By Art Railton

1959 PARADE OF CARS

IT WAS a year of decision—a year in which major decisions had to be made, decisions that will set the course of the industry for years ahead.

Some were made, others postponed until the industry is more certain what you, the public, think. That makes 1959, *your* year of decision.

It was a year for drawing the line—the little foreign cars went as far as they could be permitted to go. At one period in the year, they were selling 11 percent of the total market. That did it. The big boys decided to get into the game.

Before the 1959 World Series is over, you will be admiring the all-new domestic small cars as they scoot around the streets of your town.

What will this new breed of American cars be like? Nobody is saying for sure, but it certainly will be handsome, it certainly will be economical, and it certainly will sell.

But there was more to 1958 than the small-car decision.

Most important (and most frightening) item in 1958 was the sharp drop in sales of new cars. Total industry sales were down about 30 percent. Some makes were down twice that much. Obviously, this must be stopped if the industry is to maintain its present stature.

Detroit experts blame the sales lag on the recession. Some critics outside the industry put the blame in a different order: They argue that the excessive opulence of the 1958 cars so out-priced the average American that he couldn't buy a new model or, if he could buy it, he was so sickened by the excesses of the machines that he wouldn't buy. This, these critics claim, created the recession.

So the argument deteriorated into "which came first" and as with the hen and the egg, nobody knew.

Meanwhile in South Bend, Indiana, where gloom had been hip-deep for years, the fast-weakening, almost desperate Studebaker-Packard Company came up with the biggest news story of 1959: A small American car that could make critics eat their words.

This new car, the Lark, is a mere foot longer than the tiny foreign cars and yet seats six (snugly, to be sure). It has a good, old-fashioned American water-cooled engine. It comes as a six or a V8, and the V8 is a scat-wagon in the best American tradition. It has a trunk in the back where the bellhop has learned to expect it.

How the public is taking to this car is uncertain at this writing (late November), but expectations are great. Not only South Bend, but Detroit also, is watching, because its reception will provide valuable information about other small cars' prospective sales.

Only two cars set sales records in 1958: The Rambler (with the help of its new and smaller brother, the American); and the expensive Thunderbird.

Two more different cars would be hard to find. The only quality they share is dimensional. Both are smaller than other cars in their price classes. Yet the men who designed the Thunderbird do not credit the car's smallness with its success (see page 176). "Small" continues to be a verboten word in the industry. American Motors still isn't bold enough to use it in describing its Ramblers. (Even the current Studebaker Lark makes no mention of the car's smallness, describing it instead as a "new dimension in motoring.")

There just weren't enough Thunderbirds to satisfy the orders, so meteoric was its success. In its first year as a full-size car (with four seats, that is), the Thunderbird

What's under the sheet metal?

On the next 17 pages are photographs of all 1959 American cars and many European makes. In addition, there are drawings which show what the sleek, shiny metal hides: The frame; the suspension and running gear. These are the parts that make a car behave the way it does; these are the parts that most people never see.

Among the American cars there is considerable variation in frame design, less in running gear, and little or none in engines. European cars are more varied. They range from front engine, front-wheel drive to rear-engine, rear-wheel drive; from water to air-cooled; from two to three to four cylinders; from torsion bars to transverse leaf springs to horizontal coil springs.

The sketches are self-explanatory. The white arrow on each foreign chassis points to the front of the car. The small "X" inside the square on the American cars locates the universal joints in the drive shafts. Beneath each sketch is pertinent descriptive material.

took 22 percent of the prestige-car market. It sold more than twice as many cars as Imperial and about 25 percent more than Lincoln. Yet, says Ford, the smallness of the car has nothing to do with its success.

The Rambler American, a revival of a 1955 design, outsold even the most optimistic hopes of its sponsors. Not spectacular in either looks or performance, it is small, neat and practical—and it sells.

Among most of the new cars for 1959, stylists were king. The engineer was in a hiatus between last year's achievements and the big promises for 1960.

The exciting advances of the 1958 models somehow seem less exciting one year later. Air suspension, introduced as the greatest thing since independent front suspension, failed to attract a market. It was too expensive, too temperamental, too marginal. The public didn't get excited about it.

(Continued to page 294)

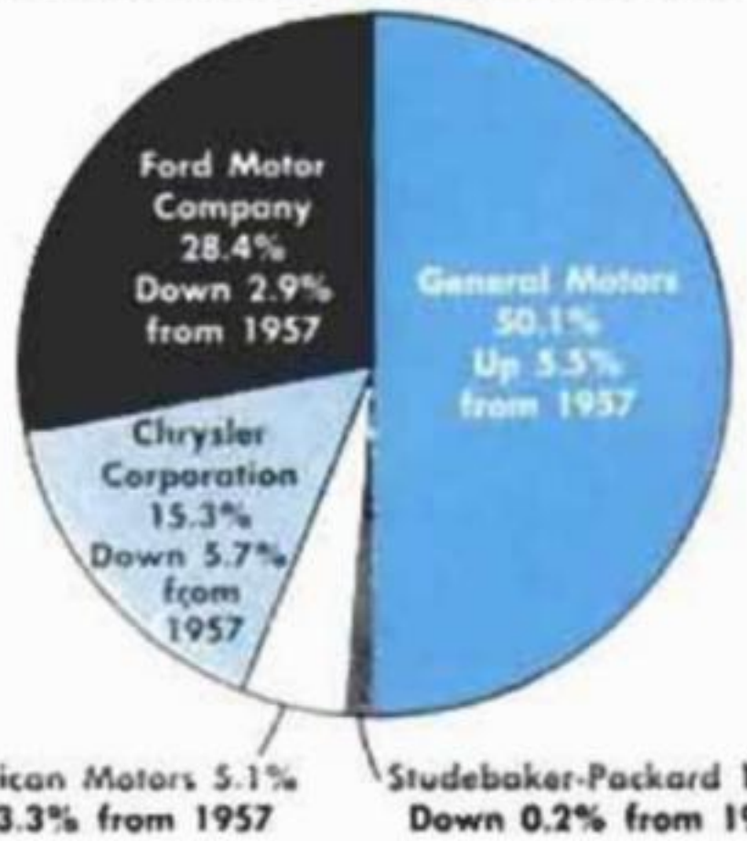
PRODUCTION OF PASSENGER CARS DURING 1958

1. CHEVROLET	960,303	Down 22.4%
2. FORD	801,098	Down 38.2%
3. PLYMOUTH	317,479	Down 45.1%
4 OLDSMOBILE	237,184	Down 26.3%
5. BUICK	185,065	Down 44.8%
6. PONTIAC	158,611	Down 44.1%
7. RAMBLER	121,124*	Up 64.1%
8 DODGE	98,122	Down 62.2%
9 CADILLAC	97,080	Down 25.2%
10 MERCURY	93,917	Down 61.2%
11 CHRYSLER	42,266	Down 60.0%
12. STUDEBAKER	34,000	Down 43.4%
13. AMERICAN	31,542*	No 1957 production
14. DE SOTO	31,091	Down 70.8%
15. LINCOLN	20,179	Down 36.0%
16. AMBASSADOR	15,109*	Up 14.9%**
17 EDSEL	14,820	Down 71.2%
18. IMPERIAL	10,542	Down 68.8%
19 PACKARD	1,745	Down 62.8%

* Approximate ** Compared to 1957 Hudson-Nash total

TOTAL FOR INDUSTRY: 3,270,877 passenger cars—Down 36.8% from 1957

PERCENTAGE OF INDUSTRY PRODUCTION



Production period covered is from January 1 to November 8, 1958, and comparisons are with same period of 1957. Total production for 1958 is expected to be about 4,520,000 cars. Data by courtesy of *Automotive News*

AMERICAN

Wheelbase: 100.0 inches
Leaf springs, rear
Solid rear axle
Drive through rear springs
Unit body-frame
One-piece exposed drive shaft
Coil springs, independent front suspension
Six-cylinder engine only

American, unlike other members of the American Motors family, has an exposed drive shaft and leaf springs at the rear in the normal Hotchkiss arrangement. Drive is through the rear springs, no torque tube being used. Front suspension is by coils as with the other American Motors products. It is entirely conventional except that the coil springs extend higher than in the usual design. The unitized body and frame eliminates the necessity for side rails.

Six-Cylinder Two-Door	Lowest Priced	Displacement	Shipping Weight	Over-All Length	Over-All Width	Trunk Space
AMERICAN	$1835	195.6	2476	178.3	73.0	8.2
STUDEBAKER	$1925	169.6*	2597	175.0	69.0	12.6

	Turn Circle	Legroom Front	Legroom Rear	Headroom Front	Headroom Rear	Hiproom Front	Hiproom Rear
AMERICAN	36.0	44.0	37.5	35.3	34.0	58.0	45.3
STUDEBAKER	37.5	44.0	41.0	36.0	35.0	59.5	59.0

*259.2-cu.-in. V8 also available.

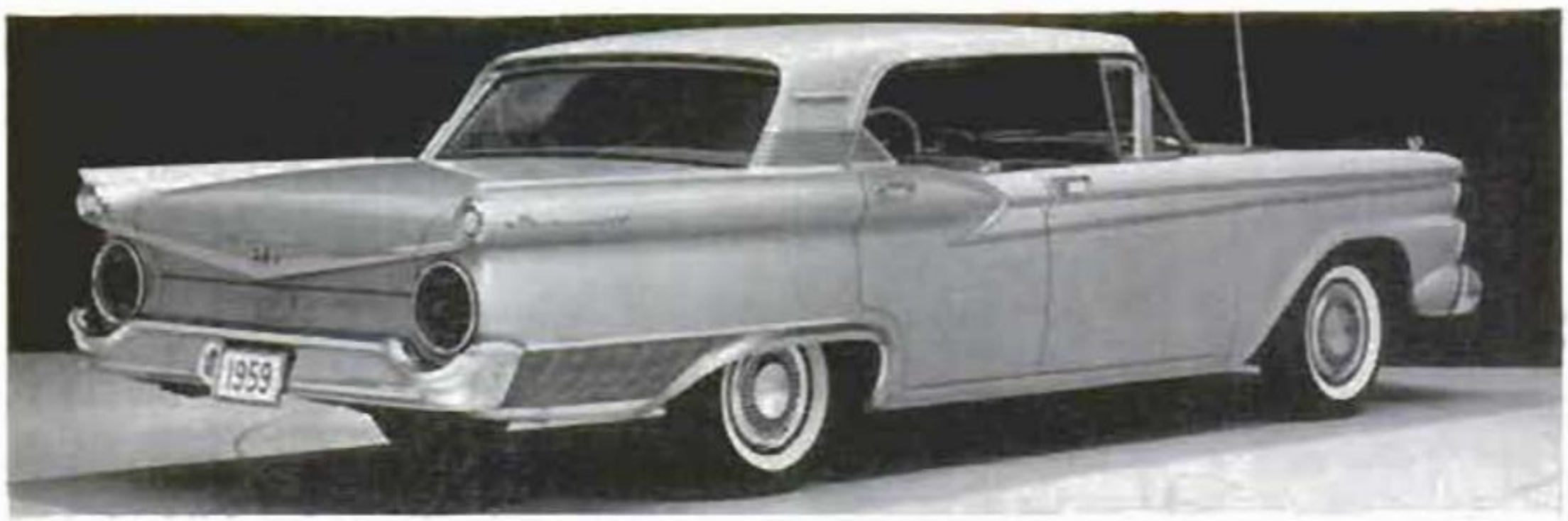
Leaf springs, rear
Solid rear axle
Drive through rear springs
Ladder frame
One-piece exposed drive shaft
Coil springs, independent front suspension
V8 or Six-cylinder engine
Wheelbase: 108.5 inches

Studebaker Lark's box-section frame is of heavier gauge than its previous models and being shorter, also, is about 30 percent more rigid. Actual frame design is unchanged except for the shortening to allow the smaller wheelbase. Rear suspension is conventional with semielliptical leaf springs that take the thrust of the exposed drive shaft in the normal Hotchkiss manner. Front suspension is by coils. These springs are designed to have a variable rate so stiffness varies with the amount of load. The ladder-type frame has a slight belly for increased rear-seat legroom.

