

THE MICHELIN TIRE COMPANY : THE AMERICAN ADVENTURE (1907- 1931)

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INTRODUCTION

A fundamental aspect of the analysis of a company's history is its attitude to the international market. An important role in the development of any firm is its capacity to be open to new markets. This strategy can define the success or failure of a company. Occasionally, an enterprise can follow the example of a competitor in seeking international markets, but in any case this strategy is usually the only choice for survival in business. Creating a multinational company involves the creation of a network of subsidiaries or factories that reflect and incorporate the spirit of the original firm. It takes time and diligence to ensure that the product will have the same characteristics in different countries.

In this way, customers all around the world can associate products with the company's name. Moreover, the items need to be renovated and adjusted to the different markets the firm is planning to enter.¹ In the case of Michelin, this strategy was adopted at the inception of the firm. The causes and consequences of the penetration of the American market which began in 1905 are part of the company's history. What was the approach of the French firm to a market as difficult as America? How did a family business face the international challenge?

¹Mira Wilkins, *The History of foreign investments in the U.S.A to 1914*, Cambridge, Massachusetts, Harvard University Press, 1989. - , *The History of foreign investments in the United States, 1914- 1945*, Cambridge, Massachusetts, Harvard University Press, 2004. - , « French Multinationals in the United States. An Historical Perspective », *Entreprises et histoire*, n° 3, 1993. -, *The Growth of multinationals*, Edward Elgar Publishing Company, Vermont, USA, 1991. -, *The Maturing of multinational enterprise: American business abroad from 1914 to 1970*, Cambridge, Massachussets, 1975. Mira Wilkins, Harn Schroter , *The Free-standing company in the world economy, 1830- 1996*, Oxford University Press, 1998.

Michelin is a real example of a worldwide enterprise. Its interest towards new ideas and innovations is one of its most important features. This approach brought the company to play a very important role in the process of Americanisation of European enterprises. Thanks to its efforts, Michelin introduced the American manufacturing systems into its factories.² Moreover, it improved the introduction of these new working methods by founding associations and schools for scientists and engineers. Michelin is a clear example of a firm that was capable of blending the idea of enterprise as described by Alfred D Chandler with the concept of a family business and showing that these two concepts of business could coexist.³ Michelin is a French enterprise where the role of the family at the head of the firm is associated with a staff of employees devoted to the same family. Michelin embodies the spirit of a modern firm where being a family business is a strong point and not a weakness.⁴

At the beginning of the 20th century, the United States began to be an important market for the European enterprises. Many of them already had subsidiaries in the most important countries of the old continent. A new spirit of innovation could be perceived in the entire world, increased by the new possibilities provided by transatlantic trips. Within a few years, the United States represented the new frontier of innovation and technical development. The ideas of Henry Ford and Frederick Winslow Taylor were assimilated by the European entrepreneurs and gave birth to new manufacturing systems.⁵

² Aimée Moutet, *Les Logiques de l'entreprise. La rationalisation dans l'industrie française de l'entre deux guerre*, EHESS, Paris 1997. Stevens Institute of Technology, Fonds F. W. Taylor, Dossier 180 C. Stevens Institute of Technology, Fonds F. W. Taylor, Dossier 63 B. Patrimoine Michelin, *Correspondance entre F. W. Taylor et Edouard Michelin*.

³ Franco Amatori, Alfred D. Chandler, Takashi Hikino, *Big Business and the wealth of nations*, Cambridge, New York, Cambridge University Press, 1997; Franco Amatori, Geoffrey Jones, *Business History around the world at the turn of the twenty-first century*, New York, Cambridge University Press, 2003, Alfred D. Jr. Chandler, *Stratégies et structures d'entreprises*, Paris, Les Editions d'Organisation, 1989. -, *La main visible : une analyse historique*, Paris, Economica, 1989. -, *Organisation et performance des entreprises*, tome 1 : Les USA, 1880-1948, Paris, Les Editions d'Organisation, 1992.

⁴ David S. Landes, "French Entrepreneurship and industrial growth in the nineteenth century", *Journal of Economic History*, IX, Mai 1949, pp. 45-61; David S. Landes, *L'Europe technicienne ou le Prométhée libéré. Révolution technique en Europe occidentale de 1750 à nos jours*, Paris, Gallimard, 1975.

⁵ Frederick Wislow Taylor, *Organisation scientifique principes et applications*, Paris, H. Dunod & E. Pinat éditeurs, 1915 ; Frederick Wislow Taylor, *Études sur l'organisation du travail dans les usines*, Angers, Imprimerie Burdin et Cie, 1907 ; Frederick Wislow Taylor, *La Direction des ateliers. Étude suivie d'un mémoire sur l'emploi des courroies et d'une note sur l'utilisation des ingénieurs diplômés*, préface de H. Le Chatelier, Paris, Dunod, 1923 ; Georges De Ram, « Quelques notes sur un essai d'application du système Taylor dans un grand atelier mécanique français », *La Revue de Métallurgie*,

Considering the American automobile market, the rapid growth of the tire demand provided an incentive to foreign investments. A potentially influential new entrant was Michelin and the company began to open subsidiaries in different countries. In 1902, the firm opened an agency in London and in 1906 a factory in Turin. In 1905, the Michelin brothers established an agency in New York City. Two years later, through the acquisition of the International Rubber Co., the French company established a factory in Milltown, a small town in the state of New Jersey. The Michelin Tire Company had branches and subsidiaries located in the most important trade centers in the country.

The Michelin Tire Company in America closed down in 1931. This action was believed by some to be the result of the Great Depression. From this point of view, the American experience seemed to be a defeat for the French firm. However, the dismantling of the Michelin factory must be read with a wider viewpoint. At that time, the American Tire market was in a difficult situation. Many small companies were forced to shut down their factories. The demand for tires was slowing down. These factors led Michelin to see that it was unwise to remain in the United States as a manufacturer. Moreover, the big American tire makers were planning to invade the European market, putting in danger the internal market where Michelin was a leader.

The French company understood that its future was connected to the creation of new and innovative products. Engineers and chemists worked on this goal. The R&D department was improved. This strategy gave birth to different products: the *Pilote* tire (1937), the *Métalic* tire (1938) and the radial tire X (1948). WWII and the rubber shortage of the 1950's slowed down the achievement of the company targets. During the 1960's and the 1970's, Michelin reinforced its position in different countries and in 1975, a new factory was opened in the United States.⁶ In 1989, Michelin acquired the American company Uniroyal-Goodrich. Today, the Michelin Company is the second

September 1909, pp. 929-933 ; Henri Le Chatelier, « Le Système Taylor », *Bulletin de la Société d'encouragement pour l'industrie nationale*, n. 113, March 1914, pp. 449-450 ; Henri Le Chatelier, « Frederick Wislow Taylor 1856-1915 », *Revue de Métallurgie*, 12nd year, n. 4, April 1915.

