
The Emerging Industry

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Paris was the center of the nascent automobile industry. That this was the case had virtually nothing to do with French culture or social conditions—possibly excepting the French roads, the best in the world at that time. Rather, early French hegemony resulted from the historical accident of a unique network of social relationships emanating from the Germans Benz and Daimler through the French and Belgian intermediaries Emile Roger and Edouard Sarazin to the French industry leaders Emile Constant Levassor and Armand Peugeot.

Gottlieb Daimler himself produced only about a dozen cars in the early 1890s. Production began to expand in 1898, but Daimler Motoren Gesellschaft (later Mercedes) did not become prominent in the early automobile industry until after Daimler's death in 1900. The right to manufacture Daimler engines under license was secured in the United States about 1890 by the piano manufacturer William Steinway, who never got into production. In the United Kingdom, rights were obtained in 1893 by the Anglo-German automotive pioneer Frederick Simms, who had been born in Germany and knew Daimler well. Simms formed the short-lived Daimler Motor Syndicate in London before selling his British rights to the Daimler patents in 1895 to Harry J. Lawson, a leading figure in the British bicycle industry. Simms went on to found the British Motor Car Club and the Automobile Club of Great Britain and Ireland (later the Royal Automobile Club) in 1897, then to collaborate with Robert Bosch in the development of the magneto.

Despite the American and British licensing, technological development of the Daimler engine occurred only in France, where in 1890–1891 it powered the early Panhard et Levassor and Peugeot models. As a young engineer in 1860–1861, Gottlieb Daimler had worked briefly for the Paris

metalworking firm of Perin et Pauwles, founded in the 1840s. René Panhard became a partner in the firm in 1867. He was the grandson of a coach builder, had been employed earlier by a wheel-making firm, and married in 1869 into a family of coach builders. Panhard was a graduate of the Ecole Centrale des Arts et Manufactures, a prestigious Paris engineering college, as were many French automotive pioneers. He brought into Perin et Panhard, by then one of the largest machine shops in Paris, his classmate, Emile Constant Levassor, who became a partner in 1872. On Perin's death in 1886, the firm became Panhard et Levassor.

After graduating from the Ecole Centrale, Levassor had worked for three years for the John Cockerill engineering works at Seraing, Belgium, where he became acquainted with Edouard Sarazin, a Belgian engineer. In the early 1870s Sarazin became the manufacturer's representative in Paris for Otto and Langden's Gasmotorenfabrik Deutz. He approached his friend Levassor to take the license to manufacture Deutz gas engines, which Panhard et Levassor produced until Deutz established its own branch plant to make the Otto Silent Engine in 1878. Sarazin remained friends with Daimler and obtained the French rights to the new high-speed Daimler engine, which he approached Levassor to manufacture in 1887. After Sarazin's death on Christmas Eve of that year, the French license to manufacture Daimler engines passed to his widow, who became Daimler's business agent in France. Mme. Sarazin married Emile Levassor in May 1890.

The other major figure in this story, Armand Peugeot, had by 1886 become the leading manufacturer of bicycles in France. His family firm, Les Fils de Peugeot Frères, was a major tool maker that employed some 2,000 workers at three factories in the Montbéliard region of France in 1889. As early as 1886, Armand Peugeot had written to Amédée Bollée expressing interest in a Bollée steam-powered vehicle described in the magazine *La Nature*.

Seeking a market for the Daimler engine, and knowing of Peugeot's interest in self-propelled road vehicles, Levassor contacted him. A meeting of historic importance followed in late 1888 between Levassor, Peugeot, and Daimler at Peugeot's Valentigney headquarters, only 150 miles from the Daimler Canstatt plant. Daimler shipped his 1887 car by rail for the meeting, to demonstrate the capabilities of his engine. Also in 1888, Emile Roger had the Benz tricycle that he had bought at the Benz plant in Germany shipped in crates to Panhard et Levassor for assembly and arranged as well for the French firm to produce the Benz two-cycle stationary engine, for which he had obtained French manufacturing rights. In 1890 Levassor delivered several Daimler engines to Peugeot at Valentigney, where a prototype gasoline-powered car was being developed by Louis

Rigolot, the head of Peugeot's bicycle production. In the same year Levassor began work on his own prototype gasoline automobile.

