☐ AUTOMOTIVE MILESTONES

HISTORY OF THE CADILLAC V-16 1930-1940

by Norman F. Uhlir

NINETEEN THIRTY stands out as one of the most important years in Cadillac's history. Cadillac was the first U.S. manufacturer to offer a 16-cylinder automobile. Marmon was the only other American manufacturer to successfully market a V-16 afterward. Later in the year, Cadillac also introduced a V-12. The line now included the LaSalle V-8, Cadillac V-8, Cadillac V-12, and Cadillac V-16—the greatest engine coverage ever offered, before or since, by a prestige automobile manufacturer.

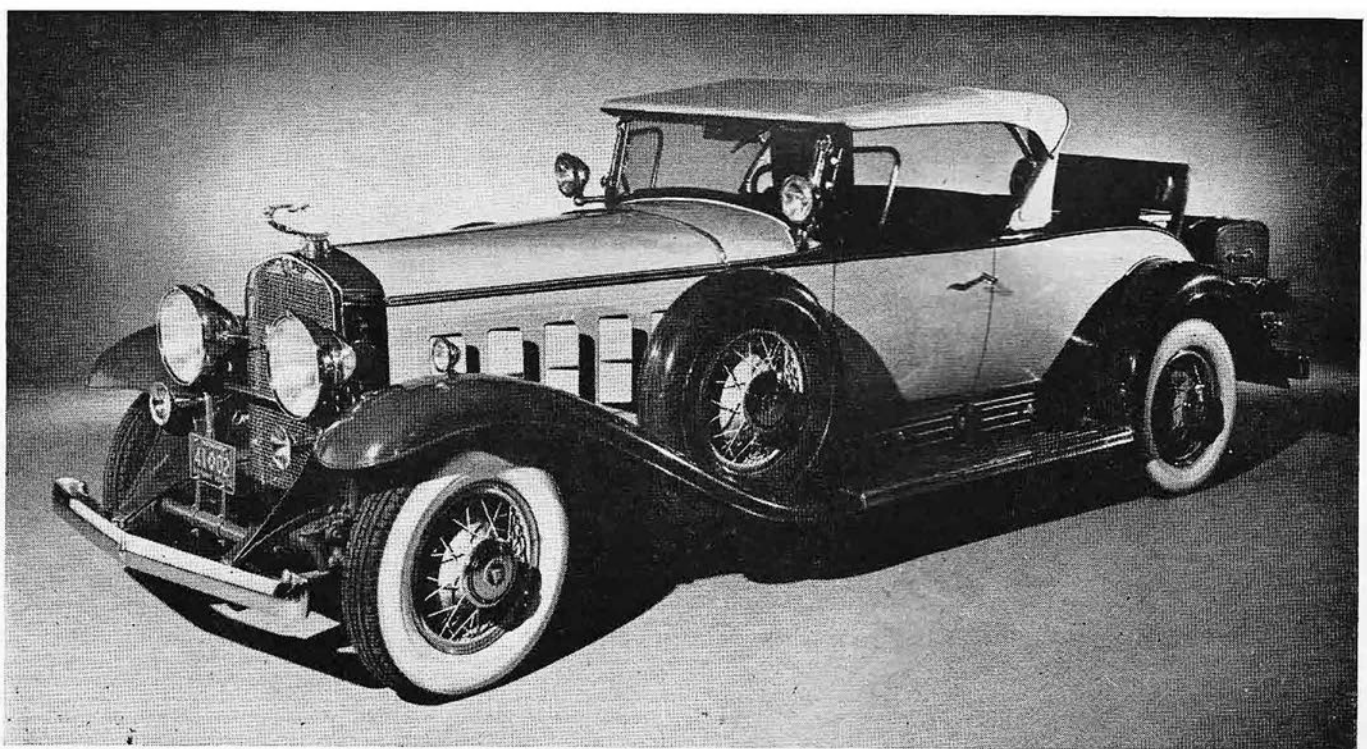
Cadillac had always built excellent automobiles, impressive models particularly noted for engineering advancements and superb workmanship. They weren't the biggest nor the most expensive cars built in this country, but they offered wonderful performance and unbelievable reliability.

Laurence P. Fisher, one of the brothers who'd founded Fisher Body, became president of Cadillac in 1925. In short order, he convinced Alfred P. Sloan, president of General Motors, that Cadillac should also build a larger, more powerful, higher-priced car to compete with the super-luxury behemoths offered by a few other manufacturers.

Approval to proceed with design and development of the new car was evidently given in 1926. It was decreed that there should be complete security during the program. With this directive in mind, Ernest W. Seaholm, chief engineer, assigned the design projects to select groups of engineers. Many of the people on the lower levels, and particularly outside suppliers, thought Cadillac was doing some design work for one of the other GM divisions, because many of the design requests and blueprints referred to the vehicle as "Bus" or "Coach."

Owen Nacker was given the design responsibility for the engine. It'd been decided that the new engine would be the ultimate in automotive power. Since the needed displacement exceeded practicality for a V-8, the engineers decided that an engine with 16 cylinders would be the answer. Nothing was to be spared in design or manufacturing cost. It'd be the best-looking, best-performing engine ever for an American production automobile. Thus, nearly four years before introduction, the die was cast.