⁶ Archives Michelin, « Michelin : un siècle d'innovation », *Michelin Informations Presse*, October 1995.

largest tire maker in the world. Its presence in the United States counts many factories concentrated in the southern states.⁷

FIRST PART

1/MICHELIN'S PENETRATION OF THE U.S TIRE MARKET: FIRST RESULTS

At the beginning of the twentieth century many European brands started being attracted by the American market. The possibility of obtaining big selling results pushed these companies to open branches and factories in the United States.

1.1/ From the first American agency to a plant in Milltown

The early development of the automobile industry and the arrival of Michelin in America were not unrelated episodes. Michelin already had plants in France and Italy when it arrived in the United States. The company had been involved with processing rubber products since 1830.⁸ Contrary to the practice of one of its most important competitors, Michelin did not use an American brand for exporting its tires to the United States.⁹ The French tire maker adopted a direct strategy by creating different corporations to answer the growing demand of its products. In 1904, Michelin began exporting its tires to New York and the company signed agreements with shops that sold its items.¹⁰

In 1905 Michelin's first American subsidiary was incorporated in the United States. Two thirds of the undersigned were American citizens, and one was resident of

⁷ Archives Michelin, "Michelin se renforce en Amérique du Nord", *Info-Plus*, October 1989.

⁸ *History of Middlesex County*, New Jersey, volume II, 1664-1920, under the Associate Editorship of John P. Wall and Harold E. Pickersfill, 1921, by an able corps of Historians, Lewis Historical Publishing Company Inc., New York and Chicago.

⁹ At the end of the eighteenth century, Dunlop started exporting its bicycle tires using an American distributor.

¹⁰ "One garage license revoked", in *The New York Times*, December 14th 1904, pp. 16.

the State of New York. The name of the corporation was Michelin Tire American Agency. The purpose of the new company was :

*“to buy, sell and deal in automobiles, and automobile supplies and accessories, to act as selling agent for automobiles, and automobile supplies and accessories and to transact its business in any state or territory in the United States, and in foreign countries.”*¹¹

The amount of the capital stock was thirty five thousand dollars, all of which consisted of common stock. Each share was worth one hundred dollars. The amount of capital with which the corporation began its business was thirty thousand dollars. The principal office was located in the borough of Manhattan in the state of New York. Eben D. Winans was appointed general manager. In 1906, there began to be gossip in the trade that the Michelin Company planned to start an American factory. The fact that the Michelins were very particular as to the location of their factory seemed to hold them back. The French company had a firm belief that the success of their tires was due not only to the use of good rubber and much skill in manipulation, but that the temperature of the air and the pureness of the water at Clermont-Ferrand were also factors. They therefore demanded like conditions for their American factory.

At any rate, at the beginning of 1906 E. D. Winans came back from France and incorporated a new subsidiary: the Michelin Products Selling Company. He announced that with a three million dollar investment the company was looking for the proper factory site.¹² Edward W. Elver was elected general manager of the new subsidiary. The corporation tried to improve sales results for their tires by establishing a discount of five percent off the current price list for payment within ten days.¹³ Moreover it established a society to repair all makes of tires under Michelin methods: the Michelin Repair Works.¹⁴ Incorporated at Elizabeth, New Jersey, the society had a capital of ten

¹¹ The County Clerk and Clerk of the Supreme Court of New York, Court House, *The Michelin Tire American Agency incorporated, Certificate of Incorporation*, file 0H35M.

¹² “A Michelin Factory for America”, in *Tire and Motor*, February 15th 1906, pp. 37.

¹³ “Rubber news”, in *The India Rubber World*, December 1st, 1906, pp. 94

¹⁴ “Automobile Notes of Interest”, in *The New York Times*, April 26th 1906, pp. 12.

thousands dollars.¹⁵ In 1907, Emile Lamberjack who had been the sole export agent of the Michelin products for several years formed a new company and took over the rights, effects and good will of the Michelin Products Selling Company Inc.. The name of the new incorporation was E. Lamberjack & Co., Inc.. Under this new arrangement Michelin et Cie started dealing directly with their patrons in America and established a lower scale of prices on its tires. The company had ten thousand dollars in capital. J. E. Lamberjack, Paul La Croix and M. G. Bernin, incorporators of the new Michelin's branch, also opened an agency called Franco-American Auto and Supply Co.. It was the only distributor for the Central and Western states.¹⁶ On March 12th 1907, Lorenzo Semple, John P. Murray and James E. Hopkins signed the act of incorporation for the Michelin Tire Company. The society had three millions dollars in capital. With the foundation of this new firm the French tire maker showed its intention to engage in the manufacture of tires in the United States.¹⁷ For this purpose, Edouard Michelin visited the United States. During a dinner he gave to some friends in New York he stated:

*“We came to the United States because, notwithstanding the fact that we have to pay an enormous duty, we sell here a large quantity of tires. Our own representatives in this country sold last year over 16.000 tires, and contracts made by them for 1907 amount over 20.000 tires.”*¹⁸

During Edouard Michelin's visit, negotiations began for acquiring a manufacturing plant. The French interest was oriented to the International A. & V. Tire Co..¹⁹ The French company acquired the plant in the spring. The transfer of the property was fixed for the end of summer, but additional buildings started being erected before the opening. Buildings and equipment were designed for an output of 1.500 motor tires daily under the same formulas and process used by the parent company. A company's speaker asserted that:

¹⁵ “New Incorporations in New Jersey”, in *The New York Times*, August 1st 1906, pp. 10.

¹⁶ “A new American Michelin Agency”, in *The India Rubber World*, February 1st, 1907, pp. 150.

¹⁷ “New incorporations”, in *The India Rubber World*, april 1st 1907, pp. 224.

¹⁸ “Michelin Tire in America”, in *The India Rubber World*, April 1 1907, pp. 227.

¹⁹ The Automoblie & Vehicle Tire Co. had purchased the factory from the United States Rubber Company.

