1958

AN APPRAISAL OF THE NEW MODELS

By Arthur R. Railton

TOP STORY for 1958? It's tough to pick just one. There's an abundance of mechanical innovations—some of real significance, some of passing interest only.

This year there are more mechanical changes than usual as the companies, in most cases, move into the second year with the same body styling.

Probably the top candidate for honors is the widespread availability of air suspension. Except for Studebaker-Packard and Chrysler Corporation (and don't be surprised if Chrysler has an air-steel option in midseason), the entire industry will be floating around on optional air bags by midseason.

Looming big, too, is the adoption of the unitized body by Lincoln and Ford Thunderbird (yet to be introduced).

A whisker behind, if behind it is at all, comes the all-new Chevrolet chassis, body and engine—a major achievement for any manufacturer, even one in the family of mammoth General Motors.

Less important, perhaps, but of interest are such items as fuel injection, electronic and otherwise, a big crop of lighter but bigger engines, the rise of the acoustical engineer, the completely variable-pitch transmission stator, aluminum brake drums and other accomplishments.

Let's look at some of these developments in greater detail.

Air Suspension

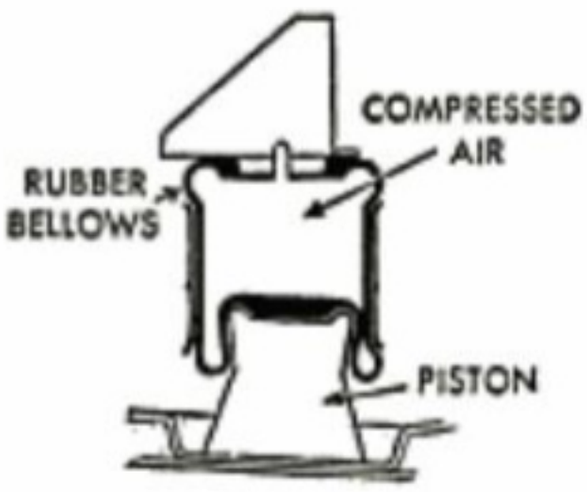
If you need evidence of how fast the industry can solve a problem when it wants to, look at air suspension. A few years ago, air suspension was a faraway look in Detroit's eyes. It was, engineers said, suitable for trucks and buses, but still a long, long way from the passenger car. It was too complicated, too expensive, too apt to give trouble and, anyway, unnecessary.

What happened? Like a horde of ants pouring in on a picnic sandwich, engineers in various companies went to work. Within two years, three companies have licked the problem and are boasting about the system's simplicity, its long life and its trouble-free nature.

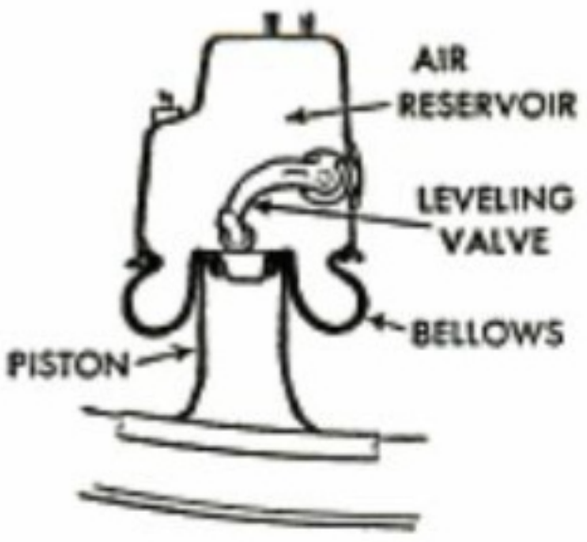
Air suspension does have advantages. Nobody denies that. But it isn't the difference between night and day. It is more the difference between a good day and a perfect, it's-great-to-be-alive day.

Unlike steel suspension, air has almost a zero rebound. It acts, as one engineer describes it, like a dropped ball of putty. It just flattens out, without fuss or bother, smoothing out the wildest rebound.