STUDEBAKER

4-Door Sedan Data	Lowest Priced	Standard V8 Displacement	Shipping Weight	Over-All Length	Over-All Width	Trunk Space	Turn Circle
PLYMOUTH	$2402*	318.0	3430	208.2	78.0	35.6	42.2
CHEVROLET	$2419*	283.0	3614	210.9	79.9	19.2	40.2
FORD	$2391*	292.0	3485	208.0	76.6	33.9	40.6
RAMBLER	$2398*	250.0	3287	191.2	72.2	13.5	37.6

*V8s only, for Sixes subtract about $120



Wheelbase: 118.0 inches

Leaf springs, rear
Solid rear axle
Exposed drive

Ladder frame
One-piece drive shaft
Drive through rear springs

Torsion bars, front
Independent front suspension
V8 or Six engines

PLYMOUTH

Plymouth's straight-railed ladder frame is typical of the Chrysler line. Front-end springing is by torsion bars which, for 1959, have been thinned and shortened thanks to improved metallurgy. Rear suspension is Hotchkiss with conventional leaf springs. A change in the roof of hardtop sedans has given added rear-seat headroom and better seat padding over the drive-shaft tunnel.

Wheelbase: 119.0 inches

Coil springs, rear
Solid rear axle
Exposed drive

X-frame
Two-piece drive shaft
Drive through control arms

Coil springs, front
Independent front suspension
V8 or Six engines

CHEVROLET

Chevrolet keeps its bodies low by using a two-piece drive shaft with its center joint inside the tubular midsection of the X-frame. Coil springs at the rear make necessary a set of control arms to transmit thrust from the rear wheels to the frame. The narrow-waisted frame permits wide stepdowns in the rear floor. Coil springs are mounted conventionally at the front end.

Legroom		Headroom		Hiproom	
Front	Rear	Front	Rear	Front	Rear
45.5	41.5	35.7	34.2	63.0	62.7
45.0	42.8	36.1	34.3	66.1	65.5
42.7	40.3	33.5	33.3	60.4	60.8
43.0	40.0	36.0	35.0	59.8	60.1

LOW PRICE

Wheelbase: 118.0 inches

Leaf springs, rear
Solid rear axle
Exposed drive

Ladder frame with cow belly
One-piece drive shaft
Drive through rear springs

Coil springs, front
Independent front suspension
V8 or Six engines

FORD

Ford makes room for rear foot wells by giving its ladder frame a broad belly. The added width makes room for lowering the floor inside the side rails. Drive shaft is of one piece. Front and rear suspensions are conventional with coils in front and semielliptical leaf springs in the rear. The rear end is a standard Hotchkiss setup with wheel thrust being transmitted through the leaf springs.

Wheelbase: 108.0 inches

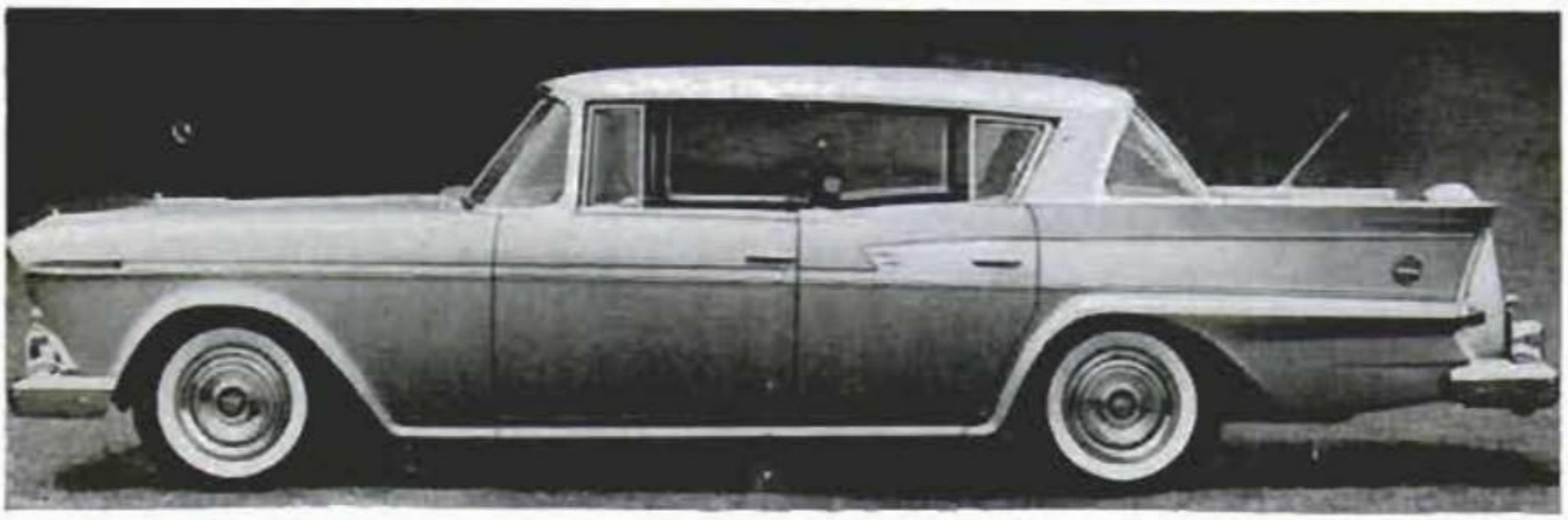
Coil springs, rear
Solid rear axle
Torque-tube drive

Unit body-frame
One-piece drive shaft
Drive through torque tube

Coil springs, front
Independent front suspension
V8 or Six engines

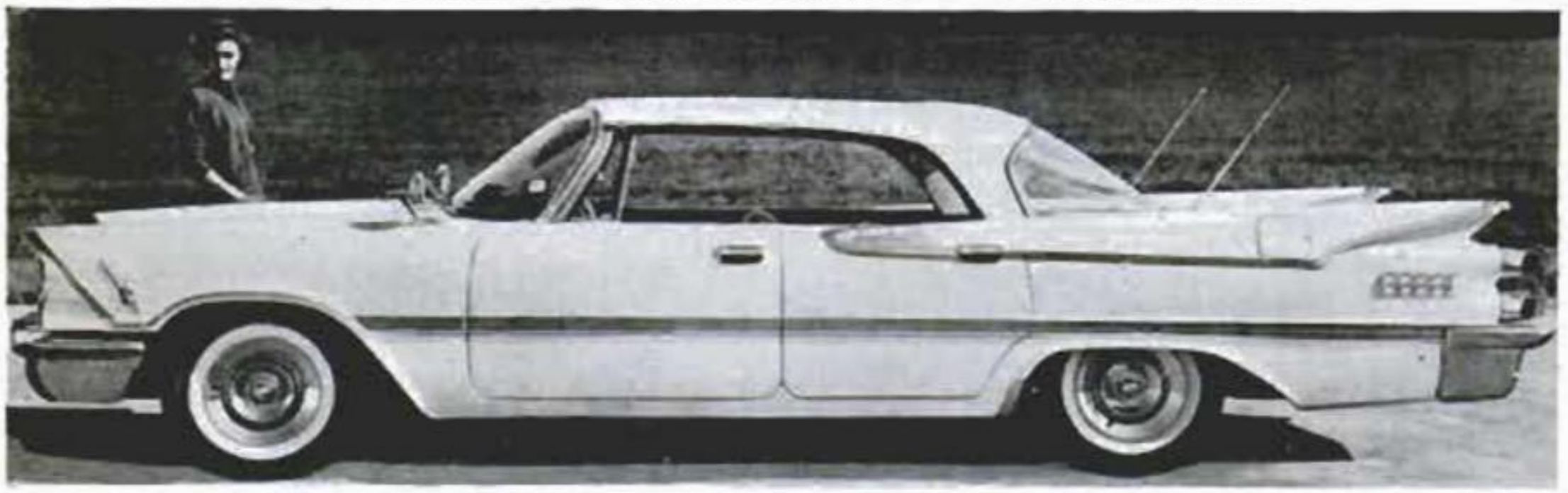
RAMBLER

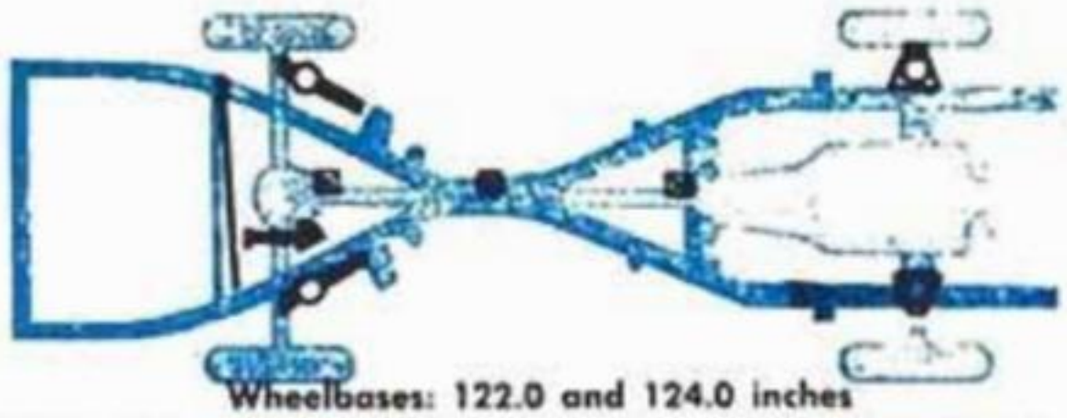
Rambler's unit body eliminates the conventional side rails. Thrust from the rear wheels is taken through the torque tube that connects the transmission and rear axle. Within it, the drive shaft rotates. Coil springs are used on all wheels and no control arms are necessary because of the torque tube. Front-end suspension is conventional. The unit body permits the floor to be lowered without rail problems.