*“Our buildings and machinery are modern in every aspect, no expense being spared to make this the most complete rubber mill in the world. We shall soon be ready to present to the trade Michelin tires made in America.”*²⁰

Edouard Michelin was elected as president of the firm. A. Fontaine, vice-president, formerly at Clermont Ferrand, was in charge of the new factory. A few months later James C. Matlack became vice president and general manager of the new plant.²¹ In 1909 he resigned his connection with Michelin and Jules Hauvette Michelin became the new vice president of the Milltown’s plant.²²

1.2/ The Michelin Tire Company of Milltown

At the beginning of the twentieth century, the Michelin tire company had extensive plants in France, Italy and England. All the factories produced identically the same goods by the same process using French machinery. Each firm benefited by the experience of all the others. In fact, the products of one plant could only be distinguished from the others by the serial number moulded in them, as all had the name Michelin and the size. The development of the American plant was very rapid. Buildings were erected by John W. Ferguson Contractors. The grounds of the factory consisted of twenty one acres, fifteen large buildings and four hundred and seventy five thousand square feet of floor space. In 1908, a railroad siding was assembled into the Michelin yard. It enabled the transfer of goods direct from the factory through its various channels to the dealers and the sub stations.²³

When Michelin decided to begin manufacturing in the United States, its tires had already created much interest because of their remarkable performance on racing cars. The anti-skid tires were recognized by many as old friends and they were among the

²⁰ “The Michelin Tire American Factory”, in *The India Rubber World*, July 1st 1907, pp. 321.

²¹ Jame C. Matlack was the president of the International A & V. Tire Co..

²² “A new Michelin manager”, in *The India Rubber World*, February 1st 1910, pp. 186.

²³ Middlesex County Clerk Archives, document number 404-589; document number 1055-359.

first of their kind to be placed on the market.²⁴ Milltown's firm was the place of many important developments in the history of tire manufacturing. In 1916 a new type of tire known as the *Universal tread* was developed there. Thus, the youngest of the Michelin factories took the lead in the development of new ideas. The *Michelin Universal Tread* possessed a casing of unusually sturdy construction. There were five to eight plies of fabric, depending upon the size, instead of four to seven which was generally considered efficient. Then there were two breaker strips instead of one, which added to the durability of the tire. The tread was made of a series of letter "M's", the outer surfaces of these letters were broad and flat. The sides were not rounded, but square.²⁵ In order to facilitate the production of this new tire, new equipment, buildings and power plant facilities were installed. Michelin was not only known for its tires but also as a company that put out one of the finest tubes on the market.²⁶

On August 16th 1918, the firm started manufacturing gas masks which were used to aid the allies' cause in the World War I. The company also claimed recognition for the manufacturing of the first low pressure balloon tire. The firm gave a demonstration of their new balloon-type "*Comfort*" cord tires in Newark and New York. The demonstration lasted a week and during that time cars equipped with this new type of tire were used to give the public a ride. These tires provided for twice as much air space with half as much air pressure. They fit the same rims and were sold for about the same price as ordinary tires.²⁷ Balloon tires came into general use with hospital and police ambulances. The Michelin company had made a survey of hospitals and ambulance equipment and recommended that normal tires be replaced by the balloon ones.²⁸ By October 1924 Michelin had made over one million balloon tires. Statistics showed that of the 111 different models of automobiles which were offered to the American customers at that time, around 61 per cent of the total were equipped with balloon tires.²⁹ By April 1925, the American plant had made three million balloon tires after a

²⁴ "Michelin Tire Company (Milltown, New Jersey)", in *The India Rubber World*, February 1st 1911, pp. 158.

²⁵ "The Michelin Tire Plant", in *The Rubber Age*, August 10th 1917, pp. 447.

²⁶ "A new non-skid tire casing", in *The India Rubber World*, November 1st 1915, pp. 73.

²⁷ "New Jersey notes", in *The India Rubber World*, January 1st 1924, pp. 251.

²⁸ "New Jersey notes", in *The India Rubber World*, June 1st 1924, pp. 607.

²⁹ "One million Michelin balloon tires", in *The India Rubber World*, October 1st 1924, pp. 37.

little more than a year in production.³⁰ At the same time it patented a disc wheel which was made at the Budd Wheel Company in Philadelphia, Pennsylvania. Michelin also had a very large testing department, which was known as the Brunswick Motor Company, where thousands of tires were tested yearly. The testing sector occupied four buildings on the east side of North Main Street, from which station a fleet of test cars were operated and tests of all kinds were made. The Brunswick Motor Company also operated four bus lines at one time. The lines travelled to Hightstown, Plainfield, Millstone and Camp Dix. Buses were of the pleasure car type and carried six passengers besides the driver.³¹

Table 1.1
List of officers of the Michelin Tire Company

Officer's name	Functions	Year
Edouard Michelin	President	1907-1933
J. C. Matlack	Vice president	1907-1909
J. H. Michelin	Vice president	1909-1933
Emile Fontaine	Secretary & Treasurer	1907-1910
R.E. Glass	Secretary & Treasurer	1910-1911
Stephane Bridier	Secretary & Treasurer	1911
Louis Masdubost	Secretary & Treasurer	1911-1920
Elmer Connolly	Assistant treasurer Treasurer	1915-1920 1920-1926
Joseph LaFarge	Secretary Secretary & Treasurer	1920-1926 1926-1929
Charles Zimmermann	Assistant Secretary Secretary	1926-1929 1929-1933
David Serviss	Assistant Treasurer Treasurer	1926-1929 1929-1933

Sources: Public Works Administration, *History of Milltown*, 1936, pp. 33

³⁰ "New Jersey notes", *The India Rubber World*, April 1st 1925, pp. 426.

³¹ Public Works Administration, *History of Milltown*, 1936, pp. 32.

When the buses were not being used for transporting, shot was used as ballast to keep the required weight on the tires, in order to make the proper test. Besides testing tires on the road, several test machines were operated in the factory. These machines ran continuously for a number of days and this gave a more accurate test. Michelin's testing department was one of the most extensive in the country and their test cars could be seen travelling all over the state under all conditions. At its peak, Michelin was manufacturing four thousand five hundred tires and fifteen thousand tubes in twenty four hours. By 1912 Michelin employed a total of 1250 workers and at its peak over 4.500 people worked at the factory.³²

Table 1.2
Employees at the Milltown's factory (1909-1934)

Year	Business name	Type of business	Number of employees
1909	Michelin Tire Company	Automobile tires	1200
1912	Michelin Tire Company	Automobile tires	1250
1915	Michelin Tire Company	Automobile tires	1500
1923	Michelin Tire Company	Automobile tires	2.000
1924-1930	Michelin Tire Company	Automobile tires	4.000
1931-1934	Michelin Tire Company	Automobile tires	40

Sources: Stage cultural Resources Survey of the Project Area for the Former Michelin Tire Factory, Ford Avenue Milltown, Middlesex County, New Jersey, prepared for, Boraie Development, LLC, June 2005.