Motor vehicle design was radically altered in the 1891 Panhard et Levassor car, the prototype of the modern gasoline automobile. Its engine was placed vertically in the front of the chassis instead of under the seats or in the back, which put the crankshaft parallel with the longitudinal line of the car instead of parallel with the axles. This mechanical arrangement, called the *Système Panhard*, marked a radical departure from the carriage silhouette in automotive design. Its great importance was that it made possible the accommodation of larger, more powerful engines in motor vehicles. In 1895 Panhard et Levassor began to use the new two-cylinder, 750-rpm, 4-horsepower Daimler Phoenix engine. Levassor drove one of these cars over the 732-mile course of the 1895 Paris-Bordeaux-Paris race at the then incredible speed of 15 mph, with the longest stop for servicing being only 22 minutes—a feat impossible for a horse-drawn rig.

That race, which began on June 11, 1895, underlined both French superiority in automotive technology and the superiority of the gasoline automobile over not only the horse but steam- and electric-powered cars as well. Panhard et Levassor began producing motor vehicles in quantity for sale and issued the first regular catalog advertising motor vehicles in 1892; by 1895 several French firms were issuing catalogs, and the automobile was a common sight on the streets of Paris. In 1894 *Le Petit Journal*, aware of public enthusiasm, had sponsored a 78-mile reliability run from Paris to Rouen, in which all thirteen entries powered by internal-combustion engines and four of the eight steam-driven entries managed to finish. The Paris-Bordeaux-Paris race was the far more ambitious undertaking of a committee of journalists and French automotive pioneers—including Levassor, Peugeot, and Serpollet—under the leadership of Comte Albert de Dion and with help from the Touring Club of France, the leading French organization of cyclists. Of the twenty-two vehicles that started, nine completed the then formidable distance, and the best driving time was Levassor's impressive 48 hours. Levassor was disqualified on a technicality, however, and first place was given to a Peugeot that finished 11 hours behind him. Eight of the nine successful entries were powered by internal-combustion engines. The last car to finish was driven by the Michelin brothers, André and Edouard. Their family rubber manufacturing firm dated from 1832 and was the leading French producer of pneumatic bicycle tires. The Michelin car was the first automobile to be equipped with pneumatic tires, which quickly became standard on French cars.

Following the race, on November 12, 1895, the organizing committee, again under the comte de Dion's leadership, founded the Automobile Club of France to encourage the development of the motor vehicle and to

regulate future sporting events. By early 1896 the club counted 422 well-to-do Frenchmen as members; by 1900 it had 2,261 members and located its clubhouse on the Place de la Concorde. Among its accomplishments, the club developed the automobile show as a marketing device. It sponsored the first automobile show independent of bicycle exhibits in 1898 in Paris. This became an annual event that attracted attention throughout Europe and in the United States.

About 130 automobile manufacturers are estimated to have been in business by 1901 in the Seine Department of France alone, making the Paris metropolitan area the world center of automobile production. The largest market for cars in France was among wealthy Parisians, and the city had the advantage of being a major manufacturing center, with a number of metalworking firms and an abundance of skilled labor. Paris remains the center of automobile manufacturing in France today, an anomaly: in no other country did automobile manufacturing come to be concentrated in its metropolis or, indeed, in close proximity to its major market for cars. Of the early provincial manufacturers, Peugeot was the most important, ranking third in the industry in 1900, after the Paris-based Panhard et Levassor and De Dion–Bouton; and Peugeot established its non-manufacturing operations in Paris.

By the turn of the century Panhard et Levassor, the industry leader, accounted for only about a tenth of French production. The most important of the many other small firms that had entered the French automobile industry was De Dion–Bouton, inaugurated in 1893 when Comte Albert de Dion approached Georges Bouton to develop an engine for a small car to compete with the Daimler motor. Bouton succeeded by 1895 in developing a reliable 2.75-horsepower, 40-pound engine. The tricycle to which this was fitted became the most popular early low-priced car in both France and England. Between 1895 and 1901 about 15,000 were sold, making it the first car to be sold in significant volume. De Dion–Bouton also initiated planned systematic research in the automotive industry by establishing as early as 1897 a laboratory for metallurgical research in conjunction with its factory. In 1899 the firm began to produce a four-wheeled, 550-pound “voiturette,” powered by a one-cylinder, 3.5-horsepower engine, that sold for a modest 3,900 francs (about \$780). By producing some 1,500 units in sixteen months in 1900–1901, De Dion–Bouton for a short time became the leading automobile manufacturer in the world. Between 1900 and 1910 some 140 other automobile manufacturers also bought about 200,000 De Dion–Bouton engines. At one time or another the firm supplied engines to Clément, Darracq, Delage, Peugeot, and Renault in France; to Argyll and Humber in England; to Adler and Opel in Germany; and to Packard, Peerless, and Pierce–Arrow

in the United States. Its engines were also produced under license in Belgium, Germany, Great Britain, and the United States. No firm was more important in the emerging automobile industry.