4-Door Sedan Data	Lowest Priced	Standard V8 Displacement	Shipping Weight	Over-All Length	Over-All Width	Trunk Space	Turn Circle
PONTIAC	$2704	389.0	3940	213.7	80.7	19.0**	42.7
AMBASSADOR	$2587	327.0	3428	200.2	72.2	13.5	39.8
DODGE	$2707*	326.0*	3615	217.4	80.0	38.6	43.6
EDSEL	$2684*	292.0**	3675	210.9	79.8	32.0	41.8

* V8s. Dodge Six $2587, Edsel Six $2600
** Catalina, Star Chief and Bonneville 220.7 length, 24.3 trunk space
* Coronet, Royal and Custom Royal 361.0
** Ranger, Corsair 332.0





Wheelbases: 122.0 and 124.0 inches

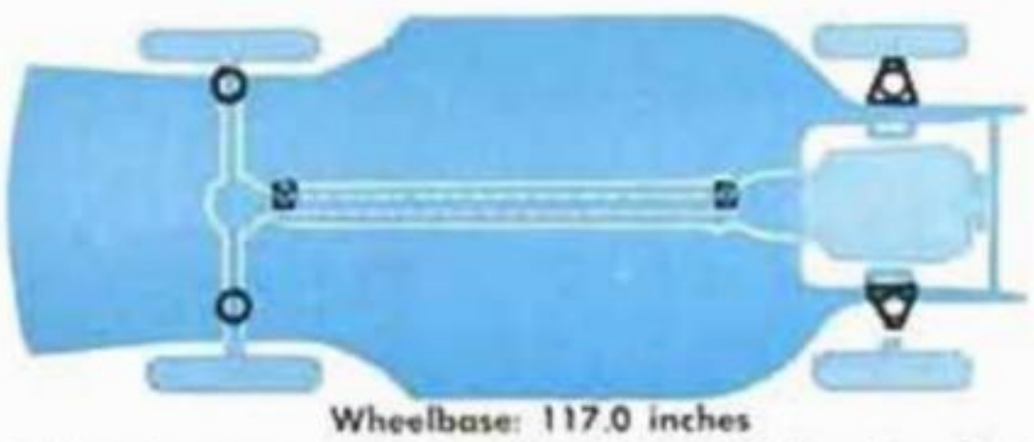
Coil springs, rear
Solid rear axle
Exposed drive shaft

Tubular center X-type frame
Two-piece drive shaft
Drive through control arms

Coil springs, front
Independent front suspension
V8 engine only

PONTIAC

Pontiac's tubular-center X-frame requires no side rails and allows the rear foot wells to be wider than usual. Coil springs suspend all four corners of the body. The two-piece drive shaft has a center universal inside the junction of the frame. At the rear, the coils are mounted ahead of the axle on pivoted control arms that take the thrust of the wheels.



Wheelbase: 117.0 inches

Coil springs, rear
Solid rear axle
Enclosed drive shaft

Unit body and frame
One-piece drive shaft
Drive through torque tube

Coil springs, front
Independent front suspension
V8 engine only

AMBASSADOR

Ambassador shares the same chassis layout as the smaller Rambler (but differs from the American). It has coil springs all around and a torque tube takes up the drive and torque. The drive shaft, rotating inside the tube, is one piece. At the front, conventional coil springs are used, but mounted higher than is customary due to the unit design that eliminates side rails.

Legroom		Headroom		Hiroom	
Front	Rear	Front	Rear	Front	Rear
44.8	42.5	34.8	33.9	65.4	65.4
43.0	40.0	36.0	35.0	59.8	60.1
45.5	42.5	35.7	34.5	63.0	62.7
42.8	40.4	33.8	33.5	60.4	60.8

Wheelbase: 122.0 inches

Leaf springs, rear
Solid rear axle
Exposed drive shaft

Ladder frame
One-piece drive shaft
Drive through rear springs

Torsion bars, front
Independent front suspension
Six and V8 engines

DODGE

Dodge has a straight-through ladder frame that is typical of Chrysler products and that makes impossible the use of rear-seat foot wells. Front suspension is by torsion bars that run longitudinally. At the rear, the suspension uses semielliptical leaf springs. The one-piece exposed drive shaft is conventional Hotchkiss design and thrust is taken through the rear springs.

Wheelbase: 120.0 inches

Leaf springs, rear
Solid rear axle
Exposed drive shaft

Ladder frame
One-piece drive shaft
Drive through rear springs

Coil springs, front
Independent front suspension
Six and V8 engines

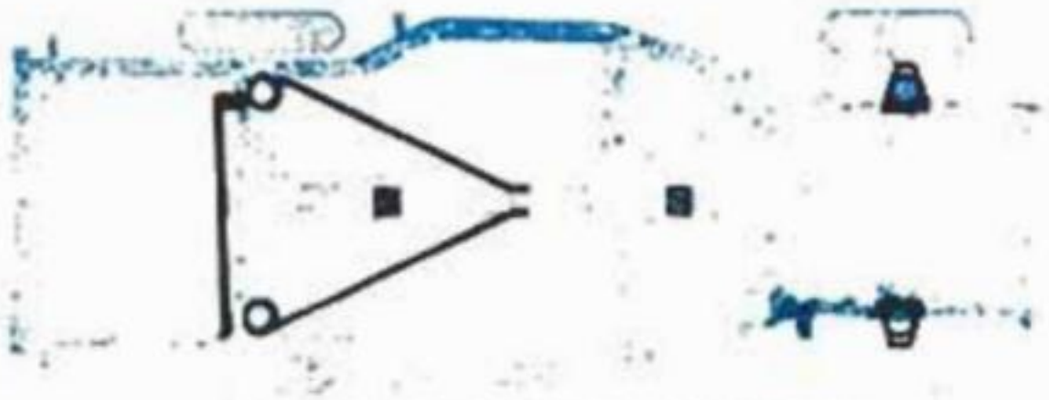
EDSEL

Edsel has a ladder frame but, like Ford, it incorporates a billowing cow belly that allows clearance for rear-seat foot wells. Its front suspension is conventional with coil springs and wishbones. Rear suspension, too, is conventional with semielliptical leaf springs that take the drive and torque from the one-piece exposed drive shaft in a standard Hotchkiss-drive manner.

4-Door Sedan Data	Lowest Priced	Standard V8 Displacement	Shipping Weight	Over-All Length	Over-All Width	Trunk Space	Turn Circle
BUICK	S2804	364.0*	4229	217.4**	80.7	15.0	44.0
DE SOTO	S2904	361.0†	3670	215.5††	78.7	37.5	43.6
OLDSMOBILE	S2902	371.0*	4162	218.4**	80.8	17.6	45.0
MERCURY	S2832	312.0†	4001	217.8††	80.7	31.5	44.0

* LeSabre Invicta and Electra 401.0 † Firesweep Fireflite and Firedome 383.0 • "88" Super 88 and "98" 394.0
** Electra 220.6, Electra 225, 225.4 †† Firesweep Fireflite 219.5, Firedome 221.1 •• "98" 223.0

BUICK



Wheelbases: 123.0 and 126.3 inches

Coil springs, rear	Ladder frame with K-member	Coil springs, front
Solid rear axle	Two-piece drive shaft	Independent front suspension
Enclosed drive shaft	Drive through torque tube	V8 engine only

Buick has a ladder frame with center bracing roughly in the shape of the letter "K." Front suspension is by conventional coil springs. Rear springs, too, are coils atop the axle. A track bar behind and two radius rods ahead of the axle maintain its location. Drive is through a torque tube that has a slight bend just ahead of the differential. Two universals are used.

DE SOTO

Wheelbases: 122.0 and 126.0 inches

Leaf springs, rear	Ladder frame	Torsion bars, front
Solid rear axle	One-piece drive shaft	Independent front suspension
Exposed drive shaft	Drive through rear springs	V8 engine only

De Soto has a straight-through ladder frame like all Chrysler Corporation cars. Its independent front suspension is with longitudinal torsion bars that are shorter and thinner this year as a result of the improved metals. Rear suspension is with standard semielliptical leaf springs that take the wheel thrust in Hotchkiss fashion. The exposed drive shaft is in one piece.

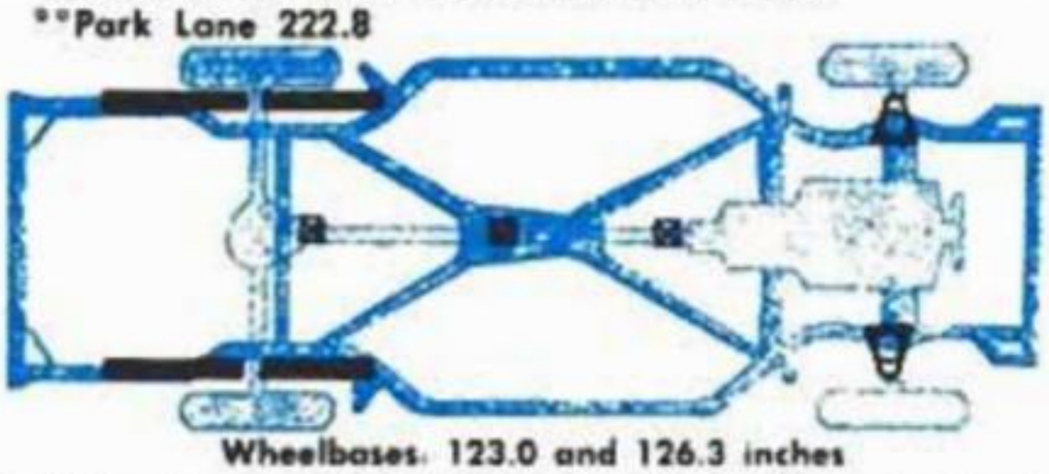
Legroom		Headroom		Hiproom	
Front	Rear	Front	Rear	Front	Rear
44.6	42.6	35.7	34.2	66 1	65,5
45.5	43 0	35.7	34 5	63 0	62,7
44.8	42 5	34 9	34 2	66 1	65 5
44.3	43.6	33.2	32.9	62 5	62 8

*Monterey Montclair 383.0 Park Lane 430.0

**Park Lane 222.8

UPPER MEDIUM

OLDSMOBILE



Wheelbases: 123.0 and 126.3 inches

Leaf springs, rear	Ladder frame with X-member	Coil springs, front
Solid rear axle	Two-piece drive shaft	Independent front suspension
Exposed drive shaft	Drive through rear springs	V8 engine only

Oldsmobile combines an X-frame and a ladder frame (most cars with ladder frames use X-bracing on convertible bodies only). It also has a cow belly to allow for the step-down floor in the rear. Front coil springs are conventional as are the semi-elliptical leaf springs at the rear end. Its two-piece drive shaft has the center universal joint mounted within the tunnel.

