

The Great Chadwick Six was one of the two finest American sporting cars of its time. The Simplex was the other. I can't think of any European machine which stood above these two greats.

There were also vast touring Chadwicks, as superbly conceived and constructed as the Chadwick runabouts and roadsters. This was a common practice; almost every manufacturer depended on the "cooking" models he built to bring in most of his revenue. The same engine that enabled Chadwicks to win races also hauled ponderous limousines stuffed with top-hatted gentlemen and their well-upholstered consorts.

The two-seated Fast Runabout Chadwick (first built in 1906) was the most exciting member of the Chadwick family. A savage looking machine, much of its length devoted to a strapped-down hood, it went as it looked it should—quickly and powerfully.

Lift that hood and you will be amazed at the sight. It appears that some French chef has stored three of his biggest, shiniest, copper pots under it. Each of these spun copper "pots" is the water jacket for two of the engine's thumping big cylinders, which have a 5-inch bore and a 6-inch stroke. This adds up to 590 cubic inches—9.5 litres! Each copper jacket surrounds the cylinders, the valves, and the valve guides with about four times as much water as is usual in most engines. It was due to this hyperabundance of coolant that the Chadwick Company was able to boast in its advertising: "When other cars are making steam Chadwick Great Sixes are making records." At least once a Chadwick actually won a race with its fan-belt purposely removed.

But its ability to keep cool was only one of a Chadwick engine's virtues.

The mere fact that it was a successful six back there in 1906, when even Henry Royce was

having trouble adding two cylinders to his fours, was remarkable. Further, it was notably smooth running and so flexible that gear shifting was almost redundant. At least part of its flexibility was due to a unique, if complex, carburetor especially designed for the car. By means of a small lever on the dash it was possible to vary the opening of the spray nozzle to meet any variation of speed, throttle opening, and atmospheric condition. A further advantage was economy. A giant six-cylinder 60-hp Chadwick engine had only about half the thirst for gasoline that most four-cylinder engines of 40 hp had.

Like many high-quality cars of its time the Chadwick had dual ignition, by trembler coil and by Bosch magneto. But unlike other cars, in which the wires of the distributor were twisted (and sometimes loosened) as the distributor was turned to advance and retard the spark, a spiral device was built into the Chadwick's distributor drive shaft to eliminate wire twisting. The magneto drive had a system to enable the magneto to be set at its most efficient position for both starting and running. A Chadwick in good fettle could be started with a quarter turn of its crank using its magneto alone.

Perhaps the most striking feature of a Chadwick engine is its look, its mathematically meticulous finish. The polished brass inlet manifold, the beautifully tapered water pipes, even the streamlined propeller-like fan with its aluminum blades, all are a joy to behold.

The Chadwick engine was the first in history to be supercharged. (The next was an Hispano-Suiza racer in 1912). In 1906 or 1907, Chadwick built a single-stage, belt-driven (from the flywheel) centrifugal blower which turned at 20,000 rpm to push air through the carburetor. Later it was developed into a three-stage pump for the 1908 Vanderbilt Cup Race. There is, however, no evidence that any but racing cars were normally supercharged.



CHAPWICK SIX ROADSTER

*Preceding pages: 1907
Great Chadwick Six Roadster had
590-cu. in. engine rated
at 60 hp, was similar to supercharged
contender in 1908 Vanderbilt Cup Race.*

The rest of the Chadwick equaled the engine in ingenious engineering, superb materials, and high-quality workmanship. The clutch, for example, an internal expanding type (like a drum brake), operated by a rack-and-pinion gear, needed only light pressure for disengagement, compared to the heavy, leg-wearingly pressure required by most cars of the time.

The Chadwick had double chain drive, with the chains entirely enclosed in dustproof, leak-proof cases. Although other makers were going to quieter shaft drives by then, the Chadwick continued with chains, because it was felt they could cope more reliably with the tremendous torque of the Chadwick engine. Chain tension was quickly adjustable by means of bronze radius rods, which formed part of the chain cases. No disassembly of the cases was necessary. The chassis frame, supported by four leaf springs and a rather archaic transverse platform spring aft, like that on today's Rolls-Royce, was fabricated from imported chrome-nickel steel.