You can demonstrate the principle of the air bag simply by pushing your fist into a balloon restricted in a cup



Here's how it works in a car. The body and frame rest atop the bellows, the wheels and axles ride beneath the piston



Chevrolet's leveling valves are inside the bags. Other designs mount them separately between frame and axles

UNIT BODY

Big news indeed is the use of the unit body by Lincoln. It makes the bigger-than-ever car as tight as a bank vault, provides more headroom too

X-FRAME

Chevrolet's X-frame makes it 30 percent more rigid. It also makes possible a smaller turn circle even though it's longer

Close-up of rocker arms on '58 Dodge engine, which is one of year's new designs. It is bigger in displacement, yet takes up less underhood space

Such a characteristic is fine on sharp dips or frost heaves, but on a table-smooth boulevard it offers little advantage. The ride is good, of course, but so is it on a well-sprung steel job for less money at the moment.

Air suspension does provide constant height. The car rides the same and maintains the same height whether partially or fully loaded. It makes it unnecessary to compromise for a soft ride and a heavy load. You can have a system that will handle both equally well.

Air solves the trailer-drag problem for the week-ending boater. It will also, in Buick at least (which has an override button to boost the body five inches above its normal height when desired), provide a means of raising the body to move easily through deep snow or rutted back roads.

Most air suspensions are the same. Squeeze an inflated balloon into a large measuring cup and push your fist against it. You are demonstrating how air suspension works. The car has a compressor that provides additional air and a leveling device that meters air into the "balloon" when needed, but the principle is the same. The automobile axles have "fists" on them which push into balloons restricted inside steel grilles. The trapped air is compressed and you ride in comfort—like riding on air, which in fact you are.

Air suspension is simple. Its major complication is the leveling valves. Chevrolet simplifies that by mounting the valves inside the air bags where they are protected. Some systems have fast and slow-leveling devices, others rely on a slow system only. Fast-leveling adherents say when the passengers climb into the car it should level at once. Slow-leveling exponents say the car will level in a few seconds anyway, why complicate the system unnecessarily with additional valving?

Not publicized yet, but certain to be along in the future are all sorts of accessories to use with the air systems: Paint sprayers, tire inflaters, air horns, air brakes and undoubtedly many more.

Unit Body

Lincoln, in its new plant at Novi, Mich., has invested its future in the unit body. To build unit bodies requires a different assembly operation, different machinery. This is one reason why Ford or Chevrolet with their numerous assembly plants will never be able to make a complete change-over to unit bodies in one model-year. It will have to be an evolutionary change with them, if the change is ever made.

As you know from reading American Motors advertisements, the unit body has no separate frame. In conventional frame-body construction, the frame, a carry-over from the wagon days, holds together all the running gear. Wheels, engine, transmission, axles, all are attached to the frame. The body is built separately, often in another plant. At the right moment in the assembly timetable, the body, all painted, chromed and upholstered, is lowered and bolted to the frame, which is equipped with the running gear. Thus there are two major assembly operations: Chassis assembly and body assembly.

In unit construction, there is no such separation. The rigid floor or underbody is the starting point and the side pieces, fenders and roof are welded to it. Thus the car becomes more and more rigid as it is assembled. Incidentally, American Motors bolts its front fenders on—the rest of the body is welded.

Evidence of this inherent rigidity can be obtained by operating the rear door on a 1958 Lincoln four-door hardtop. Despite the stub pillar to which the short hardtop door is

hinged, the door shuts solidly with no shake or drag. Normally, as hardtop owners know, rear doors on four-door models are mighty limber.

The unit method gives more interior room also, especially headroom. Most important, though, is the tight structure that doesn't creak or groan over rough terrain.

Both American Motors and Lincoln use the unit body and both dip the bodies in paint to assure absolute coverage of all metal, both exposed and unexposed. Lincoln dips its bodies to the tops of the fenders in a plastic-type paint to prevent rusting of lower body panels. American Motors submerges the entire body in the paint to assure body durability. These first coats are followed, of course, by finish coats with the usual spray application.

Chevy's New Car

Borrowing from the Cadillac book, Chevrolet offers an X-frame devoid of side rails. No unitized design, the X-frame-body combination, nevertheless, is extremely shake-free. A torsion-absorbing tubular center section where the arms of the X cross makes it so. Chevrolet claims it is 30 percent more rigid than the previous frame.