Just two vee angles that will yield equal firing intervals are possible in a 16-cylinder engine: 45 degrees and 135 degrees (excluding inverted designs). They chose the 45-degree vee and 452 cubic inches to produce the steamroller-like torque that'd propel the car effortlessly from two mph to top speed—all in high gear. A "sight" model was built for approval. It looked so real that by adding a little oil, gas, and battery power, it might've run. Sloan, Fisher, and



FIRST OF CADILLAC V-16s WAS ALSO HANDSOMEST. CAR STOOD ON 148-INCH WHEELBASE. THIS 1930 MODEL HAD FACTORY FLEETWOOD BODY.

other top officials dropped in often to check on progress.

The engine came off the drawing board as a straightforward design. It was essentially two eight-cylinder in-line blocks mounted on a common crankcase. Each bank of eight cylinders was in perfect balance and could run with the other bank dead. Since each bank had its own ignition coil, carburetor, fuel system (all the way back to the gas tank), and exhaust system, it was very easy to tune one bank while the other pumped just air.

A new valve-silencing mechanism was developed by General Motors Research Laboratories to overcome the problem of proper lash adjustment. The valves were operated by rocker arms driven from the camshaft by pushrods. Rocker arms were mounted on eccentric bushings that had small arms against which there was constant pressure from a spring-loaded plunger operating in oil. This pressure against the eccentric automatically maintained zero valve clearance for nearly silent operation. The critical "listening test" for the Cadillac V-16 engine specifies that you hear nothing more than the spark of the contact points in the distributor at idle speed. The initial engine design required little in the way of change during test and development. Time has proven it a very durable product.

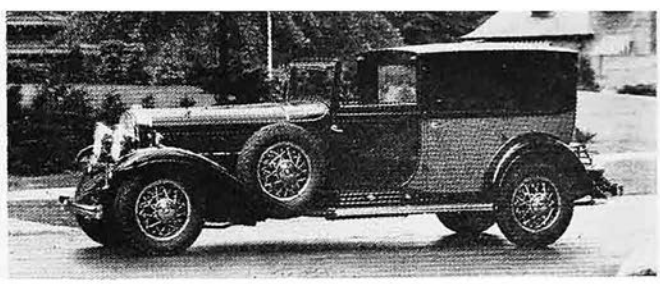
While work on the engine progressed, others were seeing to the chassis, body, and accessory designs. Bodies were built by Fleetwood, under the direction of Ernest Schebera. His devotion to the meticulous details of construction in Fleetwood bodies was legendary. Appreciative of modern trends, he agreed with the thinking of Harley Earl at GM Styling. Here, then, was a combination no other American manufacturer could match. From the Styling Studio came highly individualistic designs to be crafted into reality by a custom builder of the first rank, then joined to a superior chassis within the same family organization. Under security unequaled in the automotive profession, the car was designed, engineered, prototypes hand-built and tested without public knowledge.

The development and testing program, carried out over more than a three-year period and hundreds of thousands of miles of driving, resulted in the Cadillac V-16 being introduced to the automotive market as a car of flawless performance and proven reliability. Thus, on December 10, 1929, L. P. Fisher wrote to the Cadillac-LaSalle dealers announcing the Cadillac V-16. He suggested they tell prospective customers about it.

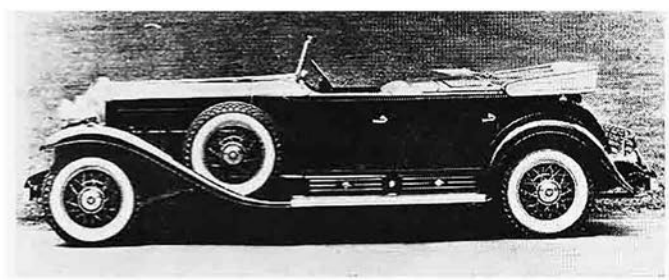
The first two V-16s to be produced were exhibited at the New York Automobile Show the week of January 4, 1930. Although there were few who could afford a car in the highest price range, this car—so entirely new and different—was bound to steal the show. Newspaper and magazine space devoted to discussion and analysis of the car was nearly endless. Many a writer went into great detail to be certain the reader would understand that the V-16 had *16* cylinders —all in one engine.

The 1930 and '31 Cadillac V-16s were identical models. As today, minor changes were made during the production run, but few people can distinguish between the two models. It wasn't expected that dealers could be supplied or deliveries made until the middle of April, 1930. The demand was so great, though, that GM increased production four times. On April 8, 1930, the 1000th Cadillac V-16 was shipped from Detroit. In a period of financial readjustment, and considering that prices ranged from $5350 to $15,000 and higher, this is little short of amazing.

