering the route" wrote Pierre Giffard.<sup>74</sup>

H.O. Duncan provided a description of the race and Michelin's involvement with flat tires:<sup>75</sup> "Michelin's foreman at Clermont-Ferrand accompanied me by train, and I shall never forget our arrival at Laval. It had been raining. We drove from the station in a horse carriage to an auberge which we found some distance along the road outside of town. Here we waited for Terront to arrive. Fortunately, the foreman had spread out in a convenient room all his tools and other 'paraphernalia' necessary for a quick change. Terront arrived with his rear-wheel tire punctured flat."

"I've been struggling along with this for about two miles in hope of assistance!" he exclaimed.

"Arnaud, the Michelin foreman, immediately sprang upon the machine and carried it through the little crowd to the room to change the tube, followed by Terront and myself. Needless to say, every minute was precious. Terront was

excited and anxious to get his bike in trim to continue. The scene of the "quick change" got upon his nerves. Each small bolt and nut holding the rim, rusted with the slush, snapped off short inside the key! "Bang" went one after the other until I thought the detachable rim would become a permanent fixture. Terront used "choice" language while Arnaud fought with the situation. Every snap went straight to my heart and we were all in a state of desperation. Happily, Arnaud unearthed a string of spare bolts and nuts from his tool bag. Were it not for these, the race, so far as Terront was concerned, would have ended at Laval! After about an hour's hard work, Arnaud began pumping up the tire. It now swelled comfortably to its proper shape and, with a broad smile, Terront rushed out to continue his ride."

"Once again in the room, I wanted to ask Michelin's foreman if the other workmen were provided with new bolts and nuts, but poor Arnaud was stretched out on a chair near the window. He was in a terrible state of perspiration and literally breathless! I could not help laughing, but Arnaud did not see any fun in the situation."

"The next tire I make will not be so complicated, you can bet!" he told Duncan later on. An important lesson learned by Michelin, which would profoundly affect their future.

"The practical experience was an excellent one both for Arnaud and Michelin. The tire was soon improved and turned out to be the forerunner of a successful pneumatic detachable tire for motor vehicles." [Figure 16]

In *Les Memoires de Terront*, published in 1893, Terront gives his account of one of the Michelin flat tires:<sup>76</sup> "Suddenly, I notice that my machine is loosening under my weight. I have punctured! My rear wheel has deflated. Under the machine shaking with emotion and with the help of my pacemakers, I removed from the cover a long, new nail. New and shiny! What to do? We were a few kilometers from Laval, in the town of Louverné, whose lights we saw in the distance. Doing repairs *in situ* was problematic. It was better to approach the city with the machine, and there perhaps the repair could be done more quickly than in the middle of the countryside."

"I got to Laval. It was 8:36 of the night. A huge crowd was still occupying the square, but I was not up for much hospitality<sup>61</sup>. . . At the control, located in a cafe, I found Duncan in the company of

a Michelin worker; both were traveling ahead of my time in order to repair my punctures if the need arose. The foreman removed the cover and made the repair. . . The operation lasted 40 minutes!”

“I was sitting at a table with my head in my hands, looking enraged at the damn mechanics, it made me lose so much time, when suddenly a small platoon of velocipedistes arrived at the control, in whose center rode Jiel-Laval! My opponent gets off of the machine, signs in the register, reassembles and departs. And I am waiting for you to fix my machine!”

In *Les Memoires de Terront*, he makes note of the many flat tires he had during the race. He says the nails were bright and shiny, quite unlike horse shoe nails some claimed were the cause of his flats. He also noted that once he was out in front of his competitors for good, he had no more flats from nails. After having placed his faith in the Michelin tire and the promise that his tires could be readily repaired by the Michelin foreman during the race in a short time, he was quite displeased with the actual performance of his tires. He made this point very clear in his book, which seems to be a rare case of a sponsored racer criticizing his sponsor’s product. Perhaps Michelin only provided him with the few prototype tires he had and promises that didn’t come true and didn’t offer Terront any remuneration, which a professional cyclist like Terront didn’t appreciate. It is interesting, however, that soon after the

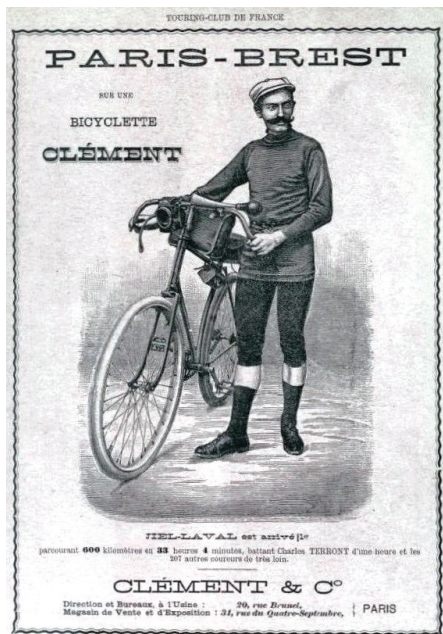


Figure 17. 1892 advertising poster for Jiel-Laval on bicycle Clément in Paris-Brest, from *Géants de la Route*.

race *Vélo Sport* reported that Terront said it was thanks to the simplicity of removal and repair of his Michelin tires that he won Paris-Brest! Quite a different story.