Because of the X-shape, which allows greater lock-to-lock wheel turn, and because Chevrolet now mounts its steering linkage ahead of the front suspension, the turn-circle diameter is smaller despite the added wheelbase (117.5 inches compared with 115.0 last year). The bigger 1958 Chevrolet turns in 37.5 feet, four feet less than the shorter 1957 model.

Coil springs are used on all four wheels by Chevrolet. To prevent rear-axle windup during acceleration there is a U-shaped upper control arm running from atop the differential to the frame members. By designing the chassis for coil springs all around, Chevrolet makes installation of air bags relatively simple, at extra cost of course.

Other New Features

Every one of the Big Three (GM, Ford and Chrysler) offers a new, bigger engine this year. GM's new engine is in the Chevrolet. Ford's (known as the FET engine for Ford, Edsel and truck) is in the Edsel and will be in the Ford. Chrysler's is shared in varying displacements by Plymouth, Dodge and De Soto. All have big bores, short strokes, high compression ratios.

All three of the new engines have a simplicity that reduces manufacturing complications. All are light in weight, often lighter in fact than the smaller engines they replace. Among the simplifications are stamped rocker arms, in-the-block combustion chambers, fewer water passages, low-silhouette intake manifolds, cleaner exterior lines. All are designed for easier access, especially to spark plugs and tappets. Maintenance-needing parts, such as distributor and fuel pump, are moved to the extreme front of the block in some cases.

Another area of added emphasis this year is acoustics. The acoustics engineer sat way, way back among the drawing boards in the bull pen a few years ago, but now he's up front at all the planning sessions. Cars have become so refined that noise suppression is a critical problem. Pounds and pounds of soundproofing are added to bodies. If you can't keep the noise down, you must muffle or absorb it. Outside the car, the engine may be real noisy, but inside it whispers.

Lincoln's new unit body created a sound problem as unit bodies do. Acoustics engineers solved it by making perforations in the underbody to kill the sounding-board effect.

Fuel injection is offered on some lines at Chrysler. The

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QUIET, PLEASE

FELT DEADENER

SPRAY-ON DEADENER

JUTE, PLASTIC FOAM AND CARPET

Cars don't get much quieter, it's just that the noise they make is better absorbed. The drawings show how Buick uses various materials to provide you with quiet. Acoustics is an essential part of design

Bigger, faster cars need more brakes. Buick carries finned aluminum drums on its front wheels to minimize brake fade