MERCURY

Wheelbases: 126.0 and 128.0 inches

Leaf springs, rear	Ladder frame	Coil springs, front
Solid rear axle	One-piece drive shaft	Independent front suspension
Exposed drive shaft	Drive through rear springs	V8 engine only

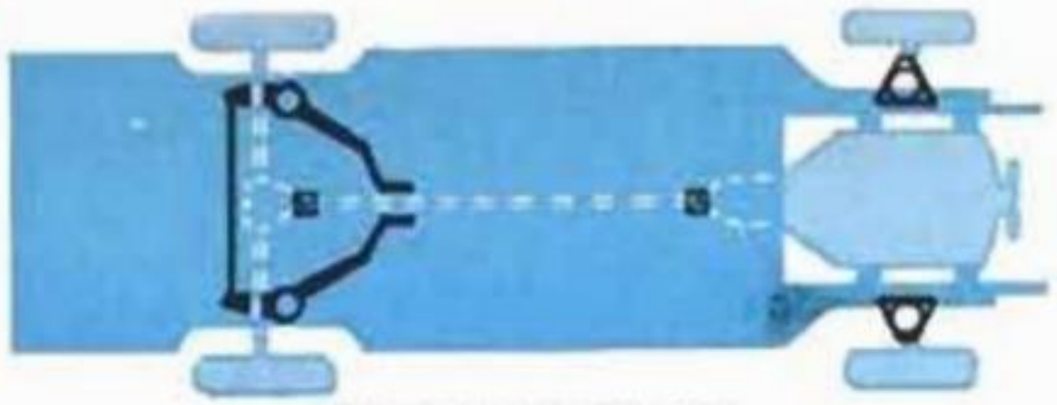
Mercury's ladder frame with a bowed center portion to give foot-well space in the rear has an unusual cross member at the rear axle. It is a wide, arched bracing and gives great lateral strength without taking up much vertical space. Front suspension by coils and rear by long leaf springs are both conventional. Drive shaft is one piece and its setup is Hotchkiss.

4-Door Sedan Data	Lowest Priced	Standard V8 Displacement	Shipping Weight	Over-All Length	Over-All Width	Trunk Space	Turn Circle
LINCOLN	$5090	430.0	4986	227.1	80.1	17.2	45.0
CADILLAC	$5080	390.0	4835	225.0	80.2	19.3	47.0
CHRYSLER*	$4424	413.0	4120	220.9	79.5	37.5	47.1
IMPERIAL	$5016	413.0	4735	226.3	81.0	36.7	48.2

* New Yorker series

All have automatic transmission, power brakes and steering standard.

LINCOLN



Wheelbase: 131.0 inches

Coil springs, rear
Solid rear axle
Exposed drive

Unit body-frame
One-piece drive shaft
Drive through trailing arms

Coil springs, front
Independent front suspension
V8 engine only

Lincoln's unitized body (probably the largest in the world) eliminates the conventional frame and its restrictive side rails. Front suspension is conventional with coil springs and wishbones. The drive is through an exposed propeller shaft with no center universal. Trailing arms that carry the rear coil springs are attached to a body cross member at their forward ends. A track bar is mounted behind the rear axle.

CADILLAC

Wheelbase: 130.0 inches

Coil springs, rear
Solid rear axle
Exposed drive

Tubular center X-frame
Two-piece drive shaft
Drive through four links

Coil springs, front
Independent front suspension
V8 engine only

Cadillac's tubular-center X-frame eliminates the problem of the restrictive side rails and allows rear floor wells to be wider. The exposed drive shaft is in two sections with its center universal joint inside the frame's narrow waist. The rear section of the shaft is rubber cushioned. Coil springs support the rear of the body and mount ahead of the axle on trailing arms. Front suspension is conventional with coil springs.

Legroom		Headroom		Hiproom	
Front	Rear	Front	Rear	Front	Rear
44.1	46.1	34.9	33.7	61.0	65.5
45.6	45.3	34.8	33.2	64.6	64.4
45.5	43.0	35.7	34.5	63.0	62.7
45.5	46.5	36.2	34.2	61.0	60.2

CHRYSLER

Wheelbase: 126.0 inches

Leaf springs, rear
Solid rear axle
Exposed drive

Ladder frame
One-piece drive shaft
Drive through rear springs

Torsion bars, front
Independent front suspension
V8 engine only

Chrysler's front wheels are sprung by two longitudinal torsion bars anchored to a frame cross member that supports the transmission. Although the drive shaft remains one piece, tunnel height has been reduced by changing to a stepped-diameter shaft that is narrower at the end, fatter in the middle, requiring less bounce clearance. Leaf springs are used in the Hotchkiss-drive rear end.

IMPERIAL

Wheelbase: 129.0 inches

Leaf springs, rear
Solid rear axle
Exposed drive

Ladder frame
Two-piece drive shaft
Drive through rear springs and struts

Torsion bars, front
Independent front suspension
V8 engine only

Imperial, like other Chrysler products, has torsion bars for its front suspension. This year its frame is slightly different from that used by Chrysler. Also different is the two-section drive shaft with its center universal being mounted on a frame cross member. The rear suspension is conventional Hotchkiss with the thrust being taken through longitudinal leaf springs.

For the Young in Heart:

CORVETTE

Here's the only true sports car stamped "Made in U.S.A." Refined steadily since 1953, it is now among the best in the world. It has coils in front, leaf springs in back. New are radius rods that take the torque reactions of the rear axle, relieving the rear springs of the job. Four-speed gearbox has a reverse lockout.

CHRYSLER 300E

Not a sports car in the nimble sense of a Corvette, the 300E is a high-performance machine that covers long distances at high speed with a maximum of comfort. Interiors are elegant in perforated leather that is cool on the hottest day. Dignified but debonair, it is a car to please those who love to go places in a hurry but feel out of character in a sports car.

SILVER HAWK

If you want a car that looks like a sports car, and are not particularly anxious for it to be a bomb, the Studebaker Silver Hawk belongs in your garage. Low, long and finned, its small V8 or even smaller Six puts it among the featherweights. But who cares? It is a handsome, pleasant machine.

THUNDERBIRD

No sports car, no bombshell, yet this is a car for the young of all ages. And it seems to be proving that as wallets get fatter, cars needn't get bigger. Handsome, luxurious and overwhelmingly youthful, it still is dignified enough to be driven to a Board of Directors' meeting at the First National Bank.

PARADE OF FOREIGN CARS 1959

THE CHART at the bottom of the page tells the story. It describes more graphically than words the spectacular sales rise of foreign cars in this country.

But it doesn't answer the question that still bothers Detroit: *Why* are they selling? It's this that bewilders the industry.

Is it simply size? Economy? Handling ease? If these are all, then Detroit has no worries. It can and will build cars that satisfy these demands.

But there may be something more—something that Detroit can't possibly provide. It may be the glamor of the imported product. It may be the wide variety of styling that enables the buyer to own an economy car that is not a carbon copy of his neighbor's. It may be the variety of engineering (the chassis diagrams on the following pages show how much variety there really is among the imported cars). This variety gives the owner reason to brag about air-cooled engine, swing axles, rack-and-pinion steering, front-wheel drive, trailing-arm suspension, unit body and all the vast cabala of automobile design that seems completely foreign to the American-car buyer.

Whatever the reason, Detroit now realizes that the foreign-car success cannot be ignored any longer. What started out as a fad for funny fellows with berets has turned into an epidemic. Small foreign cars that were originally bought as second cars apparently are becoming first cars in more and more families.

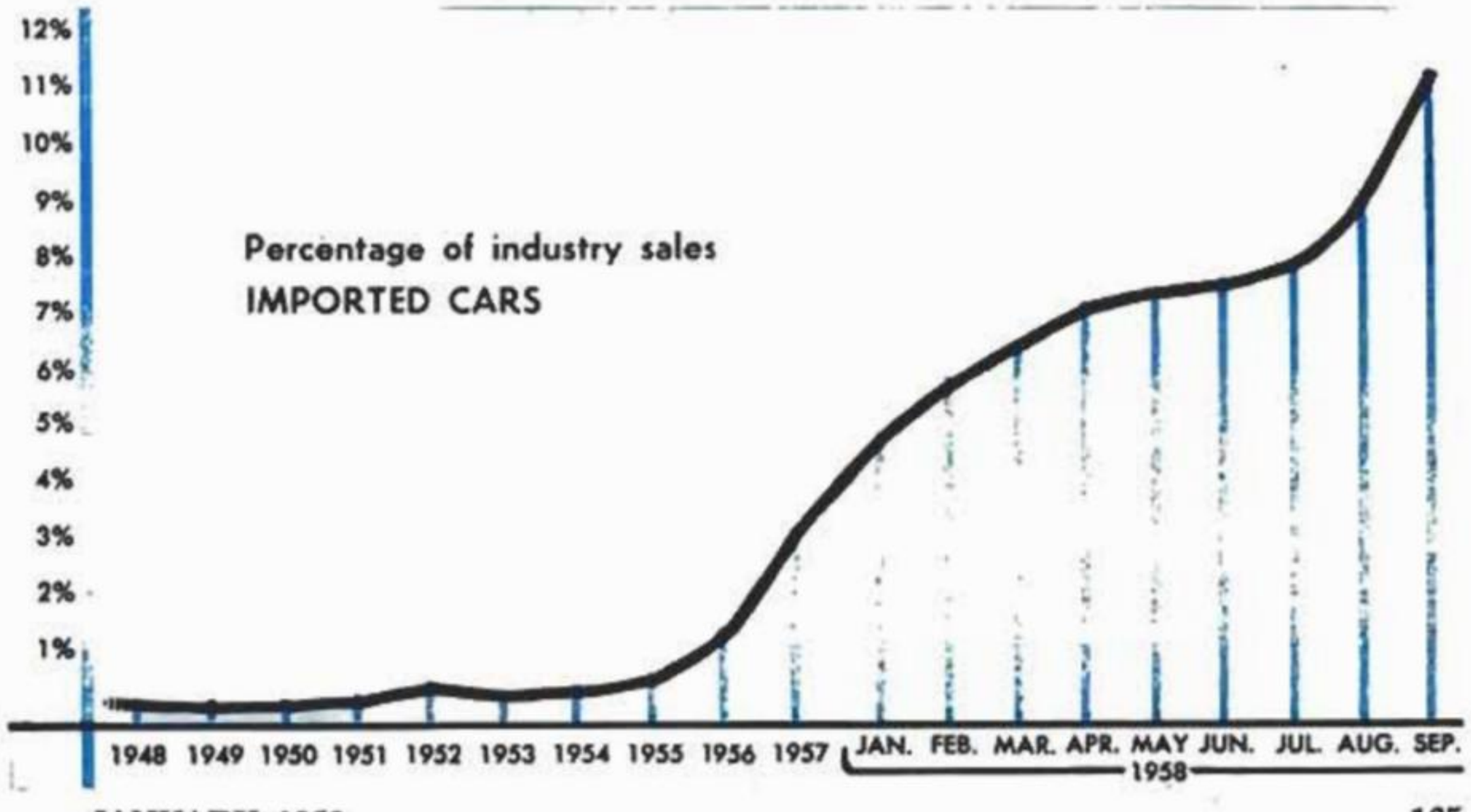
The total foreign-car sales in this country for 1958 were about 275,000 cars, which is equal to the combined 1958-model sales of Chrysler, Edsel, Studebaker, De Soto, Lincoln, Imperial and Packard. And estimates are that 1959 sales will be higher.