### The race finish and afterwards

Terront won the 1,200-kilometer race in 71 hours and 35 minutes, averaging 400 kilometers a day, over three days, without rest.<sup>77</sup> Charles Terront, arrived at the Porte Maillot in Paris to be greeted by some ten thousand admirers on winning the inaugural race. Jiel-Laval finished second in the afternoon, at 7 hours 40 minutes after Terront. The next morning it was Coullibeuf; then Corre, Gros, and Allard; in all 99 racers and ‘tourists’ completed the race within the 10-day limit.

*Le Petit Journal* did not begin reporting on the race until September 9th, three days after the start.<sup>78</sup> At this point, Terront had already finished the race! Spectators in Paris kept up to date on the race by reading a chalkboard on the sidewalk in front of the offices of *Le Petit Journal*. The idea that people followed the race by reading about it in *Le Petit Journal* as it happened, is not correct. People along the route had read about the race in the weeks beforehand and then went out to see the race either at the controls in towns or along the route.

With his success in winning Paris-Brest *et retour*, Terront became the first sports star of France. He attended many banquets in his honor. His memoirs, *Les Memoires de Terront*, was written quickly and became a ‘best seller’ in France, a first in its genre. The first edition appeared at the end of February 1893. It was put on sale at the 1,000 km race that Terront had with Corre, at the Galerie des Machines, the first Parisian winter velodrome. 3,000 copies were sold at this race alone.<sup>79</sup> More than 20,000 spectators watched Terront and Jean-Marie Corre fight this 2,500 lap duel.

The book cemented Terront as a sports star above all others and provides good information on his English forays and an account of his rather unsuccessful trip from England to race across the United States. The book was reprinted in 1980 in French and later in Spanish.<sup>80</sup>

Because of the great interest in these races, they provided the manufacturers a superior method of advertising their bicycles. In part, due to the spectacular fashion in which Terront had demonstrated the bicycle’s possibilities in Paris-Brest-Paris,

## PNEUMATIQUE MICHELIN ET C<sup>o</sup>

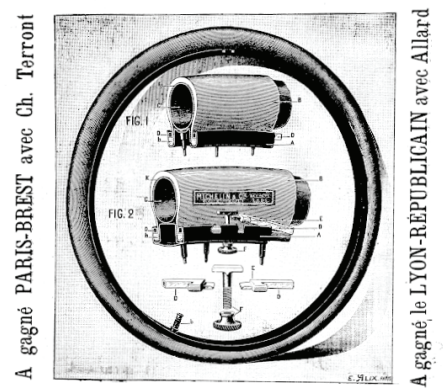


Figure 18. Michelin pneumatic tire advertising poster from *La Bicyclette*, August 6, 1892.<sup>82</sup>

sales of bicycles rose greatly in spite of the high prices they continued to command. In 1890 the number of bicycle owners in France was still below 30,000.<sup>81</sup> In 1893 this number had risen to 130,000, four years later to 375,000, and yet another four years later to a million. In order to secure the largest possible share of this expanding market, manufacturers were willing to engage the principal champions for large sums of money. In 1893 the Clincher tire company offered Terront 10,000 francs to cycle from St. Petersburg to Paris, to this amount the English bicycle builder Daniel Rudge added 2,000 francs. Earlier that year, the two companies had joined in paying Terront 5,000 francs for a track race of 1,000 kilometers.

It has long been assumed that since Terront had used the new Michelin tires in his winning effort, that Michelin’s fortunes were thus assured, but the reality is that Michelin had much work yet to do and eventually bought the patent rights to a better design than their own. Clément made good use of Jiel-Laval’s second place on Dunlop tires by creating a poster showing the racer and announcing his success. [Figure 17]

No corresponding Michelin poster praising Terront’s success on Michelin tires has been found, but Michelin advertised throughout the cycling press the success of Terront on the demountable Michelin tires. After Paris-Brest, however there was a considerable rivalry between Dunlop and Michelin in advertisements and posters, each trying to demonstrate the superiority of their tire over the other. [Figure 18]