The Chadwick's bodywork equaled the high quality of its machinery. Built of aluminum on a steel frame, it was then riveted to a wood frame of yacht builder's quality. At first the bodies were built by the Reading Body Company, but later coachwork was fabricated by the Chadwick-owned Fleetwood Body Company in Fleetwood, Pennsylvania. Absorbed years later by General Motors, the name Fleetwood still embellishes G.M.'s costlier Cadillac bodies.

No committee under a board of directors would build such a paragon among motor cars. Like Henry Royce and Ettore Bugatti, Lee Sherman Chadwick built his cars exactly the way he wanted them built. Cost or time or what his competitors thought was good enough did not count. In his advertising Chadwick quietly stated that his Chadwick car was "the most powerful, the fastest, the

strongest, the safest, the simplest, the quietest, the most easily controlled, the most dependable, the most advanced, the most luxurious car . . . available to the buying public." Geniuses don't go in for false modesty.

Lee Chadwick built his first car to convince his boss not to sell out the ball-bearing factory where he worked as chief engineer. This plant, the Boston Ball Bearing Company, owned by a man named Whitney, built bearings for bicycles and carriages and had been in parlous condition when young Chadwick arrived there from Purdue University. Chadwick, by inventing the first centerless grinding machine for roller bearings, had put the old factory on a paying basis. Whitney congratulated his young engineer, then said, "Now I can sell out." Shaken, Chadwick pointed out that the infant auto industry would be a bigger market than bicycles ever were. The Boston Yankee was adamant. "I'm selling out," he said.

To convince Whitney, Chadwick built himself an automobile—using ball and roller bearings, of course—from shop materials and with the help of a few workmen. He then invited Whitney to come for a ride. A bit frightened by the newfangled contraption, Whitney nonetheless gamely climbed aboard. Chadwick, yelling over the racket of his primitive engine, went into his sales pitch. "Mr. Whitney," he pleaded, "automobiles are the coming thing. They'll use your bearings by the million." Whitney, with a white-knuckled grip on the side of his seat, remained silent while Chadwick argued his case during the hour-long trip through the streets of Boston. The car was a faultless success, but Chadwick's arguments were not. Whitney, happy that his desperate adventure in a "horseless" was over, climbed down. "Young man," he said, "you've done a fine job building this machine. But I'm still going to sell the factory."

