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The Reader's Companion to American History

## AUTOMOBILES

Although the automobile was to have its greatest social and economic impact in the United States, it was initially perfected in Germany and France toward the end of the nineteenth century by such men as Nicolaus Otto, Gottlieb Daimler, Carl Benz, and Emile Levassor.

The 1901 Mercedes, designed by Wilhelm Maybach for Daimler Motoren Gesellschaft, deserves credit for being the first modern motorcar in all essentials. Its thirty-five-horsepower engine weighed only fourteen pounds per horsepower, and it achieved a speed of fifty-three miles per hour. But as late as 1909, with the most integrated automobile factory in Europe, Daimler employed some seventeen hundred workers to produce fewer than a thousand cars per year.

Nothing illustrates the superiority of European design better than the sharp contrast between this first Mercedes model and Ransom E. Olds's 1901-1906 one-cylinder, three-horsepower, tiller-steered, curved-dash Oldsmobile, which was merely a motorized horse buggy. But the Olds sold for only \$650, putting it within reach of middle-class Americans, and the 1904 Olds output of 5,508 units surpassed any car production previously accomplished. The central problem of automotive technology over the first decade of the twentieth century would be reconciling the advanced design of the 1901 Mercedes with the moderate price and low operating expenses of the Olds. This would be overwhelmingly an American achievement.

Bicycle mechanics J. Frank and Charles E. Duryea of Springfield, Massachusetts, had designed the first successful American gasoline automobile in 1893, then won the first American automobile race in 1895, and went on to make the first sale of an American-made gasoline car the next year. Thirty American manufacturers produced 2,500 motor vehicles in 1899, and some 485 companies entered the business in the next decade. In 1908 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. With its vast land area and a hinterland of scattered and isolated settlements, the United States had a far greater need for automotive transportation than the nations of Europe. Great demand was ensured, too, by a significantly higher per capita income and more equitable income distribution than in European countries.

Given the American manufacturing tradition, it was also inevitable that cars would be produced in larger volume at lower prices than in Europe. The absence of tariff barriers between the states encouraged sales over a wide geographic area. Cheap raw materials and a chronic shortage of skilled labor early encouraged the mechanization of industrial processes in the United States. This in turn required the standardization of products and resulted in the volume production of such commodities as firearms, sewing machines, bicycles, and many other items. In 1913, the United States produced some 485,000 of the world total of 606,124 motor vehicles.

The Ford Motor Company greatly outpaced its competitors in reconciling state-of-the-art design with moderate price. *Cycle and Automobile Trade Journal* called the four-cylinder, fifteen-horsepower, \$600 Ford Model N (1906-1907) "the very first instance of a low-cost motorcar driven by a gas engine having cylinders enough to give the shaft a turning impulse in each shaft turn which is well built and offered in large numbers." Deluged with orders, Ford installed improved production equipment and after 1906 was able to make deliveries of a hundred cars a day.

Encouraged by the success of the Model N, Henry Ford was determined to build an even better "car for the great multitude." The four-cylinder, twenty-horsepower Model T, first offered in October 1908, sold for \$825. Its two-speed planetary transmission made it easy to drive, and features such as its detachable cylinder head made it easy to repair. Its high chassis was designed to clear the bumps in rural roads. Vanadium steel made the Model T

a lighter and tougher car, and new methods of casting parts (especially block casting of the engine) helped keep the price down.

Committed to large-volume production of the Model T, Ford innovated modern mass production techniques at his new Highland Park, Michigan, plant, which opened in 1910 (although he did not introduce the moving assembly line until 1913-1914). The Model T runabout sold for \$575 in 1912, less than the average annual wage in the United States. By the time the Model T was withdrawn from production in 1927, its price had been reduced to \$290 for the coupe, 15 million units had been sold, and mass personal "automobility" had become a reality.