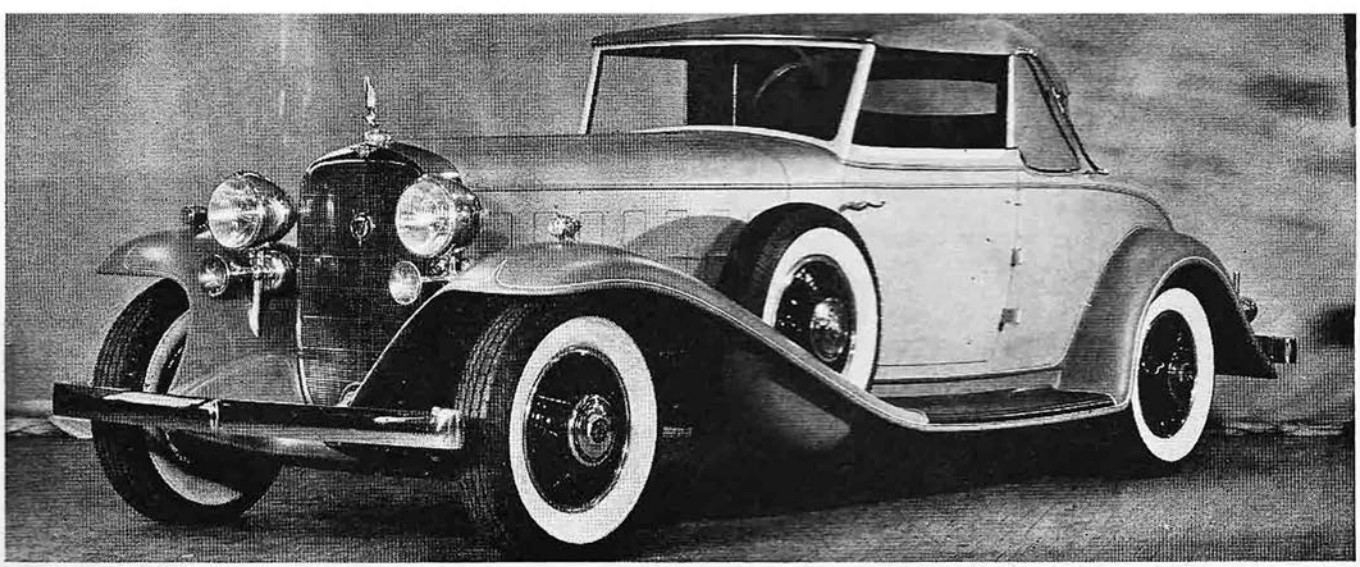
During the first year, there were 2887 Cadillac V-16s produced, of which nearly 2500 were sold at retail. The



Cane brougham of 1931 cost $15,000 in Depression days, marked the ultimate in acceptable ostentation plus smooth, quiet power.



Stainless-steel-spoked wheels graced both brougham at left and this four-seat phaeton. Wheels are now worth $250-400 each.



BY 1932, MUCH OF EARLIER TRIM AND BRIGHTWORK HAD VANISHED. ONLY 300 V-16s WERE SOLD IN '32, WHILE HIGH WAS 2887 IN 1930.

balance was sold in 1931, along with only an additional 364 cars that were manufactured. The 1930 and '31 models constitute nearly 74% of total production through the 1940 model year. Many critics believe the introduction of the Cadillac V-12 in October, 1930, cut sharply into the sale of the V-16, but the economic situation at that time must also have been a major factor.

Over 40 body styles were offered, and you could order any special design as a Fleetwood Custom. Because of the excellent designs of the standard styles offered in the Fleetwood catalogue, few buyers found it necessary to have an outside custom builder produce a body for the Cadillac V-16 chassis. This held true through 11 years of production.

The initial options of construction included disc, wire, or wooden wheels; differential gear ratios of 3.47, 4.07, 4.39, and 4.75 to 1; engine compression ratios of 4.98, 5.11, and 5.365 to 1; and a list of accessories that filled a whole catalogue.

Auto editors had a field day testing and reporting on the car. An English magazine stated, in part: "The engine is very cleanly designed and beautifully finished. It can, indeed, stand comparison with high-grade British and European car engines in these respects. The outstanding feature is undoubtedly the engine, which is so smooth and quiet throughout its range as to make it seem incredible that the car is actually being propelled by exploding gases. The minimum speed on top gear was ascertained at 2¼ mph. From this speed the car will get away quite smoothly if the throttle be suddenly opened wide. The acceleration is very good. In London traffic, the flexibility and instant acceleration on top gear make the car delightful to drive, and the same qualities produce very effortless travel in the country."

George Tolan, White House chauffeur for 30 years, recalls the 1930 Cadillac V-16 then in presidential service. He drove this one in the motorcade as chauffeur to the secretary. One day, on a trip to his Rapidan Camp in Virginia, the President, who was in another make of limousine, noticed how much faster the Cadillac could climb hills, and he then appropriated the car for himself. President Hoover grew so fond of the car that he arranged to buy it and take it with him when he left office—the only President in Tolan's recollection to do this.

Depending on body style, the V-16 cars weighed right around 6000 pounds. Needless to say, even with the then-tremendous torque of the V-16 engine, the cars weren't outstanding by today's standards. But at that time, few other cars could match their performance and fewer could exceed it. Proving grounds testing shows that maximum true top speed for the 1930 seven-passenger sedan with the 4.39-to-1 axle ratio was 86½ mph. The roadster and phaeton with the 3.47-to-1 ratio could exceed the century mark, but that axle wasn't supplied after June 1, 1930.

Nineteen thirty-two was the only year that both Fisher Body and Fleetwood bodies were available on wheelbases of 143 and 149 inches respectively. Prices were drastically reduced to attract buyers—who were becoming as scarce as stable banking institutions. Styling was more rounded, with what many consider to have been the finest of flowing fender lines. A magnificent grille replaced the former radiator windscreen, and a Ride Regulator to control the shock-absorber valving was standard equipment. Surprisingly, 300 cars found owners. Cadillac, with the backing of GM management, made the firm decision to stay in business with the V-16. Without proof or verification, it'd seem to be a safe assumption that the continuation of the Cadillac V-16 through 1940 was a heavily subsidized operation.