Other early entrants into the French industry deserving mention are Clément (1898), Darracq (1896), Delahaye (1894), Mors (1895), and Renault (1898). Of these firms only Renault was to have a significant long-range impact. Renault moved quickly from an assembly into an integrated manufacturing operation and concentrated on small cars equipped with a patented direct-drive transmission. By 1908 the firm was the French industry leader. But like all French automobile manufacturers, Louis Renault, the closest French parallel to Henry Ford in background, failed to recognize the need to concentrate on producing a single model at ever decreasing unit costs. James Laux makes the significant observation that “when a [French] firm entered the industry in these years the common pattern was to offer a small and cheap model. If it met with any sort of success the company then began producing additional designs, bigger and more powerful, rather than improving the first one and lowering the cost.”¹

Coincident with the 1898 Paris automobile show, an automobile boom became evident in France, with demand for cars far exceeding the supply. French automobile production consequently jumped from an estimated 320 cars in 1896 to some 4,800 in 1900 and to 16,900 in 1904, the year that United States production first surpassed French. Between 1902 and 1907 France produced more cars than all other European countries combined. France remained the largest automobile producer in Europe until 1924, after which Great Britain vied for leadership.

The French home market was quickly glutted, and the French industry came early to depend on exports for its profits. Whereas in 1901 home demand accounted for some 5,000 sales versus exports of 2,600, by 1903 the situation was reversed and some 7,200 cars were exported, compared with home sales of only 6,900. A market for cars never had developed in Germany, and a 45-percent ad valorem tariff on motor vehicles effectively sealed against European competition the huge developing American market. Consequently, the United Kingdom became the largest importer of French cars and automotive components, accounting for about a third of French automotive exports in the early 1900s.

The British Industry

Most of the early British cars, explains S. B. Saul, were adaptations or superficially modified versions of French models.² The British Talbot,

for example, was assembled from Clément parts made in France; the Siddeley was a British-designed radiator attached to a Peugeot chassis. De Dion–Bouton engines and Lacoste and Batemann chassis equipped with single-cylinder engines were exported from Paris and widely used by British makers, who attached their own bodies and sold the cars under their own names.

The first successful British gasoline-powered car was a 2-horsepower tricycle built in 1895 by Herbert Austin, a trained engineer employed at Wolseley, a firm that produced sheep-shearing tools and, beginning in 1895, bicycle parts. In 1895 the Wolseley directors invested £2,000 in a plant that was to produce automobiles under Austin's supervision. In 1899–1900 both Wolseley and Humber, another bicycle manufacturing firm, began to turn out small one-cylinder cars; they were soon followed by Alldays and Onions, Star, and Vauxhall. About this same time, the production of larger two- and four-cylinder cars based on French designs was begun by British Daimler and by Napier.

Some 59 British companies had entered automobile manufacturing by 1900, some 221 more between 1901 and 1905, including such later famous names as Argyll, Crossley, Riley, Rolls, Rover, Singer, Standard, and Sunbeam. Beginning about 1898, a number of Englishmen, including Charles S. Rolls, entered the automobile business by becoming British agents for French makes. Still others invested in or bought outright going French concerns. The first instance of the latter was the formation in 1896 of the short-lived Anglo-French Motor Company, with an inflated capitalization of £300,000, by Birmingham capitalists who bought out Emile Roger's Benz concession.

Metalworking firms, which played such a significant role in the formation of the French automobile industry, were conspicuously absent from the list of entrants into automobile manufacturing in Britain. Promoters and mechanics from the bicycle industry predominated among the British automotive pioneers. As in France, however, trained engineers were well represented. "It is striking," observes Saul, "how many [British automotive pioneers] received what might be called the accepted training for someone intended for an executive position in engineering at that time—a good school followed by an apprenticeship of some kind."³

The most prominent personality in the early British automobile industry was Harry J. Lawson, who had promoted the Rudge Cycle Company in 1887, then continued in the bicycle business at Humber. Lawson formed the British Motor Syndicate in November 1895, with a capitalization of £150,000, as an attempt to monopolize automobile manufacturing in the United Kingdom through control of key patents. A manufacturing subsidiary, the Daimler Motor Company, was created in

January 1896, with an initial capitalization of £100,000, as the first of an intended series of such subsidiaries; British Daimler placed an initial order for 100 chassis with engines from Panhard et Levassor. A prospectus claimed that the British Motor Syndicate would be “the original parent syndicate of the whole horseless carriage trade now beginning. . . . None may manufacture or use in this country any of the latest and successful types of Motor Cars . . . without first purchasing Licenses or paying a Royalty.”