Employees came from Clermont Ferrand, but a small number also came from a small town of the Brittany region called Gourin. In the factory, each worker always had a French supervisor and only French people could work with the "secret", in the manufacturing workshops. To start the new business, the French company had sent specialized employees such as chemists from France.³³ The company's increased production required finding workers outside of Milltown and while the surrounding

³² Bureau of statistics and WPA Study.

³³ Josette Jouas, Christian Le Corre, Christian Jamet, *Ces bretons d'Amérique du Nord*, Mémoires Editions Ouest-France, 2005, pp. 66-67.

communities supplied some of the additional help the greatest number were workers who came from France. Henry Ford's assembly line made automobile production more efficient and less expensive and consequently more and more people were purchasing automobiles. Increased car sales required more tires and therefore Michelin's production also increased.

1.3 The attitude of the Michelin Tire Company to its agencies

After the Michelin Tire Company was opened, branches and subsidiaries were located in nearly every important trade center in the country and the number of dealers also increased greatly. Their products, being of high quality, became widely known and found a ready market all over the United States. Between the firm and its agencies, a confidential agreement was established. The agencies received a 5% cash discount if payment was made on delivery or within ten days of shipment; otherwise, full payment without cash discount had to be made within thirty days after shipment.

The subsidiaries had the option to ship goods C.O.D. (collect on delivery) or to deliver a bill of lading only on payment of a sight draft. All shipments to branches close to Milltown could be available F.O.B. (free on board). The company's policy was focused on clearance of prices since they had to be published in the company's advertisements. Michelin accepted a discount of not more than 5 % from Consumer's list prices for cash in hand. The company agreed that its failure to maintain prices annulled any agreement and that any agency could withdraw without notice.³⁴ Before the opening of the plant, Michelin incorporated four agencies in Philadelphia, Boston, Chicago and New York. After the plant was opened in Milltown, Michelin began penetrating the West Coast and opened new branches there. One of its most important subsidiaries was the Michelin Tire Company of California at San Francisco.

³⁴ Kindly offered by Mr Brian Harto, *Confidential Agreement 1910-11*.

Table 1.3
The Michelin American Agencies 1905-1930

Year:	Agency
1906	New York Philadelphia Boston Chicago
1908	San Francisco Cleveland Buffalo Detroit Denver
1909	Seattle
1910	Kansas City Saint Louis
1911	Dallas
1915	Spokane Denver
1921	Des Moines Los Angeles Lynchburg Memphis New Orleans Oklahoma City Omaha Portland Syracuse
1922	Walla Walla Olympia
1928	Jacksonville

“The company notes”, in *The India Rubber World*, August 1, 1908, pp. 375; Washington States Archives, *Michelin Tire Company Card*; Kindly given by Mr Brian Harto, *New Articles for the Convenience of Motorists for 1910*; “New incorporations”, in *The India Rubber World*, July 1st 1910, pp. 368; Secretary of State of Missouri. Act of Incorporation; Department of State of Florida, Act of Incorporation of the Michelin Tire Company of Dallas; Department of State of Colorado, Annual reports.

Its act of incorporation expressed the purpose for which it was formed:

*“for the purchase and sale of tires and vehicle wheels of all descriptions and all accessories in any way pertaining to vehicle wheels.”*³⁵

The corporation in California managed many agencies. In 1920 it built a new warehouse in San Francisco. The building had a private spur track. In addition, it

³⁵ Washington State Archives, Michelin Tire Company History Card.

provided storage space for another new product that Michelin was manufacturing in America: the Michelin disc wheel. Analysis of the growing importance of California in the tire market explains the important role of this branch for Michelin.³⁶

New roads had been built and car demand had been rising steadily in the previous few years.³⁷For this reason, the Michelin subsidiary in California had established wholesale quarters in Los Angeles in 1911. There was no retail branch there because the company wanted to adopt a different strategy. Considering tires as simple accessories to automobiles, the proper method of distribution could be through the automobile and accessories houses. That was all that a company needed to establish a jobbing branch.³⁸

1.4 A joint-venture with an American Corporation: making of the Michelin disc wheel and the Budd-Micheline

In the 1920's Michelin was ahead of its time in several respects, but too far ahead in at least one for the American market. In 1932, the company imported a railroad car called *Micheline* from France for a six month trial period. It was equipped with rubber instead of the usual steel tires. It was hoped that the public would accept them and thus a new market would be created in the United States. The first *Micheline* had been built by the Michelin Tire factory of France in 1929 and the tire maker built nine cars for European use. In 1932, Michelin joined forces with the American Budd Manufacturing Company. The *Budd-Micheline* rail car was designed and built by Edward G. Budd Manufacturing Company of Philadelphia under exclusive license from Michelin et Cie of France.³⁹

³⁶ "San Francisco notes", in *The India Rubber World*, April 1st, 1920, pp. 454.

³⁷ That is why during the 20's many important tire makers, like Goodyear and Firestone established new factory in Los Angeles.

³⁸ "California notes", in *The India Rubber World*, December 1st 1911, pp. 124.

³⁹ Budd had been a prospering Philadelphia auto parts manufacturer when the Great Depression hit, and it began looking for way to increase its business in allied fields.

It was protected by numerous pending United States patents applications and patents extending to all novel features, particularly the rubber-tired wheels, the relationship of the wheels to the track on the one hand and to trucks and body on the other, the trucks, the drive, and the Budd “shotweld system of stainless construction”.⁴⁰ The model imported from France made numerous demonstrations on the Raritan River Rail Road between New Brunswick and Parlin. According to Charles Zimmerman, a Michelin worker, the experiment was a flop.

“The people didn’t go for it because it was too slow. It seems our people prefer speed to comfort so when the test period was finished the car was taken to Philadelphia and dismantled. That way the company saved the cost of shipping the car back to France.”

In April the rail car journeyed to Akron, in Ohio for further demonstration, then to the Budd Wheel Company in Philadelphia where it was destroyed. Three cars arrived in the United States from France. The first one was dismantled in Milltown by Antonin Renoux and John Keller, the second was sent to Philadelphia, the third one to Chicago, also for dismantling.⁴¹ On February 19th 1932, the *Budd-Micheline* railway coach gave a public demonstration of 28 miles along the Schuylkill River from North Philadelphia and Norristown. This car was the American development of the Michelin railway coach. It was built throughout of stainless steel and weighed only 13,500 pounds. It seated 40 passengers and could be operated at 1/3 the cost of existing rail vehicles. It incorporated every standard safety device. It travelled from 45 to 60 miles per hour and had air conditioned ventilation. It could be driven by diesel electric power, by electric power obtained from third rails or trolley or by gasoline.⁴²

The special Michelin tires had an internal device to prevent them from running flat when punctured so that they collapsed gradually but not completely. The car could be stopped and the tire changed in three minutes as one would do on an ordinary

⁴⁰ The Heagley Museum, *Reading 65: The Budd Micheline*.