With the introduction of the 1933 model, Cadillac adopted a restricted ownership policy, whereby only 400 cars would be built on special order. Some of the full-page ads in prominent national magazines read, in total: "Again . . . Cadillac limits the year's production of the V-16 to 400 cars." As the Depression wore on, the "400" circle never suffered from over-subscription. The 1933 World's Fair Aerodynamic Coupe was far advanced for that time and, since this was a show job, we shouldn't yet consider it a production model. Four-bar bumpers, skirted fenders, vee'd grille, horizontal hood vents, and No-Draft Ventilation windows were the major features of the 1933 model.

The 1934 through '37 Cadillac V-16s were very similar. For 1934, a number of engine modifications were made to give added power for the heavier 154-inch-wheelbase chassis. This is the longest wheelbase ever offered on a standard production American passenger car. Until 1934, the distributor spilled its wires out the side of the cap, which dressed the spark plug cables neatly toward the valley cover. From 1934 through '37, the wires spouted up in a fountain-like arrangement. Hollywood spinner hubcaps over the wire wheels were standard, along with pushbutton starting, independent front suspension, handbrake on the left of the steering wheel, three-beam headlights, and two-bar bumpers that were spring-loaded to give two inches on an impact of 800 pounds.

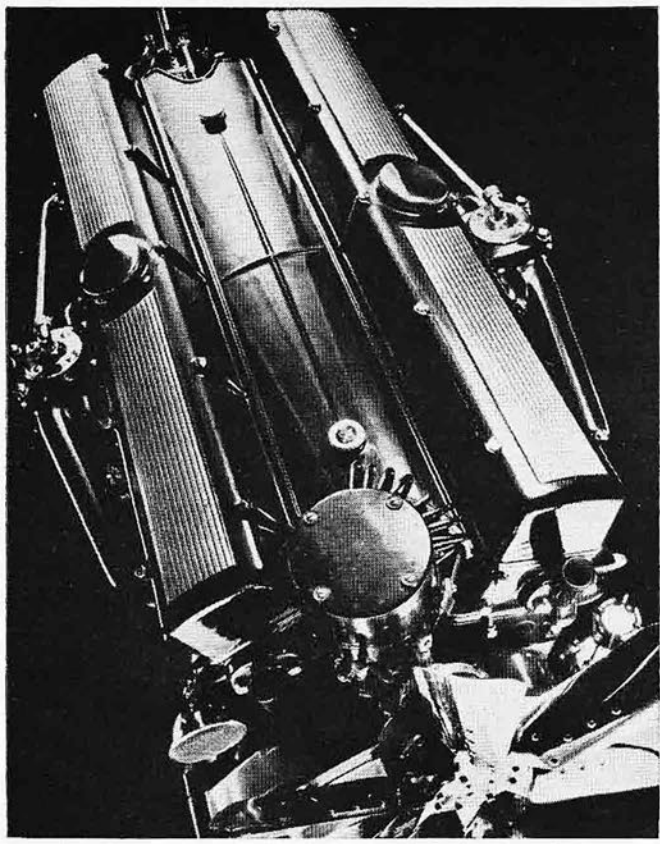
Blaine Evenson, chauffeur for William Knudsen, executive vice president of GM and later president, recalls that he watched Knudsen's 1934 Aerodynamic Coupe being built at the factory. The Michigan license plate number was V-1600. He once put the Knudsen family on the train in Hot Springs, Virginia, and easily beat the train to Michigan Central Station in Detroit to drive them home.

Little change was made in 1935 except for conventional bar bumpers. All closed styles used the turret top in 1936, and the flat windshield models were dropped in favor of the vee'd type. Mechanical modifications were again held to a minimum, as orders skidded to an all-time low of 50 cars.

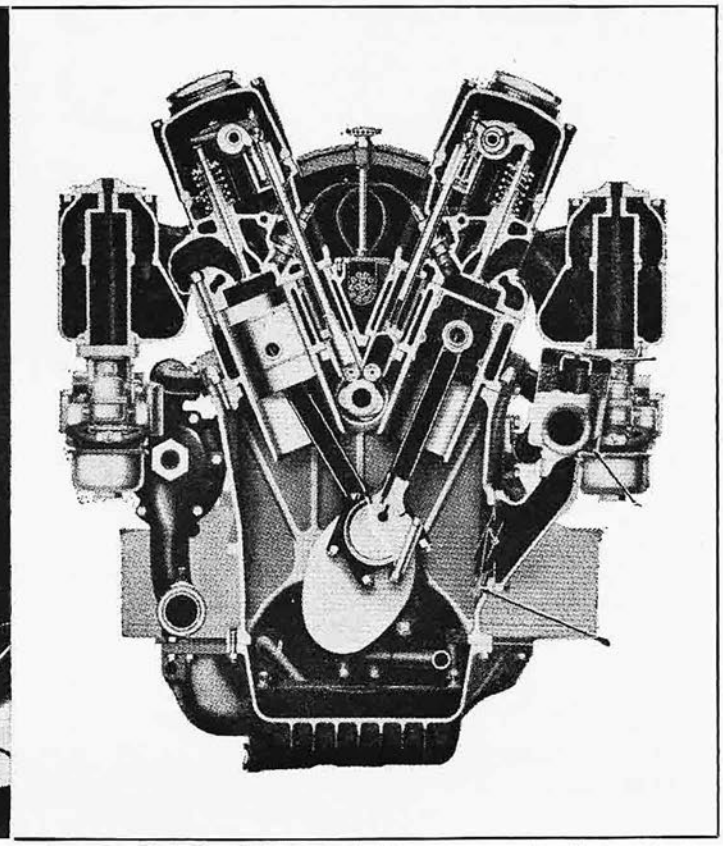
The Aerodynamic Coupe was available as a production model, although only three of them were built in 1934. In fact, there were just the three in 1934, four in 1936, and one in 1937 on the V-16 chassis. Of the eight built, four are known to exist. Nineteen thirty-seven was the last year for the beautiful ohv V-16 engine, and the adoption of hydraulic brakes was the only significant change in that model.

