

AN ENGINEER LOOKS AT THE NEW CARS

By Dale Kelly, SAE

With most of the 1957 cars now in the dealers' showrooms, we asked Dale Kelly, PM's automotive engineer, to give you his thoughts on certain of the year's innovations. At this writing, Kelly is beginning full-scale tests of the 1957 Ford, Chevrolet and Plymouth. He tests only standard production models of these cars. *Popular Mechanics* does not believe its readers are interested in unscientific "quickie" tests of hand-built engineering prototypes. These are not at all the same cars that you will buy. They are free from the defects of mass production. However, because we realize you are interested in an informed opinion, we are bringing you this preliminary account of some of the new engineering features based on information provided by the car companies. Actual test reports of production cars will appear in early issues.

THE 1957 CHEVROLET offers, as optional equipment, the first fuel-injection system used on an American production car.

The system differs from that used on the Mercedes-Benz (and elsewhere) in that gasoline is not injected into the cylinder, but into the inlet manifold just ahead of each inlet valve and, secondly, injection is a steady stream rather than separate pulsations.

Fuel injection avoids a number of weaknesses inherent in carburetors. In the best carburetor there is some variation in the amount of liquid gasoline getting into the different branches of the manifold. If every cylinder is to receive enough gasoline for full power, the carburetor must be so adjusted that some receive more than this, the excess therefore being wasted.

One remedy is to heat the manifold enough to vaporize nearly all the gasoline. Vapor mixes better with the air and distributes more uniformly among the cylinders. Unfortunately, this expands the air also and reduces the weight of air the engine can draw in. Consequently, power is reduced.

Another remedy is to use a manifold small enough to keep the air moving fairly fast even when the engine is running slowly and at light load. But this also reduces power. In some cases it has been necessary to use multiple carburetors, up to one per cylinder.

In fuel injection, the amounts of gasoline reaching the various cylinders are virtually identical, even though the inlet manifold is cold and large in cross-section. Economy and power both benefit.

The Chevrolet version of fuel injection cuts the gasoline flow completely off when the car is coasting against engine drag, so that fewer unpleasant odors and less dead-

ly carbon monoxide are discharged from the exhaust.

Smaller Wheels

Fatter tires with less air pressure on smaller wheels (14 instead of 15 inches in diameter), are being used to soften the ride and to give an appearance of lowness. The center of the 8.00 x 14 tire is only an eighth-inch closer to the ground than that of the 6.70 x 15 tire it replaces.

It is widely felt that the biggest brakes that can be put on the 15-inch wheels are unduly prone to overheat and fade under repeated severe usage. With the smaller 14-inch wheels carrying the new heavier cars, this situation will hardly get better. It may get worse, unless there is a radical change in the type of brake used.

Supercharged Hawk

Studebaker uses a supercharger in the 1957 Golden Hawk to get 275 horsepower out of the 289-cubic-inch Studebaker V8 engine. This is the same power rating the Hawk had last year. But last year it used the 352-cubic-inch Packard V8. The supercharger enables Studebaker to get equivalent power with 63 fewer inches.

This supercharger is essentially a centrifugal blower or compressor, driven by belts from the front of the engine, that gives a five-pound-per-square-inch boost to the air entering the carburetor, delivering it at 20 pounds per square inch instead of the normal atmospheric pressure of 15.

Used with a small engine, a supercharger makes it possible to combine exceptional economy with adequate performance.

Chrysler's Front Suspension

The Chrysler family of cars uses ball-joint suspension in front (this is neither

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BUICK



Just over an inch longer, the Super four-door hardtop looks about a foot longer because of its lower lines



Characteristically Buick is the front-grille design. The hood line has been lowered drastically in 1957

General Motors Offers

LAST SPRING when rumors of great engineering changes were running through the industry, President Harlow E. Curtice of General Motors said "no revolution is coming."

He insisted that there's no place in the business for revolutionary changes. Cars evolve and improve gradually, he said.

Well, General Motors' cars are out for you to see and you'll probably agree that Mr. Curtice was right.