The Dunlop tires that Jiel-Laval used, with their canvas covers glued to the rims,



Figure 19. Advertising flyer for Michelin's Paris Clermont-Ferrand Race from Géants de la Route.<sup>84</sup>

were already outdated and would soon be replaced by Dunlop tires using the Welch design. The Michelin design was so complicated and challenging to use in practice that it was soon replaced with a much simpler design. As Duncan notes, "A Monsieur Didier had invented in Paris a rim and tire exactly similar to the Clincher. This was about the same time as the Bartlett tire was invented. Didier sold his patent to Michelin, and it was I who acted as the "negotiator" between Didier and Michelin."<sup>83</sup> The Didier patent was sold for a very low sum: 20,000 franc (£800), and this style of rim and tire was a few years later adopted by Michelin.

Duncan notes, "Had Monsieur Didier asked for a small royalty of about one franc per rim, Michelin would probably have accepted the proposition, and Didier would have become a rich man. As a matter of fact, the Clincher patent was never upheld in France and the reason may be that the Didier patent was one of the obstacles."

In 1892 the race from Paris to Clermont-Ferrand was created by Michelin and was reserved for racers riding machines only with Michelin tires. Along the course volunteers from time to time threw nails in order to intentionally cause flats so everyone could see just how easy it was to repair Michelin tires! [Figure 19]

Paris-Brest-Paris had been so difficult that most of the participants announced they would certainly not enter a second race over a distance like that. None of the heroes of *Le Petit Journal's* monster race;

i.e., Terront, Jiel-Laval, and the others; appeared at the start of Paris-Nantes-Rennes-Paris, a 1,025-kilometer race organized by the *Revue des Sports*.<sup>85</sup> The editors of competing cycling journals, who were also dreaming of races that would last for days, therefore had to reconsider. Twelve years later, with a rivalry between competing cycling newspapers under way, the Tour de France was organized: Its birth can be traced directly to Paris-Brest *et retour*.

### Birth of the Classics

After Paris-Brest it was no longer necessary to create ever longer races to attract the public's attention. However, the establishment of cycling coverage in newspapers read by the masses, the creation of a sports star, and the keen interest of the cycle trade in using racing to sell bicycles, ensured that races of more manageable logistics and one-day duration were now the rage. Track racing continued to draw large crowds and often times success in a road race meant a good box office for subsequent track racing.

Many of the road races organized by the newspapers had just one edition. However, many of the well-known one-day classics soon began and many remain to this day; such as Paris-Roubaix and Paris-Tours, both run for the first time in 1896 by *Paris-Vélo*, and Paris-Brussels, organized by *La Bicyclette* (founded by H.O. Duncan, by the way) and dating

back to 1893.<sup>86, 87</sup> Other classics include Liege-Bastogne-Liege (1892), Milan-San Remo (1907), and Tour de Lombardy (1905). All of these followed in the footsteps of the 1891 Paris-Brest *et retour*.

Although the first Paris-Brest-Paris had achieved great success, it wasn't until 1901 that the second edition was organized. This time the organizer was *L'Auto-Vélo*, Henry Desgrange's new newspaper: "Paris-Brest *et retour* of 1891 has definitively launched the velocipede written about by Pierre Giffard. Paris-Brest *et retour* remains in the shadows and will not be run again until its 10th anniversary."

As Paris-Brest of 1891 was organized by the newspaper *Le Petit Journal* to be a one-up of the Bordeaux-Paris race, the Tour de France was organized as a one-up of Paris-Brest *en retour*, and Desgrange's *L'Auto* one-upping Pierre Giffard's *Le Velo*.

Paris-Brest *et retour* was run again in



Figure 20. Jiel-Laval's 1891 Clement bicyclette ridden in Paris-Brest *et retour* and close-up of the glued-on Dunlop tire. Machine is in storage in Saint-Denis, France at the Conservatoire national des arts et métiers. Photos by author.

1901, 1911, 1921, 1931, 1948, and 1951 as a race for professionals. The event was planned as a professional race in 1956 and 1961, but cancelled due to lack of interest. In 1931 a fundamental change came to PBP. While still a very prestigious professional race, the organizers dropped the category for the unglamorous touristes-routiers. Luckily for today's randonneurs, the Audax Club Parisien stepped in and organized a 1,200-kilometer brevet run alongside the race with a 96-hour time limit: 80 riders did the audax event in that first year of 1931..

ACP has organized Paris-Brest-Paris randonneuring events in 1931, 1948, 1951, 1956, 1961, 1966, 1971, 1975, 1979, 1983, 1987, 1991, 1995, 1999, 2003, 2007, 2011, 2015, and 2019. The history of Paris-Brest *et retour* continues to be made! [Figure 20] ●

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