This brings us to what I believe was the boldest move ever carried through to a successful conclusion by the management of any automobile company—the introduction of a 100% all-new Cadillac V-16 car for the 1938 model year. Production in the four previous years had totaled only 212 units. No other manufacturer in the fine-car field had offered anything radically new in a luxury model, and most of the competition had, unfortunately, been forced out of business through economic reverses and the dwindling higher-priced market. Cadillac's market penetration had improved slowly but certainly from 1927 onward, and by 1938, Cadillac was garnering nearly half the market above the $1500 price range. The all-new V-16 in 1938 was the decisive factor in establishing Cadillac as the undisputed leader in the fine-car field, a role they haven't relinquished to this day.

Ernest W. Seaholm, who continued as chief engineer until 1943 to conclude 20 years of notable contribution in that position, explained the 1938 program to me during a recent interview. The company felt that both the V-12 and V-16 were becoming outdated. They were being surpassed by the Cadillac V-8, both in power-to-weight ratio and efficiency. The V-12 was definitely not necessary, since the V-8 developed almost as much power. Another factor was that an all-new body had been scheduled—the long, high, ohv V-16 didn't fit into the picture. Thus, the higher-ups decided on a new L-head V-16 with a 135-degree vee. This new engine, with a square bore and stroke of 3¼ inches, nine-bearing crankshaft, and piston travel of only 1590 feet per mile (with the 4.31-to-1 axle) proved to have remarkable dura-

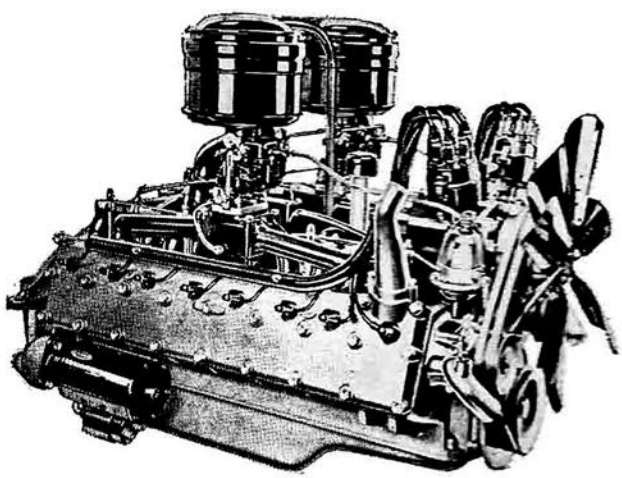


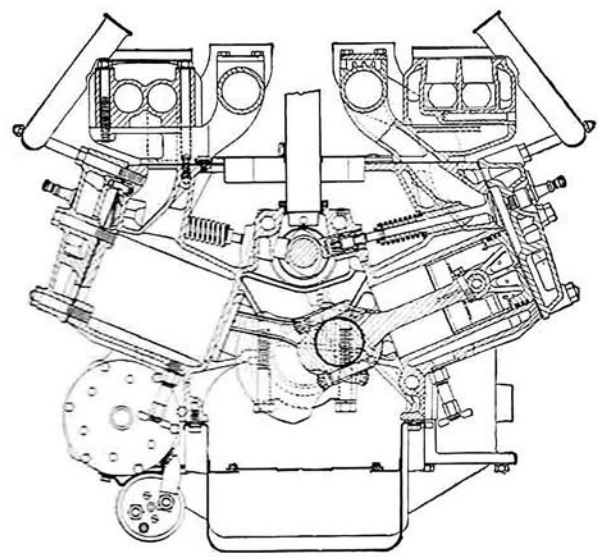
Flawless design of early ohv V-16 included aluminum block, pan, valve covers, fan, and more. No wires showed in engine compartment — just lots of chrome, polished enamel, and aluminum.



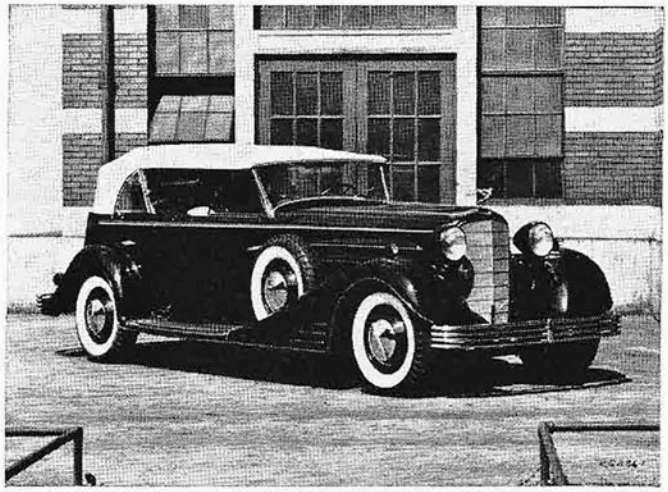
Engine delivered 165 hp in 1930, was upped to 177 in '34, then boosted again to 185 in '36. Twin updraft carbs and separation of banks essentially made this 452-incher two Eights in one.