Next year, the big American companies will have their small cars in the battle. Actually, these forthcoming small cars will not compete directly with the best-selling foreign cars in either price or size.

The new American small cars will be more like the Borgward and Peugeot in size and price. Cars like Volkswagen, Renault and Fiat (which currently combine to make most of the foreign-car total) will still have the below-$2000 market to themselves despite the counterattack of the Americans.

Whether the difference between $1700 and $2000 (the expected domestic small-car price) will be enough advantage to keep these foreign cars in volume business remains to be seen. In any case, on the following pages are 18 of the best-known foreign cars, the cars that made Detroit admit that it may have been wrong.

Sales of imported cars skyrocketed to 11.5 percent of all cars sold in this country by September 1958



Styling changes on the 1959 Hillman are minor. Its engine has been enlarged for better performance and quieter high-speed operation. Like most British cars, the Hillman is conventional in its chassis design

Wheelbase: 96.0 inches
Front engine, inline OHV four-cylinder, water-cooled, 52.5 horsepower

Front suspension:	Unitized body	Rear suspension:
Independent	and frame	Nonindependent
Coil springs	Four-speed	Leaf springs
Wishbones	transmission	Solid rear axle
Ball joints	(automatic	Rear-wheel drive
Gas mileage:	clutch optional)	by exposed
About 25 m.p.g.	Top speed:	drive shaft
	About 80 m.p.h.	

HILLMAN

	Price*	Displacement	Curb Weight	Over-All Length	Over-All Width	Turn Circle	Front Headroom	Front Legroom
HILLMAN MINX	$1849	91.1	2221	163.0	60.8	34.3	37.8	34.5
FIAT Multipla 600	$1598	38.6	1610	139.2	57.1	29.0	36.2**	35.4**
FORD ANGLIA	$1539	71.6	1716	149.8	60.8	34.5	36.0	44.0

* Port-of-entry price at New York City ** Two-door sedan, other data for Multipla model (illustrated)

Fiat makes so many models it covers the whole market. This four-door Multipla wagon is about as roomy as a small car can be. Chassis layout is shown at right. The larger Fiats have their engines in the front, the smaller ones in the rear. All but the very smallest are watercooled

Wheelbase: 78.8 inches
Rear engine, inline OHV four-cylinder, water-cooled, 22 horsepower

Front suspension:	Unitized body	Rear suspension:
Independent	and frame	Independent
Coil springs	Four-speed	Semitrailing
(Transverse leaf	transmission	wishbones with
spring on sedans)	Top speed:	coil springs
Wishbones	About 60 m.p.h.	Rear-wheel drive
Gas mileage:		through
About 35 m.p.g.		swing axles

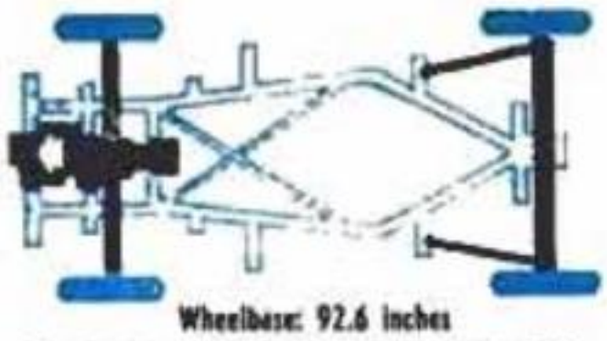
FIAT

As you can see at the right, the English Ford has a chassis layout very similar to most American cars (except for the unit body). Shown here is the smallest, the two-door Anglia. Others include the four-door Prefect sedan on the same chassis and several larger and more expensive models

Wheelbase: 87.0 inches
Front engine, inline flathead four-cylinder, water-cooled, 36 horsepower

Front suspension:	Unitized body	Rear suspension:
Independent	and frame	Nonindependent
Coil springs	Three-speed	Leaf springs
Wishbones	transmission	Solid rear axle
Gas mileage:	Top speed:	Rear-wheel drive
About 30 m.p.g.	About 68 m.p.h.	by exposed
		drive shaft

ENGLISH FORD



Wheelbase: 92.6 inches
Front engine, valveless two-stroke, three-cylinder water-cooled, 40 horsepower

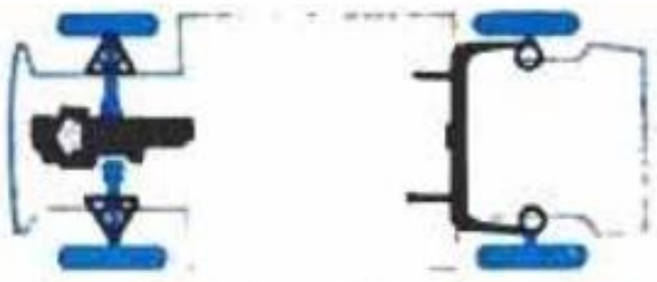
Front suspension: Independent Transverse leaf spring
Front-wheel drive
Rack-and-pinion steering
Gas mileage: About 30 m.p.g.
Box-section ladder frame with X-member
Four-speed transmission (automatic clutch optional)
Top speed: About 80 m.p.h.
Rear suspension: Nonindependent Transverse leaf spring
Solid, floating rear axle

DKW

If you like unusual designs, look at the DKW. It has a three-cylinder two-stroke engine with front-wheel drive. Its chassis is so simple and trouble-free that you wonder who decided that cars had to be complicated

	Price*	Displacement	Curb Weight	Over-All Length	Over-All Width	Turn Circle	Front Headroom	Front Legroom
DKW	$1995	54.7	2075	166.0	66.0	36.0	37.0	N.A.
SAAB 93 B	$1895	45.6	1806	158.0	62.0	36.0	38.5	36.0
PRINZ NSU	$1398**	35.6	1137	142.8	57.0	28.0	37.0**	40.0**

* Port-of-entry price at New York City ** Two-door sedan model all other data for Sport Prinz (illustrated)

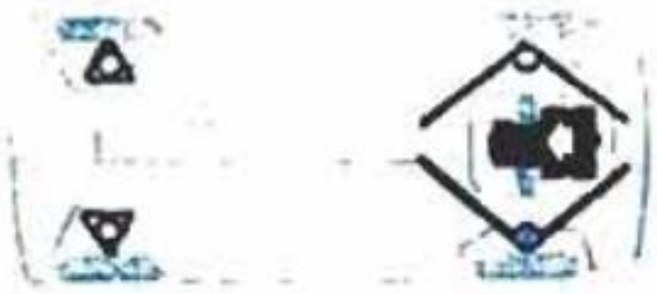


Wheelbase: 98.0 inches
front engine, valveless two-stroke, three-cylinder, water-cooled, 38 horsepower

Front suspension: Independent Coil springs Wishbones
Front-wheel drive
Swing axles
Rack-and-pinion steering
Unitized body and frame
Three-speed transmission
Top speed: About 75 m.p.h.
Gas mileage: About 30 m.p.g.
Rear suspension: Nonindependent Coil springs
Solid U-shaped rear axle pivots in center

SAAB

Saab uses the same engine design as the DKW. Built by a Swedish airplane company, it is sleek and agile. Having a front-wheel drive, it requires no longitudinal drive shaft. Its rear-axle design is most unconventional. For sure-footedness in deep snow and on ice, this car is hard to beat



Wheelbase: 78.8 inches
Rear engine, inline overhead-camshaft, two-cylinder, air-cooled, 20 horsepower

Front suspension: Independent Coil springs Wishbones
Gas mileage: About 50 m.p.g.
Unitized body and frame
Four-speed transmission, all synchromesh
Top speed: About 65 m.p.h.
Rear suspension: Independent Coil springs Front and rear radius rods
Rear-wheel drive through swing axles

NSU

One of the world's best-known motorcycle companies, NSU now has a small car, the Prinz. Newest model is the sports coupe shown here. No price is available for this sleek beauty (the sedan price is listed above). Both are powered by a two-cylinder air-cooled engine mounted in the rear

Freshest design of the year is this Austin A40 sedan-wagon. Its roof extends all the way to the rear of the body. Back seat folds to make a huge luggage area, combining the advantages of sedan and station wagon

Wheelbase: 83.5 inches
Front engine, inline OHV four-cylinder, water-cooled
38.5 horsepower

Front suspension:	Unitized body	Rear suspension:
Independent	and frame	Nonindependent
Coil springs	Four-speed	Leaf springs
Wishbones	transmission	Solid rear axle
Gas mileage:	Top speed	Rear-wheel drive
About 32 m.p.g.	About 70 m.p.h.	by exposed drive shaft

AUSTIN

	Price*	Displacement	Curb Weight	Over-All Length	Over-All Width	Turn Circle	Front Headroom	Front Legroom
AUSTIN A40	$1795	57.82	1620	144.3	59.4	35.0	36.0	37.5
SKODA 440	$1686	66.43	1984	160.1	63.0	33.0	36.8	38.0**
VOLKSWAGEN	$1545	72.74	1609	160.2	60.6	36.0	38.6	40.0**

* Port-of-entry price at New York City

** Approximate

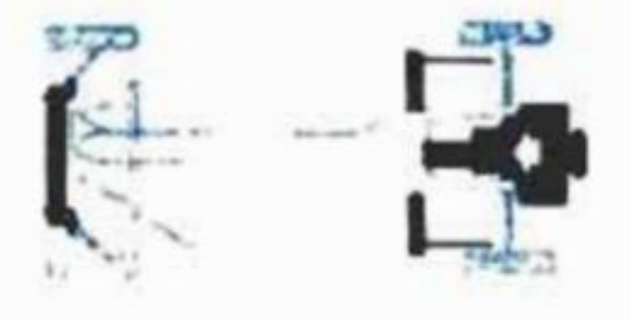
Skoda has an unusual forked frame and uses transverse leaf springs both front and rear. Built in Czechoslovakia, it is one of the few vehicles now being imported into the United States from behind the Iron Curtain