Ford's mass production techniques were quickly adopted by other American automobile manufacturers. (European automakers did not begin to use them until the 1930s.) The heavier outlays of capital and larger volume of sales that this necessitated ended the era of easy entry and free-wheeling competition among many small producers in the American industry. The number of active automobile manufacturers dropped from 253 in 1908 to only 44 in 1929, with about 80 percent of the industry's output accounted for by Ford, General Motors, and Chrysler, formed from Maxwell in 1925 by Walter P. Chrysler. Most of the remaining independents were wiped out in the Great Depression, with Nash, Hudson, Studebaker, and Packard hanging on only to collapse in the post-World War II period.

The Model T was intended to be "a farmer's car" that served the transportation needs of a nation of farmers. Its popularity was bound to wane as the country urbanized and as rural regions got out of the mud with passage of the 1916 Federal Aid Road Act and the 1921 Federal Highway Act. Moreover, the Model T remained basically unchanged long after it was technologically obsolete. Model T owners began to trade up to larger, faster, smoother riding, more stylish cars. The demand for basic transportation the Model T had met tended increasingly in the 1920s to be filled from the backlog of used cars piling up in dealers' lots as the market became saturated.

By 1927 replacement demand for new cars was exceeding demand from first-time owners and multiple-car purchasers combined. Given the incomes of the day, automakers could no longer count on an expanding market. Installment sales had been initiated by the makers of moderately priced cars in 1916 to compete with the Model T, and by 1925 about three-quarters of all new cars were bought on time. Although a few expensive items, such as pianos and sewing machines, had been sold on time before 1920, it was installment sales of automobiles during the twenties that established the purchasing of expensive consumer goods on credit as a middle-class habit and a mainstay of the American economy.

Market saturation coincided with technological stagnation: in both product and production technology, innovation was becoming incremental rather than dramatic. The basic differences that distinguish post-World War II models from the Model T were in place by the late 1920s—the self-starter, the closed all-steel body, the high-compression engine, hydraulic brakes, synchromesh transmission, and low-pressure balloon tires. The remaining innovations—the automatic transmission and drop-frame construction—came in the 1930s. Moreover, with some exceptions, cars were made much the same way in the early 1950s as they had been in the 1920s.

To meet the challenges of market saturation and technological stagnation, General Motors under the leadership of Alfred P. Sloan, Jr., in the 1920s and 1930s innovated planned obsolescence of product and put a new emphasis on styling, exemplified in the largely cosmetic annual model change—a planned triennial major restyling to coincide with the economics of die life and with annual minor face-liftings in between. The goal was to make consumers dissatisfied enough to trade in and presumably up to a more expensive new model long before the useful life of their present cars had ended. Sloan's philosophy was that "the primary object of the corporation ... was to make money, not just to make motorcars." He believed that it was necessary only that GM's cars be "equal in design to the best of our competitors ... it was not necessary to lead in design or to run the risk of untried experiments." Thus engineering was subordinated to the dictates of stylists and cost-cutting accountants. General Motors became the archetype of a rational corporation run by a technostucture.

As Sloanism replaced Fordism as the predominant market strategy in the industry, Ford lost the sales lead in the lucrative low-priced field to Chevrolet in 1927 and 1928. By 1936 GM claimed 43 percent of the U.S. market; Ford with 22 percent had fallen to third place behind Chrysler with 25 percent. Although automobile sales collapsed during the Great Depression, Sloan could boast of GM that "in no year did the corporation fail to earn a profit." (GM retained industry leadership until 1986 when Ford surpassed it in profits.)

The automobile industry had played a critical role in producing military vehicles and war

matériel in the First World War. During World War II, in addition to turning out several million military vehicles, American automobile manufacturers made some seventy-five essential military items, most of them unrelated to the motor vehicle. These materials had a total value of \$29 billion, one-fifth of the nation's war production.

Because the manufacture of vehicles for the civilian market ceased in 1942 and tires and gasoline were severely rationed, motor vehicle travel fell dramatically during the war years. Cars that had been nursed through the depression long after they were ready to be junked were patched up further, ensuring great pent-up demand for new cars at the war's end.