ILLUSTRATIONS COURTESY CADILLAC MOTOR DIVISION, CADILLAC-LASALLE CLUB, INC.

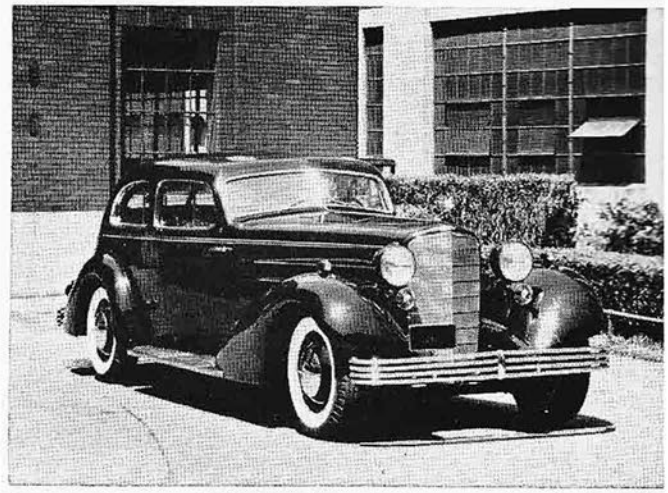




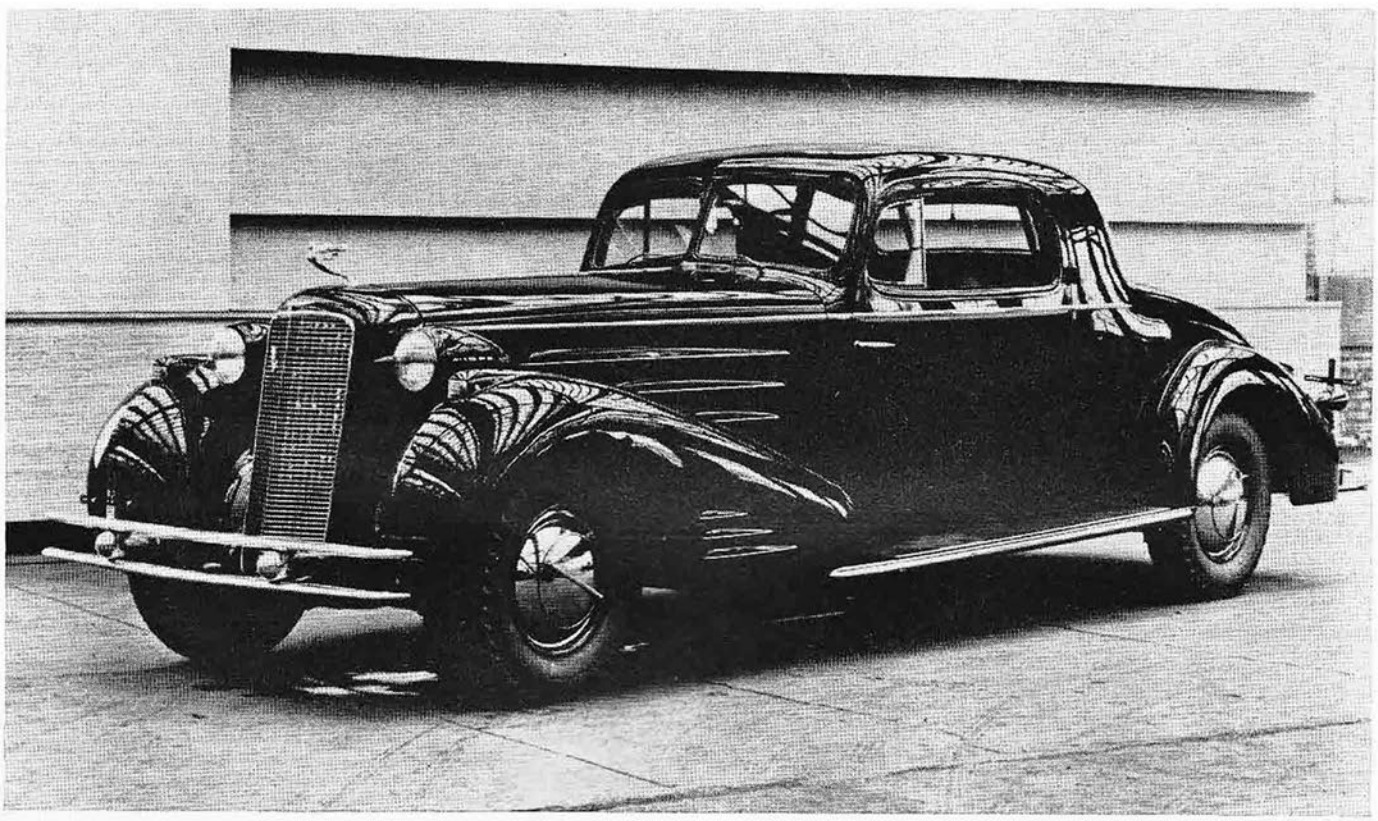
In 1938, Cadillac completely re-engineered the V-16, brought out a flathead design on a 135-degree plan. It was nearly an opposed 16, gave much lower silhouette, put most accessories on top. Two downdraft carbs helped give 185 hp. Only 514 L-head V-16s were sold. A V-12 wasn't made during this time, and Cadillac dropped this 431-inch V-16 completely by end of 1940.