Lawson’s action was timely, for at the behest of Britain’s pioneer motorists, led by Sir David Salomons, Parliament had passed the Locomotives on Highways Act on November 14, 1896, abolishing the provisions of the Red Flag Act and establishing a 14-mph speed limit on the open highway. To promote the automobile and Lawson’s attempt to monopolize its manufacture in Britain, the Motor Car Club, founded by Lawson and Frederick Simms, staged an Emancipation Day run from London to Brighton. The best performance was turned in by an American-made Duryea.

In addition to the Daimler patents, Lawson in 1896 bought the British rights to the motor vehicle patents of both De Dion–Bouton and Bollée for £20,000 each, and formed the New Beeston Cycle and Motor Company and the Great Horseless Carriage Company as additional manufacturing subsidiaries. British Daimler was to produce high-priced cars for a limited market from Daimler and Panhard patents. New Beeston was pegged to build cars based on the De Dion–Bouton patents for a large-volume market. Humber, Lawson’s bicycle manufacturing firm, was to turn out still lower priced Bollée motor tandems and a tricycle based on the patents of an American inventor named E. J. Pennington, for which Lawson paid the exorbitant sum of £100,000 cash.

The Midlands became the center of the young British automobile industry, as they were of the bicycle industry. In 1896 Lawson purchased an abandoned cotton mill in Coventry as the manufacturing center for his enterprises. As the bicycle boom of the 1890s evaporated, many bicycle firms in the Midlands turned to automobile manufacturing.

Lawson’s attempt to base his monopoly in a conglomeration of early foreign patents was foolish: the state of the art in automotive technology was rapidly changing, outdating those patents. Effective monopolization stood a chance only if the very concept of the gasoline automobile could be patented—which George B. Selden managed to do in the United States—so Lawson’s scheme did not get off the ground. By October 1897 the British Motor Syndicate was unraveling. Daimler shares collapsed from £10 to £4, and Lawson resigned his chairmanship of the company. It survived the demise of its parent company to be reorganized in 1904 and emerge as one of the leading manufacturers of luxury cars in England.

The British Motor Syndicate was reorganized as the British Motor Traction Company in 1900 by Selwyn F. Edge, an Australian-born racing cyclist. The validity of a number of Lawson's patent rights was successfully contested in the British courts by the Automobile Mutual Protective Association, and in 1907 Lawson disposed of the remainder of his patent rights to Edge and Montague Napier for a paltry £1,000, ending his automotive career. Former subsidiary companies, such as Daimler and Humber, "had to struggle for years to overcome the burden of watered stock imposed on them by Lawson," writes Saul, "and the public soon became shy of investing in the [British] industry as a result. Even so, it was a valuable purgative period too; the way was now clear, for neither the swindles of financiers nor the claims of patent holders were ever to trouble the [British] industry seriously again."⁴

The American Industry

Great interest in the automobile was stimulated in the United States by the Paris-Bordeaux-Paris race of 1895. Over five hundred patent applications relating to motor vehicles were on file in the United States Patent Office by September of that year, and the first two American automobile periodicals made their debut with the appearance of *Motocycle* in October and *Horseless Age* in November. On the first page of its first issue, *Horseless Age* reported that "all over the country mechanics and inventors are wrestling with the problem of trackless traction. Much of their work is in an unfinished state; many of their theories lack demonstration; but enough has already been achieved to prove absolutely the practicality of the motor vehicle." The periodical estimated that over three hundred companies or individuals in the United States were or had been engaged in building experimental motor vehicles.⁵

Much more than in the United Kingdom, in the United States the automobile industry developed from native roots. The Duryeas completed their first car in 1893. Their feat was duplicated the following year by Elwood P. Haynes, superintendent of the Indiana Gas and Oil Company, who built his vehicle with the help of two Kokomo, Indiana, machinists, Edgar and Elmer Apperson, and their assistant, Jonathan D. Maxwell. A number of others began to build experimental gasoline automobiles about the same time. Significant among those who had succeeded by 1896 were Hiram Percy Maxim, Charles B. King, Ransom E. Olds, Alexander Winton, and Henry Ford. Compared with the best contemporary French designs, these experimental American cars were primitive motorized horse buggies.