HERE'S A QUICK SUMMARY

AMBASSADOR

BUICK

CHRYSLER

CONTINENTAL

IMPERIAL

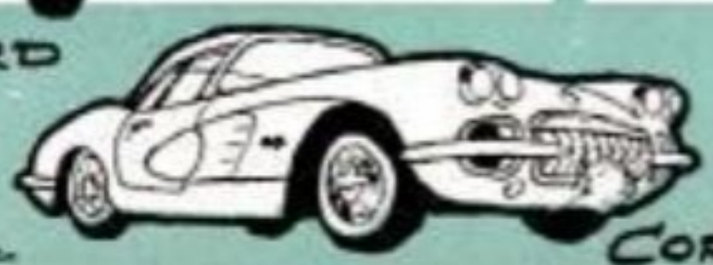
PLYMOUTH

STUDEBAKER

PACKARD

STYLING

Ambassador	Hudson and Nash are gone. The Ambassador which replaces them uses the Rambler shell stretched nine inches. Grille is anodized aluminum. Four headlights standard. Rear fins flare outward. Station wagons available in this longer body
Buick	Completely new sheet metal, but 1957 shell retained. Portholes and full wheel cutouts gone. Grille is waffle-ironish. Three-piece rear glass, ribbed roof discontinued. Hood raised to make car "feel" longer from the driver's seat
Chevrolet	Looks big and is, being 9 inches longer, 4 inches wider, 2½ inches lower. Front is Chevy-ish, rear is fresh and flashy. Fins are tucked in with strong diagonal lines. Flattened rear fenders. Impala hardtop and convertible tops in luxury
Chrysler	Chrysler little changed. Dual headlights standard. Taillights restyled. Compound windshield on all hardtops, convertible. Mirror mount new. Grille restyled. Windsor's especially
Corvette	Longer by nine inches, mostly ahead of front wheels to give a 300SL look. Fake louvers in hood. All-new dash has useful passenger grab-bar. All dials now right in front of driver
De Soto	Double-wrap windshield on all hardtops and convertibles. Four headlights standard. Other exterior changes are in brightwork
Dodge	Front-end styling, side trim new. Dual headlights standard. One-piece front seat has nonremovable lower cushion
[illegible]	After 1957's success, changes are face-lift variety: New grille-bumper, side trim. Electric door locks optional
Lincoln	Clean, straight lines with look of luxury feature the Lincoln. Distinctive front and rear, it has unique diagonal headlights plus fanciest rear end in the business. Continental has reverse-slant rear glass that goes down, distinctive tail treatment
Oldsmobile	Usually chrome-free, this year's car is bedecked. Chrome on sides make car seem lower, longer although shell is unchanged. Roof is thinner. Rear window higher. Gone are the '57 struts
Packard Hawk	First to eliminate all grillwork (others may follow). Packard Hawk has only a narrow slot above plain front bumper. Hood has airscoop. Rear deck has wheel imprint
Plymouth	Four headlights standard. Grille all new. Taillight is round and mounted low on rear fender. New mount for mirror on dash eliminates blind spot caused by third person in front seat
Rambler	Styling is more conventional: Headlights are back in the fenders; controversial bulge on roof rear ironed flat; front fenders are flattened; rear fenders are finned
Studebaker	Dual headlights standard, except optional on Champions. Roof line lowered. High, canted tailfins are also new



CORVETTE

DE SOTO

OF WHAT'S NEW AND WHAT ISN'T

CHASSIS	ENGINE—TRANSMISSION
Nine-inch extension to Rambler unit body is just ahead of cowl. Added braces stiffen already rigid package. Steering geometry improved, re-circulating balls used. 14-inch wheels	V8 engine develops 270 horsepower with 327 cubic inches. Four-barrel carburetor, dual exhausts standard. Push-button automatic transmission controlled by engine vacuum
Optional air suspension has a high-lift knob so you can raise body 5 inches above normal if desired, as in snow or ruts. Aluminum front brake drums on all but the Special series	New Flight Pitch Dynaflow has three turbines and infinitely variable-pitch stator. Downhill braking feature controls car speed descending steep grades. Fan clutch cuts engine noise
All-new chassis has two-piece prop shaft, coil springs all around. X-frame plus forward-mounted steering gear permits shorter turn circle despite added length. Air suspension available	New engine (348 inches) has combustion chamber in block, a machined extension of cylinder. Piston is peaked for turbulence. Wide-open manifolds. Smaller V8 and Six still available
Windsor on shorter 122-inch wheelbase, sharing Dodge-De Soto shell. New Yorker unchanged. New power steering. Nonslip rear end optional	Compression ratio up (10 to 1); displacement unchanged at 354 inches. 300D series has fuel injection optional. Transmission unchanged
Despite added over-all length, wheelbase still 102 inches. With four-speed gearbox, locking differential, it's a bargain-price race car	Space limits make use of Chevy's big new V8 impossible; 1957 engine retained. Injectors are optional as is four-speed transmission
Like other Chrysler Corporation cars, De Soto offers new power steering, locking differential	All models have new V8 engines with 350 or 361 cubic inches. Electronic fuel injection optional
New power steering requires only 3½ turns from lock-to-lock. Torsion-bar front end retained	All-new V8 added to previous V8 and Six designs Lighter but more rigid, it comes in two sizes
Longer outboard-mounted rear leaf springs reduce rear-end roll Torsion bars in front	392-cubic-inch V8 retained. Compression upped to 10 to 1. Transmission unchanged
Unit body welded into a tight package only 56.5 inches high. Dipped in plastic paint to prevent rusting. Trailing arms in rear. Coil springs all around. Air suspension available	New 430-inch V8 is lighter, lower. Horsepower is 375. Water-jacketed intake manifold. Combustion chambers machined in block. No Siamese ports. Transmission has dual-range feature
Air suspension available at extra cost. The 88 series has economy rear axle and economy carburetor, giving 3 more miles per gallon	Compression: 10 to 1. Horsepower down on 88s for economy, up on other cars. Transmission thermostats end upshift delay in cold weather
Uses same chassis as Studebaker Hawk. One-piece driveshaft. Lowered floor pan. Roof line down slightly. New spring rates. 14-inch wheels	Supercharged V8 engine of 275 horsepower. Automatic or handshift transmission. Same power package as in Studebaker Golden Hawk
Basically unchanged from 1957. Available at extra cost is locking differential. All-new power steering has smaller and quieter pump	Optional new V8 has 350 cubic inches, 10 to 1 compression. Lightweight, it also has less over-all height. Fuel-injection is optional
V8 models have 14-inch wheels. Sixes retain 15-inch size. New steering gear, full wheel cutouts reduce turn-circle diameter	V8 develops 215 horsepower, has 8.7 to 1 compression, four-barrel carburetor. Borg-Warner transmission has push-button panel
One-piece driveshaft, 14-inch wheels (optional on Champion), lengthened rear springs	The 185-inch Six and the two V8s (259 and 289 inches) unchanged. Transmissions are also same