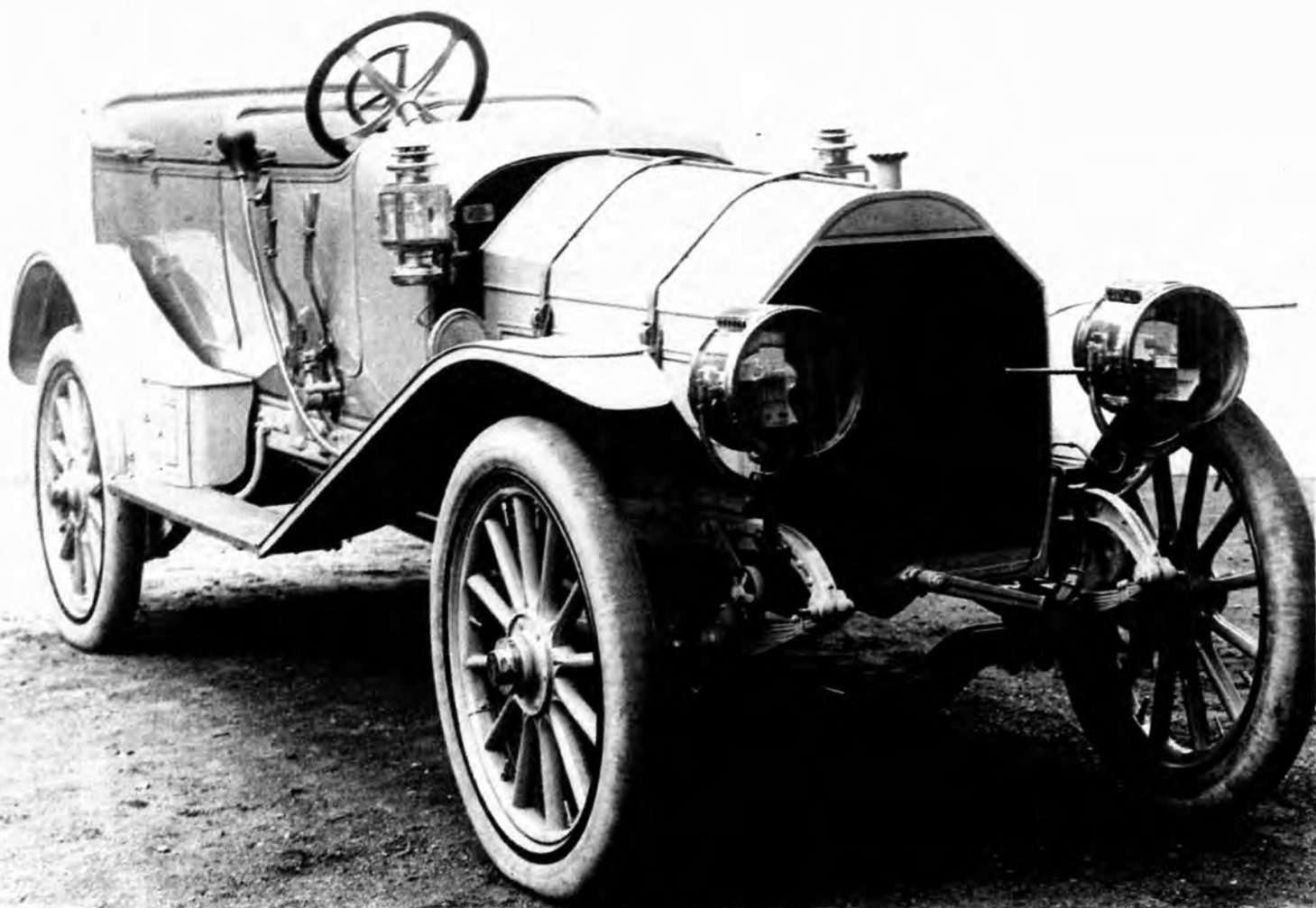


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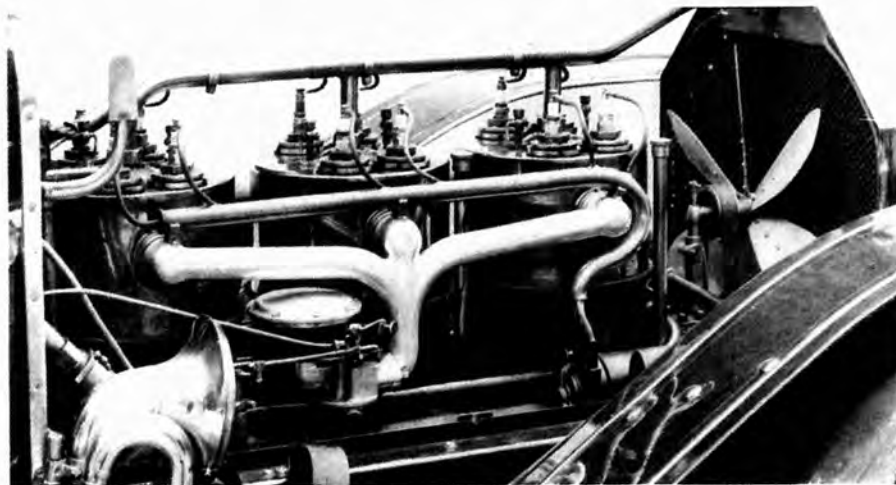
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1. Rear elevation of Chadwick roadster shows big platform spring. "Mother-in-law seat" tilts for access to locker below.
2. Publicity photograph of 1908 Great Six touring car. That trunk seems suspiciously light.
3. Chadwick Six at factory before installation of lights. Cost: \$7,000 plus.