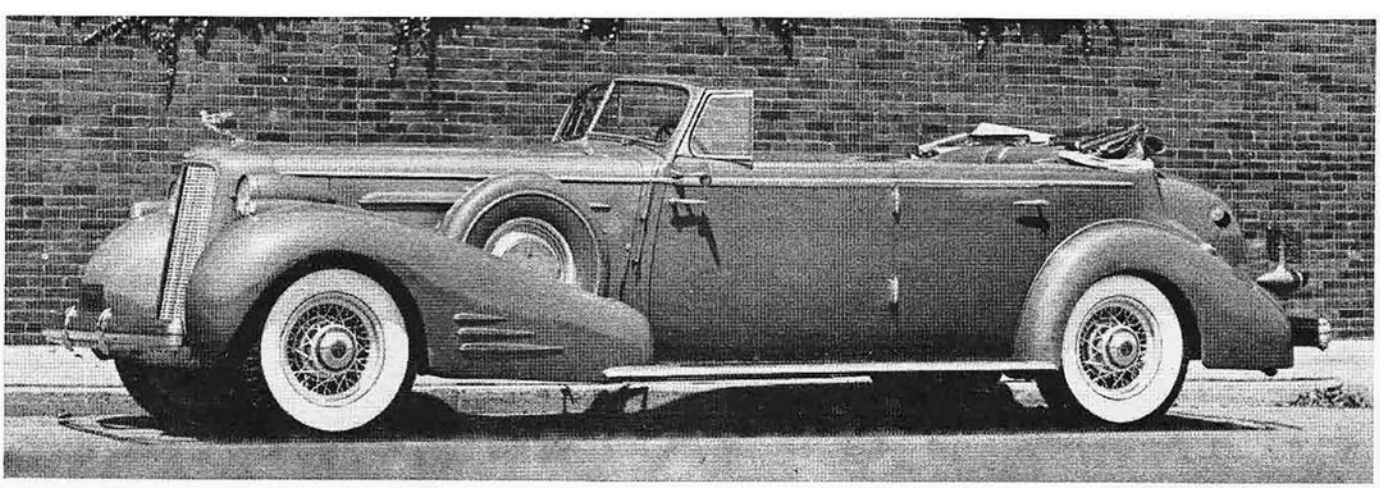
Four-tiered bumpers, Lincoln-like windwings, and modernized lines left 1934 Cadillac looking massive but much less classic.



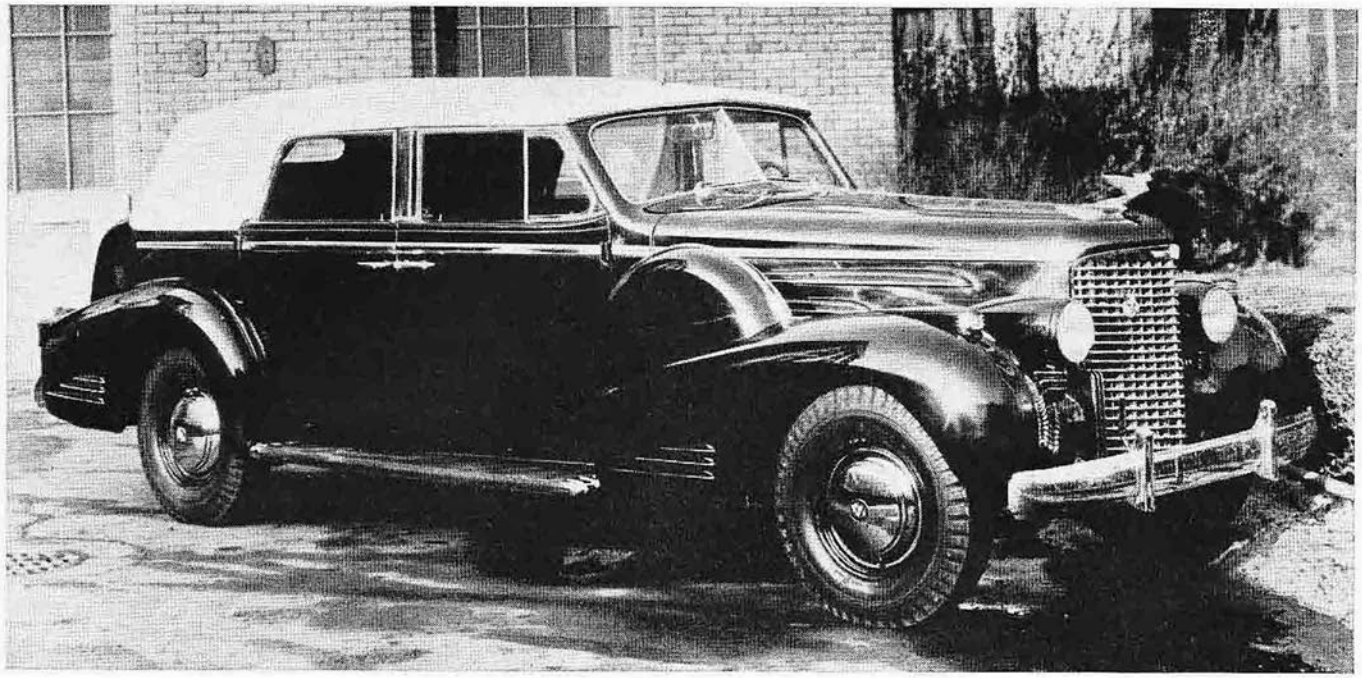
An exception was 1934 Aerodynamic Coupe, originally built for World's Fair. Fastback rear, Turret Top put it ahead of time

