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Since the primary function of tread pattern is shedding moisture, computeraided searches of many combinations of tread patterns and compounds ultimately led to the optimal combination for both dry and wet traction. In fact, in its latest \_test of high-performance tires, <u>Car and</u> <u>Driver magazine again rated the Comp T/A</u> first overall—as well as first in wet maneuverability and wet braking.

The same technology that led to the Comp T/A-ranging in aspect ratios from 45 to 70-was applied to the entire family of BFGoodrich T/A<sup>\*</sup> Radials. The result is a comprehensive line of high-performance car and truck tires in many sizes, designed for a wide variety of performance needs and driving styles.

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WE MAKE CARS PERFORM

#### FORSYTHE TEAM ENGINE BUILDER GERALD DAVIS ON THE OIL THAT HELPS HIM KEEP HIS BEARINGS AT 11,200 RPMs.



Gerald Davis talks about the performance of Quaker State QSX 20W-50 with Bud Lyons, Quaker State's Automotive Performance Manager. Quaker State's unique formula, starting with Pennsylvania Grade Crude, helps give Davis the edge in performance and protection. Just like the entire line of Quaker State motor oils, Quaker State QSX 20W-50 provides smooth flowing, steady protection—even at 11,000 rpms plus.

#### LYONS: When I recommended our Quaker State QSX 20W-50, what was your reaction at that time?

DAVIS: Well, I didn't want to use it, to be honest with you. We had done some tests with some multi-weight oils, and I was never happy with the 20W-50 or 10W-40; any kind of oil other than a 50 because the bearings didn't seem to last.

### LYONS: Why were you not sold on my suggestion?

DAVIS: Our engines are basically different than anyone else's. We start with an all-aluminum engine. It's strictly a

racing engine. We turn a lot more rpms than anyone else—like 11,200 rpms. And they are turbocharged which is even harder on them.

#### LYONS: What happens to the oil?

DAVIS: Well, oil will break down on you with the heat and you always have problems with the lubrication at high rpms. Usually, you

have oil that runs at 240-260 degrees during a race. If you have bearing problems in a racing engine, you lose it. You lose a very expensive engine completely.

### LYONS: What *does* your basic engine cost?

DAVIS: Basically, an engine less the turbocharger is about \$48,000. But if a bearing related problem occurs, you can

spend as much as \$20,000 or \$30,000 getting an engine back into shape. I can't put something in there that I know is going to destroy a man's motor. And that's why I was kind of hesitant when you came to me with QSX 20W-50.

#### LYONS: What is your acceptance now? What did you really find?

DAVIS: We tested QSX 20W-50 against two other brands. In fact, actual racing oil and a special blend. The thing I would be looking for is the foaming problem, you know, which amazed me right off, to see that the Quaker State QSX oil did not foam as much as the other

two brands of oil.

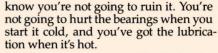
### LYONS: Is that the only test you did?

DAVIS: No. After we did the dynamometer test on the engine, we put it in the race car and went to Phoenix International Raceway and tested it on the track. They shipped that engine back to me, and

I disassembled it, checked the bearings, and it looked perfect.

LYONS: Did you witness any difference with Quaker State QSX?

DAVIS: We could have run the bearings again. I mean, they looked that good. You put the QSX 20W-50 in, and you



# LYONS: And are you satisfied with the viscosity range in Quaker State QSX 20W-50?

DAVIS: It's perfect for our application. I do believe the 20W-50 is one of the best all-around oils that we or anyone could use. All my vehicles have QSX 20W-50 in them, and it's fantastic.

#### LYONS: Have you got a recommendation for the average consumer?

DAVIS: I have no problems recommending this oil to anybody. I mean turbocharged cars—anything—any kind of driving. Highway, city. It's such a good oil. You know, people are not aware of what goes on inside their automotive engines. And that's what's good about this oil. We take it way past anything they can do, and it stands up. So it's only logical it would be a tremendous plus to them to use it.

# LYONS: What is your feeling about the average consumer's interest in maintenance?

DAVIS: I think people nowadays seem to be getting more performance-minded. People take a little more pride in their cars because they cost so much money nowadays. The maintenance is getting to be more on their minds.