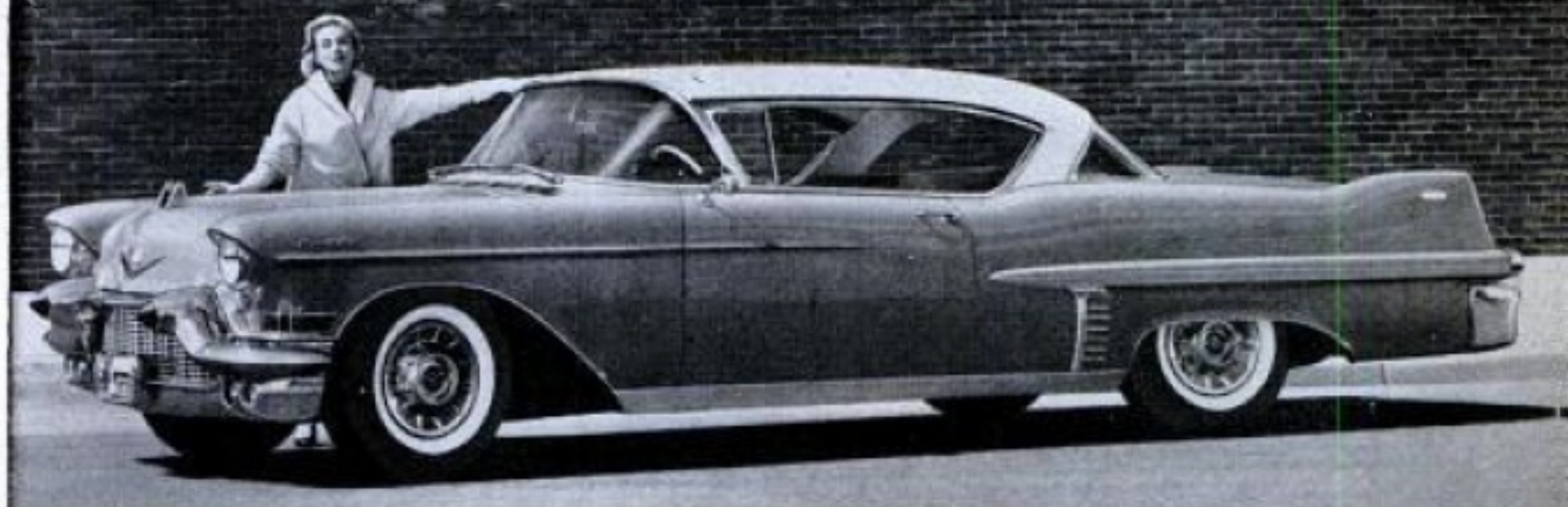
Despite its all-new body and frame, Buick is still recognizable as a Buick. Despite Cadillac's new X-frame, its entirely new sheet metal, it's still definitely a Cadillac—you don't have to read the label. The same is true of Oldsmobile and Pontiac (the last-named is not all new this year, being a major facelift).

But the cars are different, drastically different in certain spots. Some models are more than three inches lower. Many are

New is the Century Caballero, a wagon with no pillars between doors. Grooved roof is for decoration only



CADILLAC



Low, long and luxurious are words to describe the Coupe de Ville. It is two inches lower than the 1956 version

Three All-New Cars

longer, but not much. Interior dimensions, engineers say, are unchanged or, in some cases, improved.

But the most obvious difference is the lowness. Stand beside one of the new models and you'll find yourself looking down on the roof. And you stoop lower when you enter. But once in, you get a more stable ride because of the lower center of gravity.

Cadillac's X-frame has no side rails. Instead, the body is secured to outrigger mounting brackets. This permits lowering the car and increases torsional rigidity, says Cadillac. Other new frames (Buick and Oldsmobile) are more conventional.

All GM cars now have ball-joint front suspension as, in fact, has the whole industry). All but Pontiac and Chevrolet have sharply raked corner posts on the windshields that bring the lower edge of the glass much farther back. Cadillac and Buick retain the 15-inch wheels, the others



Those dark spots in the center of the bumper guards are molded rubber inserts to reduce parking damage

Tailfins on the Eldorado Biarritz are inboard. There is no continuous bumper. It consists of three sections



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OLDSMOBILE



Super 88 four-door sedan, like all Oldsmobiles, rolls on 14-in. wheels. Note the enlarged windshield



Traditionally, Oldsmobile has had bold, uncluttered front grilles and the 1957 version is no exception

More than two inches lower and four inches longer this year is the Starfire 98 Holiday four-door hardtop

at GM have changed to 14-inch wheels. Let's be specific, taking the cars in alphabetical order.

Buick

The enlarged V8 engine develops 300 horsepower in all models but the 250-horsepower Special. Displacement is up sharply to 364 cubic inches. Compression is 10 to 1 (9.5 to 1 on the Special).

Dynaflow transmission is unchanged from last year. ("Pregame tips" of a new transmission were right; Buick changed its mind at the last minute.)

Buick continues full cutouts on all wheels and all models. The hood line is lower, as is the trunk lid. Roadmasters are distinguished by two strips of chrome extending up over the trunk lid along the roof to the windshield. Buick continues its



PONTIAC



Pontiac's Star Chief four-door hardtop is lower and has a rocket-shaped two-toning along its full length

torque-tube drive with coil springs on all wheels. Optional on all models is a safety speed reminder that buzzes when a certain speed is reached (if the buzzing annoys you, you can shut it off or raise the speed setting by a knob on the dashboard).

New at Buick is a four-door wagon called the Caballero, featuring hardtop, pillarless construction and a grooved roof.

Cadillac

You'll get 300 horsepower at Cadillac also, or if you wish you can have 325 in your Eldorado as an optional extra. Compression in all engines is 10 to 1, displacement is 365 cubic inches (one inch more than Buick).

Except for limousine models, all four-door Cadillacs have hardtop, pillarless

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Notice something missing? You're right. The Silver Streaks are gone. The protruding hood ornament, too

Already long and low, the Star Chief convertible becomes more so when the continental tire mount is added