⁴¹ H. R. Rodney Luery, *The story of Milltown*, South Brunswick and New York A. S. Barnes and Company for The Borough of Milltown, pp. 100

⁴²“Budd-Micheline Rail Car”, in *India Rubber World*, March 1st 1932, pp. 74.

automobile.⁴³ The Budd-Micheline was called the Green Goose. From what seemed like an apparent success, Budd actually received few orders. The first one was from Michelin for lightweight streamlined cars equipped with French gasoline engines. The next was from the Reading Company. The Reading 65 was put into service in October 1932 but it was soon withdrawn from service.⁴⁴

It was not the first time that Michelin worked with the Budd Company. During the 1920's Michelin had licensed the Budd Wheel Corporation to manufacture the Michelin disc wheels. The American company equipped its extensive plant to produce the items in large quantities. The product had been tested during WWI with its application to ambulances, trucks and other army vehicles. The product went on to have good success in the American market.⁴⁵

SECOND PART

2/ACTIVITY OF THE AMERICAN CORPORATION AND ITS FACTORS

The Michelin plant and the French community played a fundamental role in the economic and social life of Milltown. Many different factors can be used to understand the policy that the French tire maker adopted when it penetrated the international market.

2.1 Daily life of the "Michelin Community"

Michelin improved the working conditions of its employees. The firm not only provided the means to make a living for many families in and around Milltown, but

⁴³ "Michelin Pneumatic Tired Railway Coach", in *India Rubber World*, November 1st 1931, pp. 67.

⁴⁴ National Railway Historical Society of Philadelphia, various documents.

⁴⁵ The Heagley Museum, *Michelin Disc Wheels*.

beginning in 1919 built 53 bungalows for workers. Each bungalow had four rooms and was cedar shingled and slate roofed. These homes with all modern improvements were rented to the factory workmen at cost. In total, Michelin constructed over 200 homes for its workers. The firm had a company baseball team which provided a form of recreation and entertainment during the spring and summer months. It also built a Catholic Church for many of the French families who had emigrated to Milltown to work in the factory, created a community center and helped establish social clubs.

Amateur sports were fostered by the Michelin Athletic Association, supporting its own enclosed field. A quarter mile track, a baseball diamond, soccer field and tennis courts were provided while a grand stand seating 1,500 persons overlooked grounds. Michelin's influence led also to improvements in accomplishing several municipal tasks like having the streets paved, installing electric lights and establishing Milltown as a stop on the Middlesex & Somerset Traction line. On April 1922, Jean Michelin, son of André Michelin arrived in America to make a study of factory conditions in the United States. He was accompanied by French experts who wanted to study American methods for improving the conditions of tuberculosis sufferers.⁴⁶

The influence of the Michelin Tire Company on the life of its employees has been the object of numerous analyses. The results have been discordant, with some portraying it as having a paternalistic attitude towards its workers. Historically, it is better to focus on the facts, of which there are many. From the year 1919, all employees of the Michelin Tire Company began receiving an individual life insurance policy for varying sums, depending on their years of service with the company. According to this plan, every employee received, free of cost, a life insurance policy graded according to the length of service (from 200 dollars for six months to 1,200 dollars for ten years and over).

Each new employee would be insured upon completion of his first six months with the company. Each employee received an individual policy which became effective

⁴⁶ "New Jersey notes", in *The India Rubber World*, April 1st 1922, pp. 506.

on June 16th 1919.⁴⁷ It was a psychological as well as an economic blow when Michelin closed its doors and returned to France. Just about everybody and everything depended upon Michelin for wages, entertainment, and support. Every family in Milltown had somebody on the company payroll. The fact that the Great Depression came along at the same time heightened the sense of loss and desperation.⁴⁸

Table 2.1
Increasing insurance in force on the life of the employee
as determined by the period of continuous service

Period of continuous service from date of employment	Amount of insurance
Six months and less than 1 year	\$200
1 years and less than 2 years	\$ 500
2 years and less than 3 years	\$600
3 years and less than 4 years	\$ 700
4 years and less than 5 years	\$ 800
5 years and less than 6 years	\$ 900
6 years and less than 8 years	\$ 1.000
8 years and less than 10 years	\$ 1.100
10 years and over	\$ 1.200

Sources: Milltown Historical Association, The Travelers Insurance Company, Certificate of Insurance employee of the Michelin Tire Company and/or its subsidiary companies.

Among the things for which the company was remembered was Bibendum, the Michelin Tire Man. It seemed that Bibendum was pictured everywhere. He appeared on company checks, stationery, the tops of thumb tacks and repair kits. He was posed in various positions. Balloons of him for parades and three-foot replicas for window displays were reproduced. When Michelin closed, many people had statues of Bibendum in their yards. Some dressed them up and painted them. They could be seen all over town. There was one picture on the side of the Community House, advertising the Michelin Cafeteria. It was a picture of the tire man with a chef's hat on, pot and spoon in hand, cooking at a stove.

⁴⁷ "Michelin insures employees", in *Tire Trade Journal*, August 1919.

⁴⁸H. R. Rodney Luery, *The story...*, *op. cit.* South Brunswick and New York A. S. Barnes and Company for The Borough of Milltown, pp. 99.

2.2/ Impact of the French -American Tire plant in Milltown: economical and social connections

The Michelin plant influenced the economic life of the town in different ways. In addition to the direct influence due to the great number of workers living in Milltown, the activity of the firm also brought some indirect effects. Through the efforts of the business men of Milltown and by the interest shown by the Michelin's plant, the First National Bank of Milltown was formed on January 15th 1917. The bank became a member of the Federal Reserve Bank. The room used for banking was located in the southeast corner of the tire company bounded on the east by Main Street.⁴⁹ In 1907 a post office was established. In 1915, it gained a first class rating due to the great amount of business transacted by the Michelin's plant.