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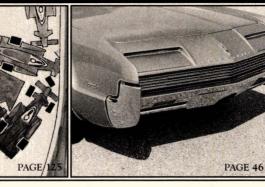
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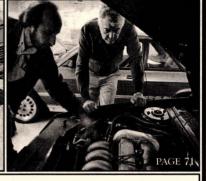
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#### **OLDS BUSINESS**

- 40 1986 OLDSMOBILE TORONADO Oldsmobilists will think they've died and gone to Hawaii-by Patrick Bedard
- 46 1966 OLDSMOBILE TORONADO When men were men, cars were cars, and GM feared no technological frontier-by Don Sherman

#### ROAD TESTS

- 53 HONDA ACCORD SE-i The final bow for the second generation-by Brock Yates
- 62 1986 AUDI 5000 TURBO QUATTRO A benchmark is born-by Rich Ceppos
- 83 NISSAN STANZA WAGON The dinosaur redefined?-by Pete Lyons
- 99 PREVIEW: ALFA ROMEO 75 Japanese value, European prestige-by Don Sherman

#### FEATURES

71 THE CHRYSLER-SHELBY SKUNKWORKS A visit to Chrysler's free-wheeling high-performance think tank-by Csaba Csere

MEANWHILE, AT MASERATI The Chrysler-Maser two-seater, coming in '87

- 89 ASC VISION From George Barris to America's premier independent automotive-design studio, Heinz Prechter and ASC have come a long way-by Jean Lindamood
- 105 PIRELLI'S PROGRESS The latest rubber from the low-profile pioneers-by Csaba Csere

#### SHORT TAKES

- 108 BMW 524td On turbo-diesel timing-by Larry Griffin
- 111 COLT PREMIER TURBO One of Mitsubishi's best-by Csaba Csere
- 112 RENAULT ENCORE GS Expert drivers wanted-by Larry Griffin

#### COLUMNS

- 9 DRIVER'S SEAT Roadside trash
- 12 LETTERS Of agitated hormones, fat and stupid girls, and the Nobel Peace Prize
- 22 DON SHERMAN A perpetrator's pocket primer
- 24 BROCK YATES Don't do it, Lee
- 27 WARREN WEITH The disappearing car nut and other mysteries
- 114 ROAD TEST REVIEW
- 136 PATRICK BEDARD On the right tract: Ford's squeak-and-rattle squad

#### FOR YOUR INFORMATION

29 NEW & IMPROVED An open-air Porsche-for-the-peasants, 4x4 Vanagon Syncro

#### SPORT

125 RISKY BUSINESS Every once in a while, you get a reminder that racing is not like other sports-by-Michael Jordan

Cover photography by Aaron Kiley



Car audio is our life. There's no way we would settle for less than the best. Why should you?

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# Small Wonder At last, *pocket-size* radar protection.

Quite simply, PASSPORT is the smallest superheterodyne radar detector ever made – only 3/4" tall, 23/4" wide, and 41/2" long. It fits your pocket as easily as a cassette tape.

#### Small means nearly-invisible protection

This miniaturization is possible only with SMDs (Surface Mounted Devices), micro-electronics common in satellites but unprecedented in radar detectors. The result is exactly what you'd hope; high performance in a low-profile package. And the response is exactly what you'd expect. The experts at *Car and Driver* said, "In a word, the Passport is a winner."

The magazines report excellent performance. More than early warning, PASSPORT also provides a precise measure of radar range. Simply turn PASSPORT on and set the volume level. At radar contact, the alert lamp lights and the variable-pulse audio begins a



In PASSPORT, 102 SMDs (right) do the work of ordinary transistors, resistors and capacitors.

slow warning: "beep" for X band radar, "brap" for K band. Simultaneously a bar graph of Hewlett-Packard LEDs shows signal strength. A photocell even adjusts the alert brightness to the light level in your car.

#### Small means the size of a cassette tape

As you get closer, the pulse quickens and the bar graph lengthens. And if you should want to defeat the audible warning during a long radar encounter, a special switch allows you to "mute" the audio, yet leave PASSPORT fully armed for the next encounter. You get the complete radar picture.

#### Small means never having to go without

You can take PASSPORT anywhere: on an airplane to another city, or to work for trips in the company car. Just install on dashtop or visor, then plug into your lighter. PASSPORT keeps such a low profile, it can be on duty without anyone noticing. And PASSPORT comes complete with a visor clip, windshield mount, straight cord, coiled cord – even a <u>leather</u> travel case. And we back PASSPORT with a full one year limited warranty.

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# Inside Major Motion.

# How Nissan's electronic technology is breathing new life into airflow systems.

With any complex piece of machinery precise measurements and controls are critically important. Yet, before the advent of electronic technology cars had to rely on mechanical control systems. Inherently, these systems were often cumbersome and inaccurate. The result was lost performance and fuel efficiency.

Nissan has helped to change all that through our pioneering achievements in electronic technology. For instance, Nissan was one of the first to offer an electronic, directport fuel-injection system, the first to offer a vocalized warning system. And Nissan was one of the first to use an electronic airflow meter system to greatly improve the precision of electronic fuel control.

#### MEASURING BOTH AIRFLOW MASS AND VELOCITY.

The function of an airflow meter is to continuously measure the airflow. This enables the microprocessor to meter the precise amount of fuel needed to optimize power output without generating excessive exhaust emissions.