Wheelbase: 94.5 inches
Front engine, inline OHV four-cylinder, water-cooled, 40 horsepower

Front suspension:	Forked tubular	Rear suspension:
Independent	frame with	Independent
Transverse	outriggers	Transverse
leaf spring	Four-speed	leaf spring
Wishbone	transmission	Swing axles
upper arms		Rear-wheel
Gas mileage:	Top speed	drive through
About 30 m.p.g.	About 70 m.p.h.	torque tube

SKODA

Completely unconventional, the Volkswagen continues the same chassis and over-all styling it has had since it began. There are no changes for 1959. Torsion bars suspend all four wheels (all independently) and the flat four-cylinder air-cooled rear engine is as dependable as always



Wheelbase: 94.5 inches
Rear engine, flat OHV four-cylinder, air-cooled, 36 horsepower

Front suspension:	Forked tubular	Rear suspension:
Independent	frame with	Independent
by trailing	welded-on	by trailing
arms, laminat-	platform	arms,
ed transverse	Four-speed	solid transverse
torsion bars	transmission	torsion bars
Gas mileage:	Top speed:	Swing axles
About 32 m.p.g.	About 68 m.p.h.	Rear-wheel drive

VOLKSWAGEN

Wheelbase: 105 inches
Front engine, inline OHV four-cylinder, water-cooled, 66 horsepower

Front suspension: Independent One transverse leaf spring
Rack-and-pinion steering
Gas mileage: About 26 m.p.g.
Unitized body and frame
Four-speed transmission, all synchromesh
Top speed About 80 m.p.h.
Rear suspension: Nonindependent Coil springs Solid rear axle
Rear-wheel drive through torque tube

PEUGEOT

Substantial and not at all austere in looks, the French Peugeot is a full-size car (about as big as the Lark). But it's amazingly economical. And the price is very low, considering the extras that you get with it

	Price*	Displacement	Curb Weight	Over-All Length	Over-All Width	Turn Circle	Front Headroom	Front Legroom
PEUGEOT 403	$2175	89.6	2352	176.0	66.0	30.0	36.0	40.0**
LLOYD TS	$1395	36.4	1260**	132.1	55.8	34.5	33.8	39.8
CITROEN 2CV	$1298	25.9	1120	148.8	58.3	32.5	36.0	42.0

* Port-of-entry price at New York City

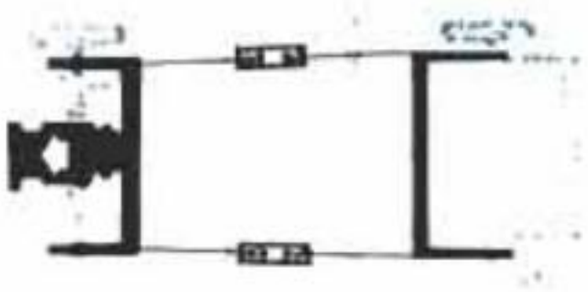
** Approximate

Wheelbase: 78.8 inches
Front engine, inline OHV two-cylinder, air-cooled, 25 horsepower

Front suspension: Independent Two transverse leaf springs (superimposed)
Rack-and-pinion steering
Gas mileage: About 42 m.p.g.
Front-wheel drive
Tubular backbone with welded-on platform
Four-speed transmission, all synchromesh
Top speed About 62 m.p.h.
Rear suspension: Independent Trailing wishbones and coil springs
No rear axle as driving wheels are in front

LLOYD

Lloyd has a new and larger engine that drives through the front wheels. Its rear suspension is unusual with the trailing wishbones and coil springs. Its tubular backbone is the main structural member of the car



Wheelbase: 94.4 inches
Front engine, flat OHV two-cylinder, air-cooled, 12 horsepower

Front suspension: Independent on leading arms interacting with rear through central coil springs
Front-wheel drive
Gas mileage: About 46 m.p.g.
Ladder-type box-section frame
Four-speed transmission, all synchromesh
Centrifugal clutch
Top speed About 52 m.p.h.
Rear suspension: Independent on trailing arms sharing common coil springs with front wheels
No rear axle as driving wheels are in front

CITROEN

If you tried to make a car uglier than the 2 CV, you couldn't. Nor could you make one more beloved by its owners. It will go anywhere, under any conditions. Suspension is as unique as its styling and is soft enough to cushion eggs, rugged enough to haul pianos—no wonder the French love it

Volvo is built by Swedes to last forever—or at least so it seems. It is a solid car, unadorned but peppy. And it travels a surprising distance on a gallon. It may look stodgy, but don't be fooled. It goes!

Wheelbase: 102.5 inches
Front engine, inline OHV four-cylinder, water-cooled, 85 horsepower

Front suspension: Independent Coil springs Wishbones
Gas mileage: About 25 m.p.g.
Unitized body and frame
Three-speed transmission (four-speed all-synchromesh optional)
Top speed: About 90 m.p.h.
Rear suspension: Nonindependent Coil springs Solid rear axle
Rear-wheel drive through torque arms
Two-piece exposed drive shaft

VOLVO

	Price*	Displacement	Curb Weight	Over-All Length	Over-All Width	Turn Circle	Front Headroom	Front Legroom
VOLVO PV 444	$2239	96.5	2140	177.0	62.5	32.5	39.0	47.0
RENAULT Dauphine	$1645	51.5	1397	155.0	60.0	30.0	37.5	42.0
OPEL REKORD	$1958	90.8	1995	174.0	63.6	34.8	36.0	43.5

* Port-of-entry prices at New York City

Wheelbase: 89.4 inches
Rear engine, inline OHV four-cylinder, water-cooled, 32 horsepower

Front suspension: Independent Coil springs Wishbones for lower arms Rack-and-pinion steering
Gas mileage: About 36 m.p.g.
Unitized body and frame
Three-speed transmission (automatic clutch optional)
Top speed: About 70 m.p.h.
Rear suspension: Independent Coil springs Swing axles
Rear-wheel drive

Renault's little princess, the Dauphine, is currently the best selling four-door foreign car in the United States. And with reason. It has European styling, but is not so peculiar as to be embarrassing. Its rear engine, a water-cooled four-cylinder, purrs around town and is almost inaudible at idle. Typically French, it has wet cylinder liners

RENAULT

Wheelbase: 100 inches
Front engine, inline OHV four-cylinder, water-cooled, 56 horsepower

Front suspension: Independent Coil springs Wishbones
Gas mileage: About 26 m.p.g.
Unitized body and frame
Three-speed transmission, all synchromesh
Top speed: About 78 m.p.h.
Rear suspension: Nonindependent Leaf springs Solid axle
Rear-wheel drive by exposed drive shaft

OPEL

Certainly the most American looking of the imports is the Opel Rekord. Built by General Motors in Germany, it is sold by Buick over here. The chassis is conventional and except for its unit body, it could be a domestic GM car. Also available is a very handsome station-wagon model

Wheelbase: 84.0 inches
Front engine, inline OHV four-cylinder, water-cooled, 40 horsepower

Front suspension: Independent Coil springs Wishbones
Gas mileage: About 35 m.p.g.
Unitized body and frame
Four-speed transmission (automatic clutch optional)
Top speed: About 65 m.p.h.
Rear suspension: Nonindependent Leaf springs Solid rear axle
Rear-wheel drive by exposed drive shaft

TRIUMPH

If you want a truly compact car, this is it. Inside its 145-inch overall length are four doors, a front engine and a rear trunk. Narrow doors make exit and entry tricky, but once inside there's amazing room

	Price*	Displacement	Curb Weight	Over-All Length	Over-All Width	Turn Circle	Front Headroom	Front Legroom
TRIUMPH	$1699	57.8	1680	145.0	58.0	32.0	38.0	45.5
VAUXHALL Victor	$1958	91.9	2180	166.2	62.5	34.0	35.5	43.0
SIMCA Aronde	$1645	77.5	2100	162.0	61.3	31.0	35.4	37.0

* Port-of-entry price at New York City

Wheelbase: 98.0 inches
Front engine, inline OHV four-cylinder, water-cooled, 54.8 horsepower

Front suspension: Independent Coil springs Wishbones
Gas mileage: About 30 m.p.g.
Unitized body and frame
Three-speed transmission, all synchromesh
Top speed: About 74 m.p.h.
Rear suspension: Nonindependent Leaf springs Solid rear axle
Rear-wheel drive by exposed drive shaft

VAUXHALL

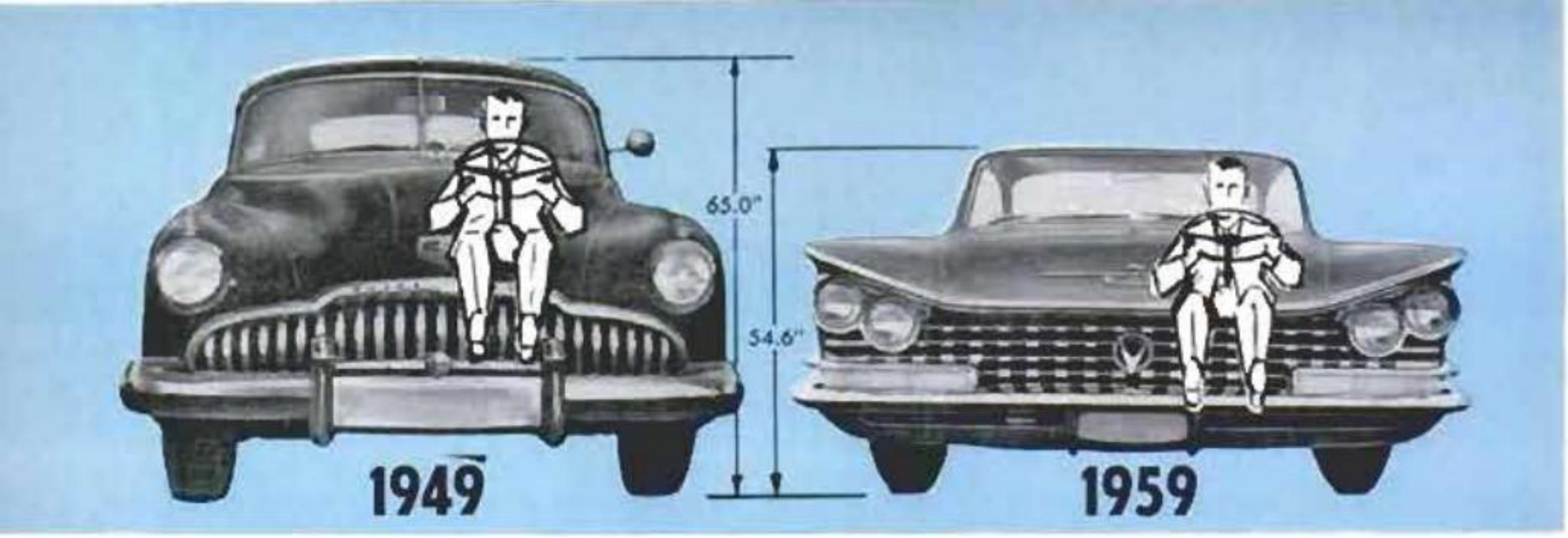
First of the British cars with a wrapped windshield, the Vauxhall, like Opel, is a "naturalized" American citizen. It is built in England by GM and, some British claim, is more American than English. Whatever its origin, it is a trim, sensible design. Suspension is conventional and the shift lever is on the steering post where Americans expect it to be