The *Chicago Times-Herald* sponsored the first American automobile race, held on Thanksgiving Day, November 28, 1895. Just six of the eighty-three entrants started, and only two vehicles were able to complete the 55-mile distance: the Duryea car that won and a Benz driven by Charles B. King. J. Frank Duryea's winning average speed was less than 8 mph. But as the *Times-Herald* report the following day stressed, the race had been run in thirty-degree temperatures "through deep snow, and along ruts that would have tried horses to their utmost." Eastern newspapers viewed the contest as a convincing demonstration that the Duryea and Benz cars could perform tolerably under the worst possible conditions and prophesied the demise of the horse. Herman H. Kohlsaat, the publisher of the *Times-Herald*, received an open congratulatory letter from P. H. Studebaker, whose family firm was then the world's leading producer of carriages and wagons. And Thomas A. Edison told a reporter from the *New York World* that "the horseless vehicle is the coming wonder. . . . It is only a question of time when the carriages and trucks in every large city will be run with motors." It was generally believed that the *Times-Herald* race had advanced by a least five years the formation of the American automobile industry.

Capitalizing on their success in the *Times-Herald* contest, the Duryeas made the first sale of an American gasoline automobile in February 1896 and produced twelve more vehicles of the same design that year. Elwood P. Haynes and the Apperson brothers also took advantage of their early start and in 1898 began to build cars at Kokomo. Alexander Winton, a Cleveland bicycle manufacturer, formed the Winton Motor Carriage Company. In the summer of 1897 he gained national recognition by driving one of his cars 800 miles from Cleveland to New York City in less than 79 hours' driving time. Winton sold his first automobile in March 1898 and by December had delivered twenty-two vehicles.

John B. Rae has established that, as in Europe, most of the successful American automotive pioneers "were less likely to be individual inventors starting a completely new business than men who added the production of automobiles to an existing operation. Most frequently, they were bicycle and carriage and wagon manufacturers, or operators of machine shops, but there were a variety of odds and ends." He also points out that although "the number of college-trained engineers in this first generation of automotive entrepreneurs is surprisingly large, considering that engineering degrees were something of a rarity in the United States until the twentieth century," the great majority of the more important figures in the early American automobile industry had received only practical training as machinists or mechanics.⁶

Allowing for changes of name and early failures, thirty American

manufacturers produced an estimated 2,500 motor vehicles in 1899, the first year for which separate figures for the automobile industry were compiled in the *United States Census of Manufactures*. Ten New England firms that concentrated on producing electric and/or steam-powered cars were responsible for the most significant part of that output. The remaining firms were equally distributed between the Middle Atlantic states and the Middle West, which even then was the center for the manufacture of gasoline automobiles. *Motor Age*, one of several recently launched automobile trade journals, estimated in 1899 that in addition to the operations of these manufacturers, experimental work was being carried on in as many as a thousand shops in the United States, “and probably one hundred of them have been in operation for two years or longer without yet having advanced to the stage of manufacture, except in a very few instances.”⁷

As experience proved the superiority of the gasoline automobile, the geographic center of automobile manufacturing in the United States shifted from New England, the home of the electric and the steamer, to the Middle West. The early, overwhelming choice of the internal-combustion engine by midwestern manufacturers was influenced by the region’s poor roads, which were nearly impossible for electrics to negotiate, and by the universal availability of gasoline for fuel in sparsely settled rural areas lacking electricity. As the demand for electrics and steamers quickly subsided and as rural markets replaced urban ones after about 1906–1907, many New England manufacturers saw their sales dwindle to nothing and faced unfamiliar problems of design and production engineering in trying to switch over to the gasoline-powered car.

Michigan, Indiana, and Ohio in particular provided the ideal environment for the manufacture of gasoline automobiles. Their excellent hardwood forests had made these states the center for carriage and wagon manufacturing, and they were also important in the manufacturing of the stationary gasoline engines widely used on midwestern farms. They thus afforded the assembler of gasoline automobiles access to suppliers of bodies, wheels, and internal-combustion engines. Additionally, Detroit was an open-shop town with an abundant supply of unorganized, skilled labor.