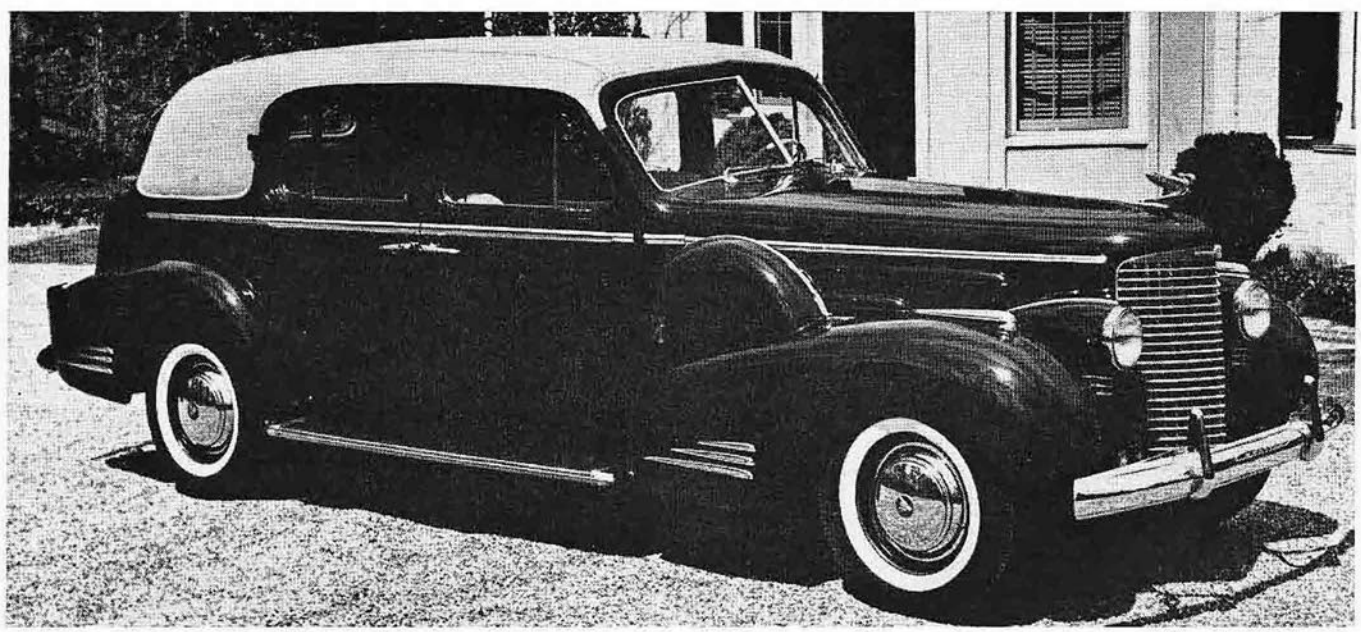


BY 1935, V-16s STOOD ON 154-INCH WHEELBASE, LONGEST EVER FOR A CAR. THIS AUSTERE BUT POWERFUL COUPE CARRIED TWO PASSENGERS.



ANOTHER EXAMPLE OF 1935 COACHWORK, CONVERTIBLE SEDAN BODY PROVED POPULAR WITH CAD BUYERS, WAS CONTINUED UNTIL AFTER WW II.





FACTORY MADE VERY FEW CHANGES BETWEEN 1938 V-16 (ABOVE) AND 1940 MODEL (BELOW). THE V-8s OF SAME PERIOD DIFFERED MORE.

bility, smoothness, and flexibility from any speed on up beyond 100 mph. In comparing it with the ohv V-16, it was nearly six inches shorter, 12 inches lower, 4⅜ inches wider, 250 pounds lighter, and had slightly less than half as many parts. The new engine weighed only 120 pounds more than the 1937 V-8 as used in the Series 75 limousine.

The all-new Cadillac V-16 burst on the automotive scene on October 27, 1937, at the New York Auto Show, recreating the excitement its predecessor had generated eight years before. The bodies were new from bumper to bumper. The car had column gearshift, an alligator hood, new instrument panel, and a single exhaust system with the muffler placed transversely behind the gasoline tank. The transmission was the same used in the V-8 Cadillac and LaSalle.

There was little change in the car between the 1938, '39, and '40 models. The instrument panels and bumpers followed the V-8 designs each year. In 1939, the license light and plate were moved to the center of the trunk lid. The 1940 model used Sealed Beam headlights, turn signals combined with the parking lights, trim strips added to the side of the running boards, and the running board end plates were plain instead of fluted (as in the previous two years). These cars, due to a power-to-weight ratio far more favorable than the 1930-37 V-16s, were fantastic performers for their size.

In any year that the Cadillac V-16 was built, there were few other cars that could match it. By 1940, three out of four cars sold in the luxury class were Cadillacs. As abruptly as it'd entered the scene, the Cadillac V-16 was discontinued at the end of the 1940 model year to close the curtain on an era that won't likely be repeated. /MT

Special acknowledgement goes to the Public Relations Department of Cadillac Motor Car Division and to the Cadillac-LaSalle Club (710 Symes, Royal Oak, Michigan) and its members for the use of photographs and technical information.