From a social point of view, the presence of the French community also played an important role in the small town. In October 1912 through the efforts of Mr DeSouche, a Catholic Mission was started under the supervision of the Sacred Heart Church of New Brunswick. The first mass was said in the French school. This was the first step towards establishing the Catholic religion in Milltown. Three weeks later, it was decided to have the function in the Red Men's Hall where it continued until 1917 when Jules Hauvette Michelin extended the use of the French Clubhouse to the Catholics. The Mass ceremony was then said there until 1920.

At that time, the congregation became too large for the clubhouse, so the functions were moved to the cafeteria and later to the Community Hall. The raising of a church became an important issue. A committee was formed to solicit funds for the church erection. The estimated cost was about forty thousand dollars. Jules Hauvette Michelin made an offer of fifteen thousand dollars. The amount was raised on October 30 1921. Because of the kindness shown by Hauvette Michelin, he was given the honor of naming the church. He declined so a French name was chosen: Our Lady of Lourdes.

⁴⁹ Public Works Administration, *History of Milltown*, 1936, pp.62.

A French school was opened in 1910. Michelin tried to help those families who preferred to have their children continue with French studies. From two to four rooms were used to teach, depending upon the number of pupils. There were four teaching levels. Students had to be younger than 10 years. After that age they had to attend the American public school. The French families from Gourin did not send their children to the French school. They preferred to have their children act like American citizens.⁵⁰

A terrible event modified the balance that the Michelin workers had found in Milltown. On August 4 1914, war was declared on France by Germany. Word was sent to the French people of Milltown the day after and on the 6th, trolley cars to New Brunswick were loaded with French men leaving for France.⁵¹ Eighty six French residents at Milltown in 1914 responded to the call to arms of their native country. Out of this number, eighteen made the ultimate sacrifice, dying for France.

On April 6th 1917, war was declared on Germany by President Woodrow Wilson. In order to secure funds required for relief work during war, drives were developed throughout the country. The president appointed a War Finance Committee and under that came all the local committees of the United States. The Milltown committee one was represented by Jules Hauvette Michelin.

2.3/ The Michelin Man in the USA (1905-1931)

The penetration of the American tire market required an impressive amount of investment for the French company. From a marketing point of view, the company initially adopted a strategy that gave control to the department of Clermont Ferrand. Because of language considerations, the Michelin Tyre limited of London prepared the illustrations that were published in the American newspapers. Necessity of market and a

⁵⁰Josette Jouas, Christian Le Corre, Christian Jamet, *Ces bretons...*, *op. cit.*, Mémoires Editions Ouest-France, 2005, pp. 66-67.

⁵¹ Annie Moulin Bourret, *Guerre et industrie, Clermont- Ferrand, 1912-1922: La victoire du pneu*, vol. 1, Clermont Ferrand, Publications de l'Institut d'Etudes du Massif Central, 1997.

certain independence of the American factory brought the French firm to change its direction. This case probably represents an interesting example of the Michelin marketing strategy on the international market.⁵² Between 1907 and 1931, Michelin mounted a massive advertising campaign in the United States. More than 150 advertisements were published in different magazines like the Saturday Evening Post, The Literary Digest, Collier's Liberty, The County Gentlemen, The American Magazine, Motor, Motor Age, Automotive Industries, The Theatre, County Life in America, Elks Magazine and others.

At that time, illustrations were still the most efficient tool used in campaigns. They explained concepts through images. Firms hired famous artists to create their campaigns. Their signature gave prestige and value to their products. According to the company history, it is possible to distinguish three phases in the American advertising campaign: the first campaign from 1907 to 1916, the second one from 1916 to 1926, and the last one from 1927 to 1929.⁵³ From 1907 to 1910, Michelin advertisements described the activity of the new American firm emphasizing its production. The French origins of the firm were not publicised. Bibendum appeared sporadically. It was introduced in sketches created by O'Galop and used in the company's worldwide campaign. Between 1910 and 1916, there is a significant information vacuum.

Nevertheless, Bibendum finally made his appearance in some American newspapers. For the first time, he was depicted with other important elements such as tires, cars and competitions. At the end of 1916 the Michelin Tire Company changed its advertising strategy.⁵⁴ For the first time, a campaign was created and conceived on American soil. It had a different style from the worldwide campaign created at Clermont. This new attitude had a simple explanation. American tire marketing was becoming more competitive, and innovative advertising campaigns were necessary to survive. The author who represented this new direction was Arthur Norman Edrop.⁵⁵

⁵² Archives Michelin, *Nunc...op. cit.*, pp. 184-186.

⁵³ Archives Michelin, *Nunc...op. cit.*, pp. 187-189.

⁵⁴ Michael J. French, *The U.S. Tire Industry: a history*, Twayne, New York, 1990.

⁵⁵ Arthur Norman Edrop was born in Birmingham, England in 1884. He sailed for New York in 1896. He studied in different schools in Brooklyn and he was a member of the Society of Illustrators. He worked as a journalist in different newspapers like: Brooklyn Eagle, New York Tribune, or Philadelphia Bulletin. He

Journalist and illustrator, he designed, drew and sometimes wrote Michelin advertisements. He worked on press advertisements, pamphlets, brief technical publications, enamelled plates and gadgets. He created more than one hundred advertisements, even if his signature was only readable in about twenty of them. His first works appeared in Life Magazine in a very privileged location, just inside the cover. They depicted Bibendum reciting the virtues of Michelin tires to different characters. Drawings were laid down in a white background.

At the same time, the French company started publishing a black and white series of advertisements. Quite different from the previous ones, they provided technical and advertising texts. Bibendum played a different role. He appeared alongside tires and motorists. Moreover, Michelin started conceiving continuous campaigns, with long series of advertisements that appeared in different publications. The most famous were called “*9 ways to judge tires*” and “*Twelve Tire Test*”. Advertisements appeared in a consecutive way and they stressed qualities and advantages of Michelin products. In 1918 a revolution arrived from Europe. Color started to be used by European advertising illustrators. As a consequence, Michelin adopted this new trend. Through an innovative visual impact, the company hoped to attract new customers. Letters were fat and outlined while advertisements had flat and deep colors with a central illustrated motif. Yellow and blue, the corporate colors, dominated the majority of the company works.

Bibendum started acquiring great importance in the American Michelin campaign. He started being the primary seller of the company. At the same time, new advertisements in black and red were created. The difference from the yellow and blue ones was simple: the last ones had advertising purposes; the new ones gave technical information and explanations. The real protagonists were tires and their performance. Bibendum, real mascot of the French tire maker, assumed the role of a teacher, pointing out features and uses of items.

wrote short stories for the radio. He also published illustrations for important magazines such as: Life, Collier's, Liberty or Saturday Evening Post and books. For a large part of his life he stayed at Radnor in Pennsylvania. He died in Maryland in July 1973 at the age of 89.