Wheelbase: 96.3 inches
Front engine, inline OHV four-cylinder, water-cooled, 48 horsepower

Front suspension: Independent Coil springs Wishbones
Gas mileage: About 30 m.p.g.
Unitized body and frame
Four-speed transmission (automatic clutch optional)
Top speed: About 80 m.p.h.
Rear suspension: Nonindependent Leaf springs Solid rear axle
Rear-wheel drive by exposed drive shaft

SIMCA

Chrysler now sells Simca in this country. It is a conventional design, well thought of in France. A new model of the Aronde was introduced recently (not shown here) which has a lower, more modern look. The car in this photo, however, is the one now being sold over here



Drivers don't change, but look what has happened to the automobile in just 10 years—10 inches lower!

WHERE DID THE INCHES COME FROM?

By Roger Huntington, SAE

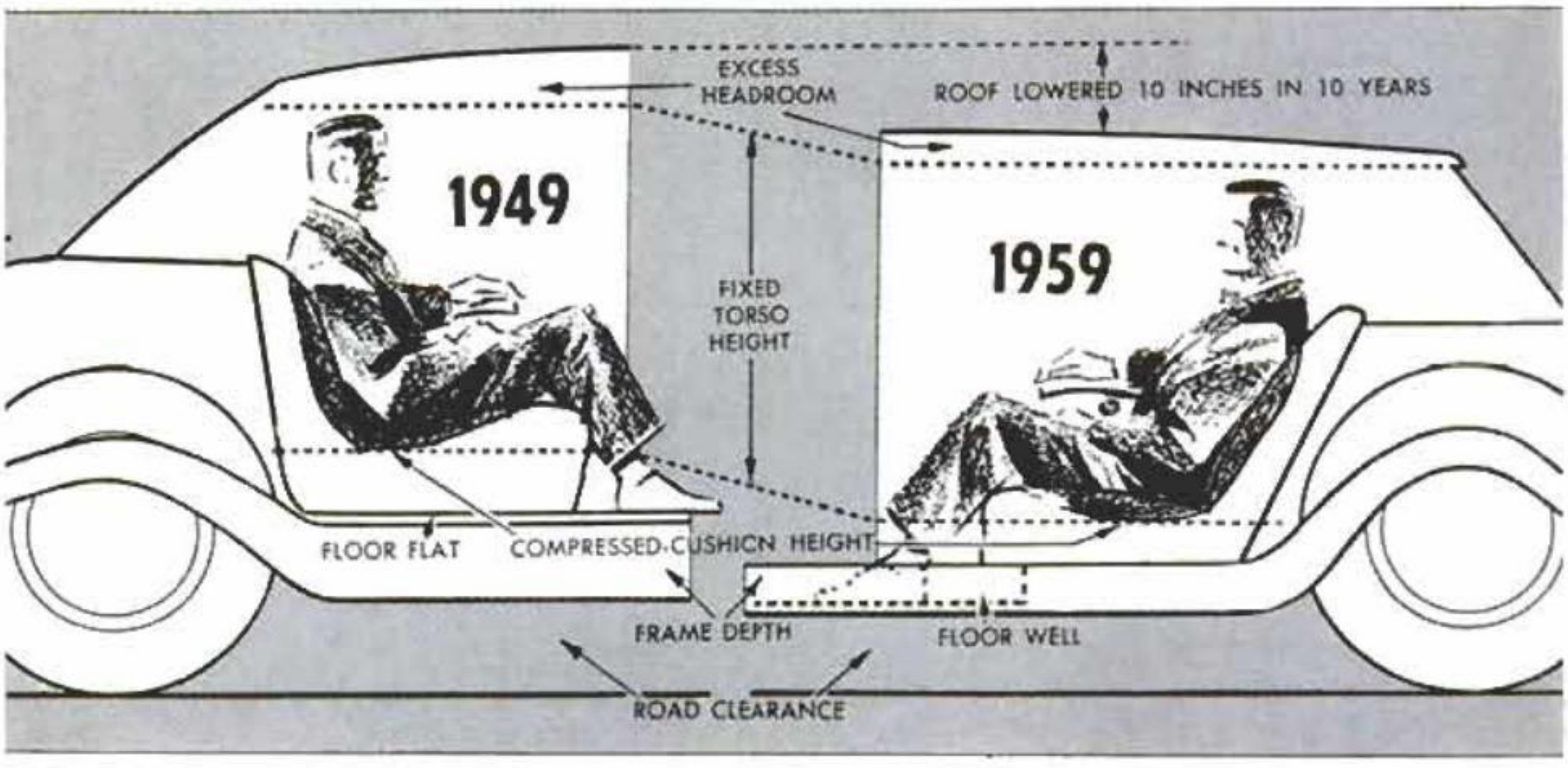
THIRTY YEARS AGO, a prominent Packard engineer, surveying the company's new low-slung hypoid rear axle, confidently predicted that American passenger sedans might some day be as low as 66 inches.

The 1959 model crop out of Detroit runs in height from 54 to 59 inches. Some models are as much as two inches lower than corresponding 1958 bodies.

Yet the crystal-ball gazers tell us we're heading even lower—down to 52 inches. They say sales indicate that the low look is what John Q. wants and Detroit is going to give it to him.

Where did the inches come from? How

Here are the body's vital statistics. After 10 years, the problem is the same, but the solution is different



did we get so much lower than the best engineers were predicting 30 years ago? How can we possibly get any lower?

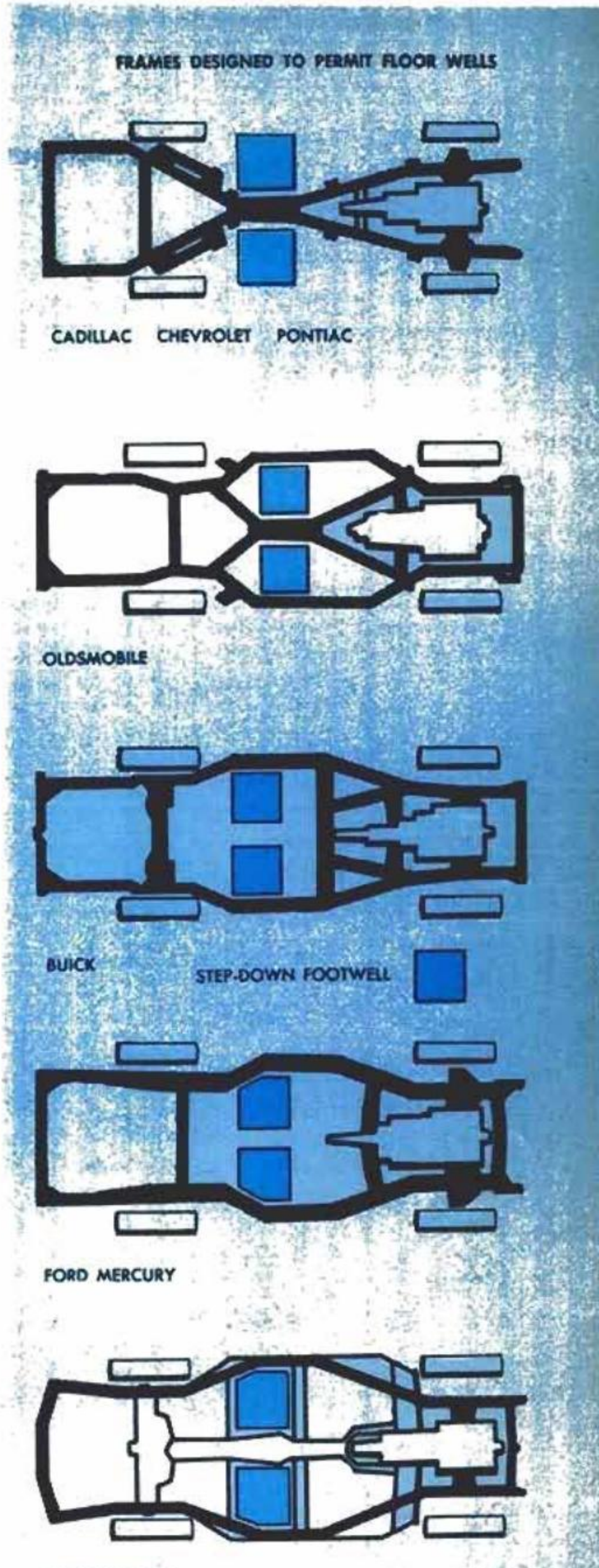
Good questions, all of them. To get the answer you must analyze what determines car height. Several vital dimensions add up to set the over-all height of a body. Starting at the pavement, we move up through the "ground clearance" area, the distance between the ground line and the lowest part of the car's undercarriage.

There has to be space here to clear obstructions on back-country roads and to provide ramp clearance at the center of the chassis for leaving steep driveways. Current models have minimum ground-clearance figures ranging from a little over five inches to about seven inches. Engineers don't see how they dare reduce this even as much as a half inch on future models.