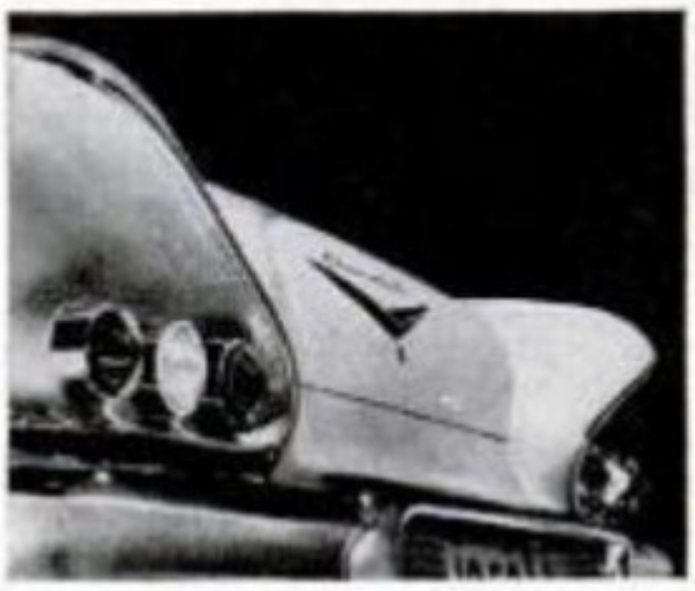
Ambassador

American Motors makes its big car, the Ambassador, more competitive in price by designing it on the Rambler shell. Previously, its Hudson and Nash had a separate shell from the Rambler. Nine inches are added to the hood to distinguish it from the smaller car. Its optional automatic transmission is push-button controlled.

Buick

Many Buick traditions are gone: Portholes, grille and full rear-fender cutouts. Air suspension has high-lift feature that raises body five inches above normal to clear ruts or abrupt ramps. Photo, left, shows air-ride piston with body in extra-high-lift position.

Chevrolet



One of the two most changed cars for 1958, it may appear like the 1957 model at first glance. But a view of its flat-fendered rear end corrects that in a hurry. It is big and powerful with a variety of engine sizes and transmissions. It has coil springs all around or, if you can afford it, air suspension for extreme luxury.

Chrysler

Chrysler expects its second year with the dart-shaped styling to be even more successful. Sheet metal is unchanged. Mechanical and production improvements will be emphasized. Windsor models have a new look, using as they do the corporation's smaller body shell for the first time. Power steering has more "feel of the road." Bendix fuel injection available on 300D only.