The new popularity of Bibendum raised a problem for the American firm. After its first appearances, accompanied by the slogan “*Nunc est Bibendum*” and thanks to some current events of the time, people christened the mascot with its peculiar name: Bibendum. Why was this name not adopted in the American advertising campaign? In 1914 the North America Congress received a request with six millions signatures for the prohibition of wine and liquors. On January 18th, the Volstead Act was adopted.⁵⁶ It was obvious that a character whose name came from a Latin verse meaning “Now it is time to drink” was not the right choice for the American tire market.

In March 1922, Michelin published a bizarre advertisement: the convening of a competition with 65 runners-up prizes and a first prize of a thousand dollars cash. The intention of the competition was to find a name for the tire maker’s mascot. In July 1922, the decision was published. Unfortunately, none of the names proposed was considered appropriate by the judges. From the company’s point of view, “the most suitable name was yet to be discovered”. After that, Michelin abandoned the idea of finding a new name for Bibendum. At the end of 1926, Edrop left the Michelin American advertising department. During the following years, the Michelin tire company changed its strategy. A black and white intensive campaign was created by Gluyas Williams (1888-1982), graphic artist and cartoonist.⁵⁷

His illustrations designed for Michelin can be considered as comic graphic jokes in which Bibendum advises motorists in a tight spot. In 1929, Michelin made its last advertising appearance. An advertisement was published in *The Saturday Evening Post*. It showed the *Supertread* tire model accompanied by Bibendum. The style and the graphics were far from the style adopted during the previous years. This was the last advertisement of the French company in the United States.⁵⁸

⁵⁶ It was better known as Law of Prohibition and it remained in force until 1933.

⁵⁷ He was considered as one of the founding fathers of the American comic. His works have been published in magazines as *Life* and *The New Yorker*. He illustrated many books where he depicted social life of the American middle class.

⁵⁸ Images of America, *Milltown*, Milltown Centennial Committee, 1996; H. R. Rodney Luery, *The story of Milltown*, South Brunswick and New York A. S. Barnes and Company for The Borough of Milltown; *History of Milltown* (1936), Public works Administration, typed from original copy and presented to the Milltown Historical Society by Linda Matlack Butch; “Michelin factory shutting down, throwing 300 employees out of work; mergers discussed”, *Milltown Review*, le 25 April 1930, pp.1.

2.4/ 1925-1930: between hope and crisis

The last seven years of activity of the American factory were crucial. Good results obtained from 1923 to 1925 thanks to a choice of products successful on the American market gave way to a tough situation that culminated in the dissolution of the company in 1931. In 1923 the American company declared that its business had increased about one hundred per cent over the past year. The company was running three shifts, including holidays and two thousand people worked in the factory. The company claimed the necessity of raising prices because of the increasing cost of raw materials.⁵⁹

In 1925 the Michelin tire company reached its best result: 856.178 tubes and 2.353.659 tires. In the following years, the firm's production slowed down considerably: twenty one per cent less for tubes and thirty two per cent for tires. This drop could be explained by the selling result of a new type of tire called the *Confort Interchangeable*. Driven by its positive experience in Europe, Michelin assigned the new tire to the Ford T and planned to begin its production at Milltown. The conditions of use in the United States were extremely different from those in Europe. The tire was too thin to tolerate the kind of aggression that was typical of American streets.

The sides of the tire were easily damaged showing punctures and rents. This problem surfaced at the same time that the crisis in the tire market began to appear. Heavy reorganizations, pricing wars and dissatisfaction of stockholders were factors that negatively influenced the development of the American tire market. In connection with the Michelin Tire Company there was also another problem: the French Company and the Michelin family members held more than 14.000 shares of the 20.000 that were the capital of the American firm. The other 6.000 shares belonged to one hundred and forty two American holders.

In a letter of May 15th 1928, the management explained the situation: with a debt of 7.7 million dollars, the amount of interest to pay was 427.100 dollars or roughly 3.2

⁵⁹ "New Jersey", in *The India Rubber World*, April 1st 1923.

per cent of the cash flow. The Michelin of France proposed to repurchase the shares and on May 26th 1929, the administrators of the French factory asked their stockholders for authorisation to do this. At the end of the year, an internal report revealed another important aspect. The commercial troubles at Milltown were contributing to a depreciation of the Michelin brand. This state of affairs constituted a prime opportunity for its competitors in Europe and all over the world to garner important market shares. Another factor was influencing the firm's decisions at this time: the *Manufacture Michelin* was going to be quoted on French Market Exchange. Any event that could call into question the Michelin reputation could have important consequences in the stock market. The company proposed a solution: the French firm would rent the Milltown factory through a broker that had yet to be chosen.

An interest of 6 percent would be guaranteed to the stockholders. The French company was disposed to repurchase the shares of people who did not want to be part of the new business.⁶⁰In 1929 the activity of the firm, particularly in relation to the Milltown branch, started to become the object of rumors. The rumors ranged from a proposed purchase of the plant by Henry Ford, the Goodrich Tire Company and the Sears Roebuck Company, to a report that the company would continue on and would build a large fabric plant in the near future. The Michelin management authorized a statement indicating that the past months had been a period of idleness on the part of the plant executives and that a substantial new program was to be adopted.

The process by which the president of the firm and his advisers hoped to bring about improvements in this important industry was intended to be achieved by a present-time reduction in the work force, laying off some 200 workers and confining operations to a single day shift. That was justified by the production of an even better tire and increased production. Somewhat reluctantly, Hauvette Michelin incorporated into his statement to the press a bit of information suggesting that it might be necessary to construct one or more buildings at the Milltown factory before the new plants were completed.

⁶⁰Patrimoine Michelin, Tristan de la Broise, Private Document.

His hesitancy was due to his intense dislike for anything that had a taste of propaganda. No decision regarding building operations had been made although these things could become necessary in the future. Emphatic denial was made at the Michelin offices of a report that in laying off workers before the announcement, the lay-off was aimed especially at what was known as contract employees, although a number of old workmen including some who had been with the plant since the days of the International Tire Company were included among those laid off. The firm stated:

*“It is reported that during the period of rearrangement of old machinery and equipment, installation of new machinery and preparation of new manufacturing schedules, it has been found necessary to work the plant at only one shift of eight hours, which required of disposing of the services of some employees during the past few days. It has been learned also that it may be found necessary to construct one or more new buildings at the large Milltown factory before the new plans are completed, but this has not as yet been definitely decided. When the work has been completed the Michelin will be one of the most modern in the rubber industry from the standpoint of manufacture.”*⁶¹

A few days later Hauvette Michelin explained that the firm was laying out a model tire plant. Michelin had just completed the building of two entirely new tire factories at Stoke-on-Trent, England and at Turin, Italy. No old buildings or old machinery limited the engineers in planning these factories. These new plants had demonstrated the value of their new features and Michelin knew that many of these features were still new to American practice. That could mean better quality and greater economy. So the company decided to incorporate them in the Milltown plant.