1

1. 1909-10 Chadwick with front doors. Instruction sheets are still inside acetylene lights.
2. Six cylinders of Chadwick engine are submerged in three copper cooling jackets. Big 590-cu. in. engine moved light runabout at around 100 mph. Note fine workmanship of brass inlet manifold.



2

So Lee Chadwick in 1901 got himself a job where he could work on cars. He was hired as superintendent of the Searchmont Motor Company in Philadelphia. There he designed a four-cylinder engine, and was as surprised as anyone when it propelled a Searchmont car at the then spanking speed of 40 mph.

Encouraged, the Searchmont directors had Chadwick find them bigger quarters in Chester. But by the time a hundred or more Searchmonts had been built, the 1903 financial panic had thrown the cautious Searchmont people into receivership.

Chadwick saw his chance. He bought a pile of parts from the receivers and built the first car, a four-cylindereed machine, to bear the name "Chadwick." He immediately sold it and used the money—\$4,000—to go into business for himself in a stable on Callowhill Street in Philadelphia. In 1905, needing more room to build the four-cylinder cars which he was selling quite successfully, he moved his plant to Spring Garden Street.

But Lee Chadwick was dissatisfied. Those four-cylinder cars were very good, but he wanted to build the ultimate, the very best car. Soon the residents of Spring Garden Street became aware of an endless ground-shaking rumble from the little Chadwick works. The huge six-cylinder engine of the Great Chadwick Six was on test.

Installed in its superb chain-drive chassis, it exceeded even Chadwick's great hopes. The fours were abandoned and Chadwick, with money raised from enthusiastic backers, built a new plant in Pottstown, so that he'd be close to the Light Foundry Company, which was to make the Chadwick's castings.

Within the next few years the Chadwick won a dizzying number of victories in hill climbs and on road courses and race tracks. In May, 1908, famed driver Willie Haupt took a stock short-chassis model

up the still-used six-thousand-foot Giants Despair Hill (with grades up to 23 per cent), near Wilkes-Barre, in 1:38.4 to shatter the mark held by a Stanley Steamer. In June Haupt climbed Dead Horse Hill in a minute flat for the steep mile, and defeated the then famous 90-hp Mercedes "Flying Dutchman" and the formidable 120-hp Darracq.

In the Vanderbilt Cup Race of October, 1908, with Haupt again at the wheel, the Chadwick (now supercharged) ran against the seventeen best racing machines in the world. It moved from tenth place up to first by the fourth lap, taking the lead from Locomobile No. 16. It held first place, averaging about 65 mph for the 23.46-mile laps until lap number six. It had covered 140 miles. Then, with the rest of the field strung out behind it, the Great Chadwick Six slowed to a stop. Both its Bosch magnetos were kaput. When the magnetos were opened up, a strictly nonstandard little nut was found lying loosely in each one's breaker-point mechanism. Sabotage? In any case, the big Locomobile, "Old 16," won the Vanderbilt.

The Chadwick, considering its damn-the-cost construction, was quite obviously a car for the rich. The spartan 100-mph Model 19 Runabout cost a whopping \$6,500, a limousine \$8,500. Multiply the price by about five to allow for our devalued money and you'll see why only the kind of people who buy Lamborghini Miuras today could afford one.

Still, Lee Chadwick thought he could improve his cars by setting up his own foundry. He thus expanded his plant at a time when the market for luxury cars already was contracting owing to the flood of mass-production automobiles.

In 1911, balked by his money men, who didn't agree with his continual zeal for improvement, Chadwick left the company. He had built 264 of his incomparable cars. By 1916 the Great Chadwick Six was no more than a great memory.