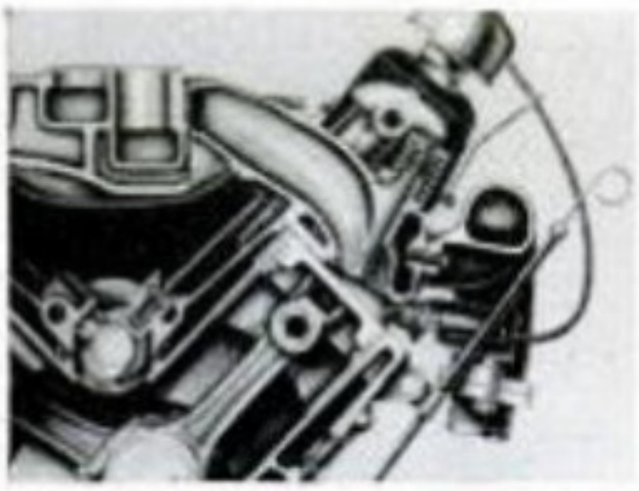
Corvette

Slightly longer due to extended front overhang, the new Corvette looks more European. It remains the only American production car that is taken seriously by the sports-car set. It offers lots of options, including four-speed gearbox, locking differential, fuel injection.

De Soto

De Soto's most apparent exterior change is the grille and even there the same character remains. All have a new V8 engine, available in 350-inch and 361-inch sizes. Compact, simple and designed for rigidity without bulk, the engine takes up less underhood space than its less powerful predecessor. It is easier to service, lighter in weight. Fuel injection optional only on Adventurers.

Dodge



Styling changes are minor as Dodge, like all Chrysler divisions, continues the big-fin styling. Grille, taillights and other details are reworked slightly. Four headlights are standard. Dodge offers the corporation's new V8 in 350 and 361-inch displacements. Its wedge-shaped combustion chamber means Chrysler is moving away from the hemispherical design. Retained are the smaller V8 and Six.

Imperial

With 1957 sales more than triple 1956 figures, Imperial continues its successful styling, making only minor changes. An electric locking system lets you lock all doors by pressing one button. One-piece front seat provides more legroom for rear-seat passengers, more headroom in front. Last year's unhandy turn-signal switch is redesigned. All models are two inches longer than in 1957.

Lincoln

Without doubt, the year's most interesting design, Lincoln is all new—even its factory. On rough roads or boulevards, its unit body handles like a sports car, rides like a limousine. The huge new engine (430 inches) weighs less than last year's. Fast steering, trailing-arm rear suspension (with air optional), extreme lowness, all make this car a pleasure to drive or ride in.

Oldsmobile

There's a lot new here as Olds aims to recover from a mediocre sales year. Many horizontal trim lines make it look longer, lower. Four headlights, a new grille, the nondivided back window, all emphasize a new look. Radio pulls from dash for use as separate portable, right.

Packard

There's a Hawk in the Packard line for the first time. And it's definitely European, with a shark-mouthed front end—the least cluttered design in the industry. An imprint of a spare tire decorates the rear deck. More Packards will be out later, including a new hardtop.

Plymouth

Considered by many to be the best looker in the 1957 Chrysler family, Plymouth continues its styling another year. It now has four headlights, a new grille (although similar to last year's). The taillight is a single round lens at the base of the soaring tailfin. Extending upward from it is a shiny aluminum bar. Fuel injection is available for top performance. The new V8 engine has 350 cubic inches. Also available are the 318-inch V8 (last year's Fury engine) and the 230-inch L-head Six.

Rambler

No more going it alone, the Rambler looks more like the other cars with its headlights in fenders and flaring tailfins. Gone, too, is the bulge at the rear of the roof. Seats are redesigned and make the interior appear much larger because of the lower backs. Economy is increased. Turn circles are even smaller.

Studebaker

Studebaker has adopted 14-inch wheels. Big news is that it will soon be selling the German Goggomobil coupe also, a two-cylinder air-cooled two-seater (not shown here). For pictures and details see *PM*, May 1957, page 48.

Mercury

Out for big-car business, Mercury has a new line, the Park Lane, 220 inches long on 125-inch wheelbase. Other Mercurys are 213 inches long, have 122-inch wheelbase. All-new engines range from 312 to 400 horsepower. There's a new automatic transmission, too. Air suspension (see cutaways left) optional. Front-end styling new, as are rear fenders. Many new features such as automatic brake adjuster, powered heater controls and lubricated-for-life bearings on front end.