With an electronic airflow meter, an engine has the capability to instantaneously adjust to different driving conditions and power demands. This enables the engine to extract the maximum amount of energy from every ounce of fuel and the result is increased fuel economy.

Of course, not all electronically controlled fuel-injection systems are the same. Many consist of a mechanical flap control device which measures the average volume of air passing through it. Due to the mass and inertia of the flap it inherently cannot respond instantly to changes in the airflow. In the Nissan system a heated platinum wire measures the mass flow, and since there is no mechanical movement, the response to a change in the airflow is instantaneous.

#### A PLATINUM WIRE THAT MEASURES AIRFLOW 200 TIMES PER SECOND.

Nissan's unique airflow sensor measures the airflow in such a way that the control circuit emits an electrical output signal in relation to the amount of heat dissipated from the heated platinum wire. This wire is placed in the stream of the air intake, and as air flows around it heat is removed from the wire. The higher the temperature of the wire, the higher its resistance value. This resistance value is translated into a signal which is fed to the control circuit which controls the time that the fuel injector remains open during the



COME ALIVE, COME AND DRIVE

intake cycle. Because this method enables the airflow to be measured 200 times a second, it enables the system to respond instantly to changes in driving conditions. It's precise measurement like this that translates into the most efficient use of fuel and the most optimum use of power.

#### NISSAN'S ELECTRONIC CONTROL COMPUTER SYSTEM.

Nissan has maximized the benefits of precise airflow controls with their Electronic Control Computer System. This system monitors 12 different engine parameters and controls such functions as ignition timing, fuel flow, idle speed, fuel pump operation, and in the turbocharged engine, detonation.

Electronics also control the automatic transmission shift schedules. The result is a transmission that closely matches the performance level of the engine.

#### TECHNOLOGY THAT MAKES A DIFFERENCE.

Nissan has extended the use of electronic technology into other areas such as driver comfort and safety. For instance, Nissan has developed windshield wipers that react automatically to rain.

Nissan has pioneered such developments as bumpers which contain electronically controlled radar sensor devices to tell the driver how much space is between the vehicle and another when parking, and a steering wheel which automatically senses driver fatigue and transmits a vocal warning. You'll find many more innovations such as these with Nissan and they all add up to one thing...Major Motion.



# DRIVER'S SEAT

#### Roadside trash.

• The sun shines bright on my old Kentucky home... 'tis summer, the Interstates are covered with the shards of blown-up truck tires.

Warm weather seems to be the season for debris along the roadside. In the northern tier of states the arrival of spring is particularly hard on lovers of roadside neatness and beauty. First off, the melting snows reveal an entire winter's accumulation of trash. Worse, the migratory waterfowl and various representatives of the nation's smaller fur-bearing population are seized with the need to wander far afield in search of the opposite sex. Rabbits, skunks, raccoons, and possums give up their lives nightly-squirrels by day-and the shoulders of the roads begin to look like the pastures behind the Normandy beaches when Allied shelling killed all the dairy cattle.

A little later, the mallards make their nests and settle into a kind of sedentary stupidity that's absolutely heartbreaking. I saw three dead mallard drakes in the gutter on my way to work one morning. They just don't understand. It's even worse when the proud mallard mothers start marching their kids back and forth across the roads. I have stopped traffic in both directions on suburban streets and country roads to let them pass, but I know that there are people who deliberately steer for them, as though a mallard left dead in the road were a sign of human superiority.

My headlights illuminated a young rabbit kicking his last by the Veterans Hospital the other night. I wanted to stop for him, but I knew how futile that would be. Once, in downtown Detroit, we passed a black Labrador pup trapped on the median, barking his fear and defiance at the traffic whipping past at 60 or 70. I finally managed to get stopped, in an attempt to call him, only to see him bolt into the rush of cars and trucks and . . . Goddam if he didn't make it to the other side!

In Nevada one morning, on I-80, we came face to face with a big downed coyote lying athwart the center line, his toothy grin and lolling tongue belying the fact that he was disemboweled and doomed to be struck again at any moment. I think about that covote a lot, and I always hope that shock had relieved him of the burden of terror. But at the same time, as an enthusiastic coyote watcher, I think of the breed's incredible wisdom and toughness, and wonder if maybe he wasn't lying there daring the eighteen-wheelers to try to take him out-like John Wayne or John Garfield propped up along the trail, too badly hurt to move, waiting for the bad guys with one full clip and a couple of grenades.