Ohio and Indiana were important producers of cars in the industry’s early years. But production came to center in southern Michigan, particularly in the Detroit area. By the end of the 1903–1904 fiscal year, Michigan’s twenty-two motor vehicle manufacturers employed 2,133 wage earners and with an output that year of 9,125 units accounted for 42.1 percent of American motor vehicle production. In that the value of Michigan-made cars accounted for only 22.9 percent of the total value of American-made cars, it is apparent that Michigan concentrated on the

production of low-priced cars for the rapidly developing middle-class market in the United States.

The favorable objective conditions found in Michigan notwithstanding, Gerald R. Bloomfield points out that in its formative stage motor vehicle manufacturing was not tied either to sources of materials or to markets, because transportation costs were relatively low and the industry was not yet capital intensive. Hence, the industry “enjoyed a relatively free choice of location.” Rae asserts that as a consequence, “with due allowance for the influence of economic and geographic factors, Detroit became the capital of the automotive kingdom because it happened to possess a unique group of individuals with both business and technical ability who became interested in the possibilities of the motor vehicle.” George S. May sees as the most critical factor in Michigan’s early rise to hegemony the accidental one of “an idea that Ransom Olds had in 1896 to build a light, inexpensive gasoline-powered motor vehicle [that] led to production of the [1901–1906] curved-dash Oldsmobile. . . . When it was quickly followed by such other successes as the Cadillac, Ford, and Buick, which were in varying degrees inspired by the Oldsmobile, Detroit’s and, to a somewhat lesser degree, Michigan’s reputation as an important center of auto production was established.”⁸

French leadership was short lived. American production overtook French in volume in 1904 and in value of product in 1905. In 1907 United States production reached 44,000 units, compared with about 25,000 for France, 12,000 for Great Britain, and 5,150 for Germany. France lost technological leadership as well to the United States with the appearance of moderately priced, light American runabouts in 1906–1908—most importantly the Ford Models N and T and the Buick “Nifty” Model 10. After 1907 not only the American but also the British and German automobile industries grew at a faster rate than the French. By the beginning of the First World War, United States production dwarfed European production. In 1913, the last year of peace and full production of cars prior to World War I, the United States accounted for some 485,000 units out of the world production of 606,124 motor vehicles.

Some 485 companies entered automobile manufacturing in the United States between 1900 and 1908; and 253 remained active in 1908, the year that Henry Ford introduced the Model T and William C. Durant founded General Motors. The new firms operated in an unprecedented seller’s market for an expensive consumer-goods item. By 1905 the annual New York automobile show was the nation’s leading industrial exhibit. By 1910 automobile manufacturing had leaped from 150th to 21st in value

of product among American industries and had become more important to the national economy on all measurable criteria than the wagon and carriage industry. Some 458,500 motor vehicles were registered in the United States in 1910, making America the world's foremost automobile culture. Nowhere else did a mass market for cars materialize so early.

A Car for the Great Multitude

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No industry in history developed in a more favorable climate of public opinion. By the time the Ford Motor Company was organized in 1903, the belief that the automobile would soon supersede the horse was commonplace. In a statement released in late 1900 through a Boston financial information agency, Colonel Albert A. Pope predicted that “inside of ten years there will be more automobiles in use in the large cities of the United States than there are now horses in these cities.” He further declared that 15,000 of his bicycle agents throughout the country were “fairly howling” for automobiles to meet “an enormous demand.” The principal examiner at the United States Patent Office stated in early 1901 that “to say the future of the automobile is assured is merely to voice an impression which is as common as it is usually vague.” John W. Anderson, one of the original investors in the Ford Motor Company, described the scene in Detroit in a letter to his father just prior to the 1903 Ford incorporation: “Now the demand for automobiles is a perfect craze. Every factory here . . . has its entire output sold and cannot begin to fill orders. . . . And it is all spot cash on delivery, and no guarantee or string attached of any kind.”¹

In many respects the diffusion process was identical on both sides of the Atlantic. The Automobile Club of France, the Royal Automobile Club in Great Britain, and the Automobile Club of America were equivalent organizations of the motoring elite and carried on identical functions—sponsoring tours and tests, lobbying for legislation favorable to motorists, and propagandizing the automobilists’ cause. Less affluent middle-class motorists were represented and their practical needs for touring information, insurance, and so forth, were met by the Touring Club de France and French regional clubs, the Motor Union in Great Britain,