Detroit's Big Three carried Sloanism to its illogical conclusion in the postwar period. Models and options proliferated, and every year cars became longer and heavier, more powerful, more gadget-bedecked, more expensive to purchase and to operate, following the truism that large cars are more profitable to sell than small ones. Engineering was subordinated to the questionable aesthetics of nonfunctional styling at the expense of economy and safety. And quality deteriorated to the point that by the mid-1960s American-made cars were being delivered to retail buyers with an average of twenty-four defects a unit, many of them safety-related. Moreover, the higher unit profits that Detroit made on gas-guzzling "road cruisers" were made at the social costs of increased air pollution and a drain on dwindling world oil reserves.

The era of the annually restyled road cruiser ended with the imposition of federal standards of automotive safety (1966), emission of pollutants (1965 and 1970), and energy consumption (1975); with escalating gasoline prices following the oil shocks of 1973 and 1979; and especially with the mounting penetration of both the U.S. and world markets first by the German Volkswagen "bug" (a modern Model T) and then by Japanese fuel-efficient, functionally designed, well-built small cars.

After peaking at a record 12.87 million units in 1978, sales of American-made cars fell to 6.95 million in 1982, as imports increased their share of the U.S. market from 17.7 percent to 27.9 percent. In 1980 Japan became the world's leading auto producer, a position it continues to hold.

In response, the American automobile industry in the 1980s underwent a massive organizational restructuring and technological renaissance. Managerial revolutions and cutbacks in plant capacity and personnel at GM, Ford, and Chrysler resulted in leaner, tougher firms with lower break-even points, enabling them to maintain profits with lower volumes in increasingly saturated, competitive markets. Manufacturing quality and programs of employee motivation and involvement were given high priority. The industry in 1980 undertook a five-year, \$80 billion program of plant modernization and retooling. Functional aerodynamic design replaced styling in Detroit studios, as the annual cosmetic change was abandoned. Cars became smaller, more fuel-efficient, less polluting, and safer. Product and production were being increasingly rationalized in a process of integrating computer-aided design, engineering, and manufacturing.

The automobile has been a key force for change in twentieth-century America. During the 1920s the industry became the backbone of a new consumer goods-oriented society. By the mid-1920s it ranked first in value of product, and in 1982 it provided one out of every six jobs in the United States. In the 1920s the automobile became the lifeblood of the petroleum industry, one of the chief customers of the steel industry, and the biggest consumer of many other industrial products. The technologies of these ancillary industries, particularly steel and petroleum, were revolutionized by its demands. The automobile stimulated participation in outdoor recreation and spurred the growth of tourism and tourism-related industries, such as service stations, roadside restaurants, and motels. The construction of streets and highways, one of the largest items of government expenditure, peaked when the Interstate Highway Act of 1956 inaugurated the largest public works program in history.

The automobile ended rural isolation and brought urban amenities—most important, better medical care and schools—to rural America (while paradoxically the farm tractor made the traditional family farm obsolete). The modern city with its surrounding industrial and residential suburbs is a product of the automobile and trucking. The automobile changed the architecture of the typical American dwelling, altered the conception and composition of the urban neighborhood, and freed homemakers from the narrow confines of the home. No other historical force has so revolutionized the way Americans work, live, and play.

In 1980, 87.2 percent of American households owned one or more motor vehicles, 51.5 percent owned more than one, and fully 95 percent of domestic car sales were for replacement. Americans have become truly auto-dependent. But though automobile ownership is virtually universal, the motor vehicle no longer acts as a progressive force for

ownership is virtually universal, the motor vehicle no longer acts as a progressive force for change. New forces—the electronic media, the laser, the computer, and the robot probably foremost among them—are charting the future. A period of American history that can appropriately be called the Automobile Age is melding into a new Age of Electronics.

James J. Flink, *The Automobile Age* (1988); David L. Lewis and Lawrence Goldstein, eds., *The Automobile and American Culture* (1983).

James J. Flink

See also [Ford, Henry](#); [Iron and Steel Industry](#); [Model T Ford](#); [Oil Industry](#); [Sit-Down Strikes](#); [Suburbanization](#); [Vacations and Resorts](#).

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