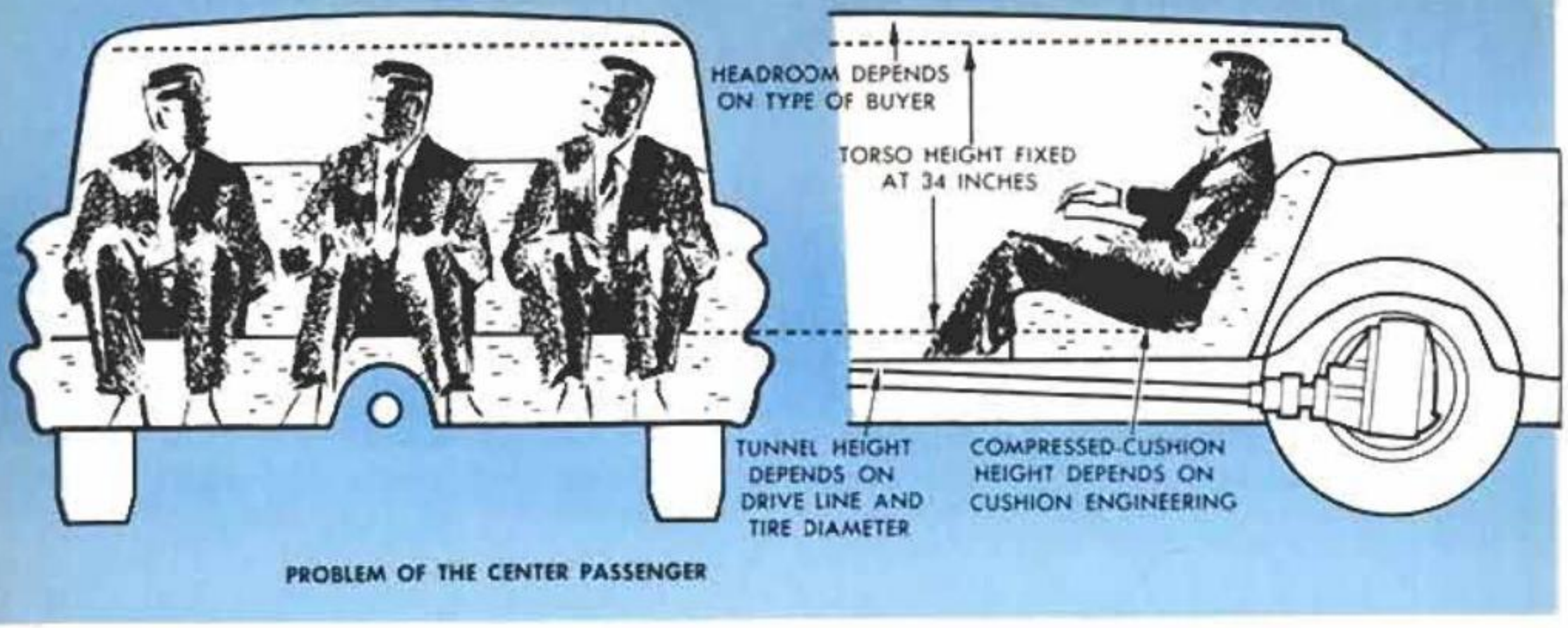
The vertical distance between the ground-clearance line and the floor of the passenger compartment is "open to negotiation," so to speak. It will depend on the layout of the chassis. If the car uses a frame, the floor can be dropped below the top of the frame side rails by putting footwells in the floor pan. This is the by-now-familiar step-down construction, used by all except Chrysler Corporation. It requires a special frame design to make room between the rails for wells while maintaining adequate stiffness.

Things are simplified with the unit body construction in which there is no separate chassis frame and the body is welded up as a sturdy box structure. In this design, you can place the floor anywhere you want. Of course, there still must be room under the floor for the exhaust pipes and mufflers. Running the exhaust along the frame rails (as on the Continental Mark II) is expensive. Finding room for the exhaust system is one of Detroit's biggest headaches today and you'll see radical changes by 1961.

The next dimension is seat height. Seats have been getting lower and lower for 10 years. The passenger is sitting more and more with his feet straight out in front of him. There's nothing particularly wrong with this, but it requires very careful seat design to get acceptable comfort in this position. Thigh and kidney support is vital. Some seats in low foreign sports cars do the job very well. Detroit is definitely behind in this problem. It looks now as though a minimum practical distance between the floor line and the lowest point of the compressed seat cushion (with an average-weight person in the seat) might be four inches. Many 1959 models are close to that right now.



Frame shape determines size of the floor wells for rear-seat riders. These drawings explain the reason



PROBLEM OF THE CENTER PASSENGER

Major problem is the center passenger. Unless we get major chassis changes, he will limit the lowering trend

Next is one of the fixed dimensions in body design—the height of the human torso in a seated position. In a reasonably upright position, the average height is 34 inches from seat to the top of the head. There is little we can do to reduce this dimension on future cars. Of course, we could tilt the passenger back a little, putting him in a semireclining position. There is just a hint of this on some 1959 models. How much of this the public will put up with for style, only time will tell.

Above the head we must allow a little excess room for the taller riders and, in some cases, for hats. This dimension is not so fixed as some others. For instance, you would allow more headroom in a Cadillac limousine than in a sporty Plymouth Fury. The man who buys the Fury will put up with less headroom (perhaps even would be willing to take his hat off) to get the flashy body lines.

Probably an average allowance on all cars for excess headroom should be four inches between head and ceiling.

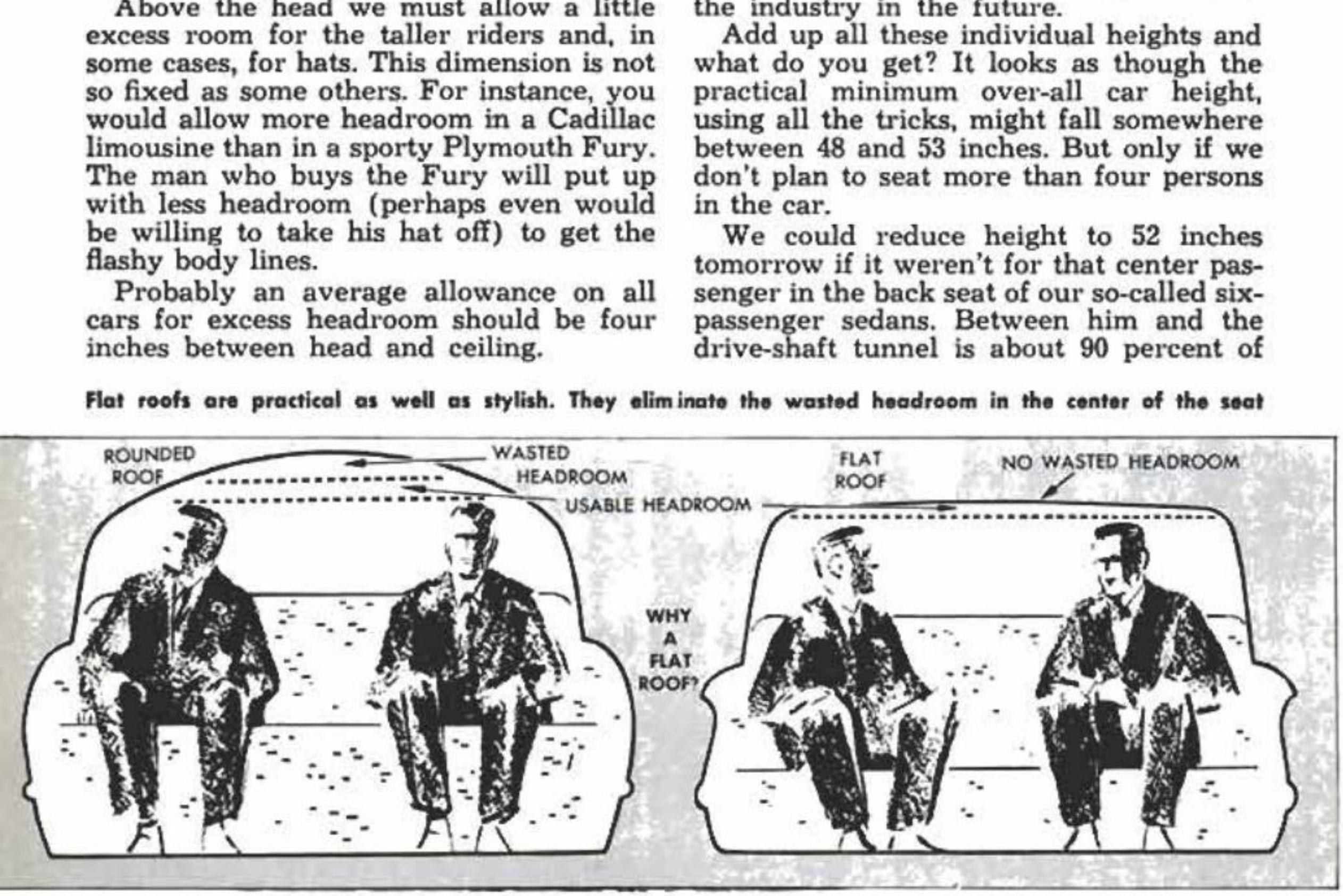
The thickness of the roof structure (upholstery and metal) doesn't need to be much over a half inch. If the roof panel is curved, obviously we're going to have waste headroom in the center. We must allow a certain minimum headroom at the sides and clearance at the center where the roof bulge is more than needed. This makes the body one or two inches higher than necessary.

Flat roofs are the answer, of course. And the 1959 flattops will be common to the industry in the future.

Add up all these individual heights and what do you get? It looks as though the practical minimum over-all car height, using all the tricks, might fall somewhere between 48 and 53 inches. But only if we don't plan to seat more than four persons in the car.

We could reduce height to 52 inches tomorrow if it weren't for that center passenger in the back seat of our so-called six-passenger sedans. Between him and the drive-shaft tunnel is about 90 percent of

Flat roofs are practical as well as stylish. They eliminate the wasted headroom in the center of the seat



Detroit's problem. There just isn't any room left there to play with.

Three significant dimensions are involved: First, there is the height of the top of the drive-shaft tunnel above the road. This is largely determined by tire radius and the design of the differential and drive shaft. The 14-inch wheels have helped some (although the latest low-profile 15-inch tires are just as low).

Ford reduced the drive-shaft height at the rear axle by designing the hypoid rear-end gears to lower the pinion gear ¾ inch on the ring gear (which, incidentally, was a very ticklish engineering and production problem). The GM divisions have gone to two-section drive shafts so there won't be so much up-and-down swing as wheels go over bumps. Oldsmobile even shortened its rear shaft section for 1959, to reduce further the amount of upswing. Ford and Chrysler have necked down the outside diameter of their one-piece drive shafts at the rear. On its bulky torque-tube drive, Buick designed a clever two-section tube with a kink near the rear axle under the seat.

The second dimension is the seat-cushion thickness above the tunnel. This is a killer. Every inch of cushion that the occasional center-passenger gets (and how often do you ride three in back?) is one inch added to the car's over-all height.

Detroit is trying to compromise here. On some cars compressed-cushion thickness over the tunnel is less than one inch and the passenger "bottoms" on many bumps on reasonably smooth roads. A heavy passenger may contact the tunnel all the time (which might be less annoying and uncomfortable than bumping up and down on it). On the other hand, some companies, by clever design all through the chassis and body, manage to get compressed-cushion thickness of two to four inches over the tunnel and still retain low body lines.

The third dimension is the passenger.

(Continued to page 278)