For this purpose Michelin enlisted the service of the chief engineer of the Michelin European factories and also the services of a distinguished Akron expert in tire factory planning. The Michelin engineer, H. M. Laloux had very wide experience in the management of tire building shops and had recently begun to specialize in the perfection of methods for saving labor without endangering quality production.

⁶¹ “Michelin factory changes likely to bring about better tire production”, in *Milltown Review*, October 3rd 1929.

Michelin's statement disclosed that the plans called for alterations to many buildings and installation of a great deal of new machinery. Under the new order of things, hand labour in tire making would be eliminated to an extent never before accomplished and as nearly as possible everything would be done by machinery. Jules Hauvette Michelin explained the most important reason for adopting this new method:

“The uncertainties of hand labor in tire making will be eliminated to an extent never before accomplished. As nearly as possible everything will be done by machinery so that every Michelin tire will be exactly like every other Michelin tire made, that will increase regularity in our product and reduce the cost to the user by increasing the average mileage...For instance, in American tire plants it is now universal practice to build the large/sized truck tires by hand, that is to say the various plies of fabric are laid on the core of the tire by hand labor. Each of these operations gives an opportunity for uncertainties as particularly serious condition, inasmuch as a large size truck tire includes ten or twelve or more layers of fabrics. If even one of these layers is applied unevenly or at an improper tension trouble is likely to develop when the tire is used, causing failure by either separation between plies or rupture of some of the cords. We have devised a machine for building these large tires.”⁶²

On April 25th 1930, Hauvette Michelin announced that the plant had been shut down. The date of re-opening was uncertain depending on conditions in the tire industry. The firm had been working with a greatly reduced work force for several months, during which numerous rumors had been afloat regarding the future of the industry and linking the names of many prominent tire concerns with that of Michelin. Each story had been in turn denied by the factory management and recently a glowing account had been published in one of the national trade papers predicting a brilliant success for the new fabric tire to be produced at Milltown. About 300 employees had been affected by the shut-down, many of them who had been with the Michelin plant for a long time, and including not a few Frenchmen who were brought to Milltown to engage in tire making. The Michelin cafeteria had been closed, while the Community House was still available for organizations wishing to use it for affairs of civic nature.

⁶² “Michelin is laying out model tire factory in Milltown; hand labor to be largely eliminated”, in *Milltown Review*, November 28th, 1929.

*“Few industries are so disturbed today as the tire industry. The tire business has been hurt not only by the general depression but by conditions in the trade which long antedated the depression. There has been over-production. In addition there has been unprecedented competition in the sale of tires.”*⁶³

By the way, the company decided to hold open the contracts under which all foremen worked. On March 18th 1931, the stockholders’ assembly of the Michelin Tire Company of Milltown ascertained the cumulative loss of the last fiscal years had exceeded the capital of the firm. They decided to sign the act of dissolution. Michelin continued owning the property after the plant was closed and in 1934 the Industrial Directory of New Jersey listed the Michelin Tire Company as owning the abandoned factory complex.⁶⁴ The company retained 40 employees in Milltown. This continued presence was the result of Michelin forming the Michelin Realty Company to help with the divestiture of their existing holdings. By 1940 Michelin’s divestiture was complete.

CONCLUSIONS

Right from its inception, the Michelin Tire Company was focused on the international market. The French tire maker opened factories and agencies all around the world. The strategy adopted to penetrate the American market illustrates some important characteristics of Michelin’s strategy during its first years. The company decided to open an agency to begin understanding the tastes of American customers. It created a strong advertising campaign extolling its success in auto competitions in Europe and then in the United States.

Driven by initial success in the American market, Michelin decided to establish a factory at Milltown.⁶⁵ The small town had a strong tradition in rubber manufacturing and was located not far from New York City, one of the most important tire markets in

⁶³ “Michelin factory shutting down, throwing 300 employees out of work; merged discussed”, in *Milltown Review*, April 25th 1930.

⁶⁴ 1934 Industrial Directory of New Jersey, pp. 267.

⁶⁵ Michael J. French, *The U.S. Tire Industry: a history*, Twayne, New York, 1990.

the United States. Michelin brought some employees from France. They took care of the most critical aspects of a tire manufacturing. It is important to underline that the interest of Michelin in the United States was not limited to the USA as a potential market buyer.⁶⁶ At the beginning of the century, Edouard Michelin sent his nephew Marcel Michelin⁶⁷ to meet Frederick Wislow Taylor. The French patron wanted to discover the possible applications of the new working methods to the rubber manufacturing. It was at Milltown that these new ideas were applied for the first time.⁶⁸

The Milltown experience ended in 1931. Numerous factors influenced this decision: the crisis of the American tire market due to the Great Depression, the new strategies adopted by Michelin in France and the arrival of the big American tire makers in the European market.⁶⁹ Michelin understood that there was only one possibility to survive: they had to create new and innovative products. From the thirties, the company made many investments in research and development. These efforts brought the firm to create a product that changed the history of tires: the radial.

Thanks to this innovation Michelin faced the American challenge once again. After introducing the product adopting an American brand, the company decided to penetrate the market using its own brand name. In the 1970's, the Company established a factory in the United States. In the 1980's it acquired one of the most important American tire makers: B.F. Goodrich. In the nineties Michelin became the biggest tire maker in the world.

⁶⁶ André Gueslin, *Michelin, Les homes du pneu: les ouvriers Michelin à Clermont- Ferrand*, Editions de l'Atelier, Paris, 1993.

⁶⁷ Marcel Michelin was one of the sons of André Michelin. He had spent some time at the Michelin Agency of London to improve his English. In 1909 he entered in the family business at Clermont Ferrand. From 1913 he was chief of the testing department (office F and A). He died in a concentration camp in 1945.

⁶⁸ Stevens Institute of Technology, Fonds F. W. Taylor, Dossier 180 B, Report to Mr Marcel Michelin, Clermont, France, 20 September 1912.

⁶⁹ Goodyear opened a factory in England in 1927.