In 1974 the Federal Highway Adminis-

tration reported to Congress that the crud on the highways broke down as follows: 59 percent paper; sixteen percent cans; six percent plastics; six percent glass bottles; thirteen percent miscellaneous. Litter volume was found to correlate directly to traffic volume, and I suppose that coyotes and mallard mothers got lumped into "Miscellaneous." Someone at the Highway Administration suggests that those trashy numbers would be pretty much the same today, but I wonder.

For instance, what about the miles of dead audio tape that festoons the bushes from here to the nation's perimeter? I see loops and furls of cassette tape glistening in the sun wherever I go. Cassettes fail from three main causes: first, heat, which causes the tape to curve and prevents proper threading, and finally destroys sound quality; second, uneven winding caused by the constant starting and stopping of carstereo equipment; and third, vibration, because tapes left rattling around in a car unpack themselves, then jam when they're plugged into the player. Nobody seems to know why people then throw them out their car windows in the first place.

I'm certain that various states' bottle laws have made a big difference in the amount of glass and cans on the roadside. Connecticut, Delaware, Iowa, Maine, Massachusetts, Michigan, New Hampshire, New York, Oregon, and Vermont now have such laws, and they've made a very positive difference. New York reports a 70percent reduction in roadside glass as a result of the law's enactment, and Michigan savs that bottles decreased from sixteen percent of total highway litter in 1978 to less than three percent in 1981. Michigan also reports that half of the bottles still found along that state's roadsides are nonreturnables from out of state. A former chief engineer at Chevrolet once told me that glass was the largest single cause of tire and road damage, so reductions of these magnitudes are welcome news indeed. Now we need biodegradable fast-food containers, or maybe edible ones.

Which brings us to shredded truck tires, which, like Big Mac containers, are neither biodegradable, edible, nor particularly attractive. One tire-industry spokesman told us that blowouts are seldom the cause of these scattered chunks and strips of tread, since most truck tires are tubeless. If I may play devil's advocate for a moment, I'd like to report that I was passing an eighteenwheeler on the Ohio Turnpike one summer night at about 2:30 when the inside tire on the trailer's front set of duals blew, and I mean blew. There was a noise that drowned out my Joe Cocker tape, a huge black cloud of smoke or dust and debris, followed by a veritable barrage of rubber projectiles. My windshield didn't break, but the silver paint sure caught hell.

Most of the truck tires that blow, or otherwise fail, are retreads, but our industry spokespersons were quick to point out that this is no indictment of retreads. To a man, they stoutly maintained that the retread industry has become so sophisticated today that their product is as good as or better than the original-equipment tires supplied with the truck. One source said that poor maintenance causes most of the truck-tire failures, while another suggested that road hazards are the number-one problem. We do know that underinflation and overloading are both causes of overheating, and overheating causes tread separation. Everybody agreed that universal acceptance of radial-ply tires by truckers will go a long way toward alleviating the problem, and proper maintenance of their equipment by both fleets and independent owner/operators would only improve on the improvement.

Finally, I wish we cared as much for the condition and appearance of our roadsides as the peoples of northern and western Europe do. Italy and Greece may look like the United States at its most unkempt, but France, Germany, and Scandinavia really do a job. I've seen dead people lying along the road in Africa, but never a beer can in Germany. Only a third-rate creature fouls the place where it lives. —David E. Davis, Jr.



# More Bauer to you!

<u>Ford Bronco and Bronco II</u> not one but <u>two</u> tough 4-wheelers for '85—both with Eddie Bauer style. They're all dressed up with <u>everywhere</u> to go!

Now Ford offers you a choice of big Bronco (seats 5 or 6) or trim-size Bronco II (seats 4) in special Eddie

Bauer editions. Both have a lot of good things in common– besides Ford toughness and Bauer class.

#### More power to you.

Both have plenty of power on tap. Power that eases you through hard off-road going and makes <u>all</u> driving more fun. Bronco II's 2.8L V-6 gives you power no other small V-6 4-wheeler can

top. It's standard at no extra cost. Bronco starts with a big high-torque 4.9L Six, standard. Adds a 5.0L V-8 with new electronic fuel injection. Plus a 5.8L High Output V-8 with 4-barrel carb—and 27% more horsepower than Blazer's biggest engine.\*

#### Unique suspensions.

Both Broncos have

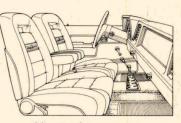
independent front suspension to absorb offroad jolts so you don't have to. And to help keep wheels glued to the ground for solid traction. Both give you a

proven 4-wheel-drive system with a choice of manual or optional automatic locking hubs.

And now both offer you the special looks and luxury of Eddie Bauer editions.

#### The Bauer Broncos.

These unique 4-wheelers have highstyled interior and exterior trim. They include dual Captain's Chairs, floor console and much more. Plus Eddie Bauer gear bag, travel blanket and visor organizer. And, to top it all, "Ford Care" extended maintenance



and limited warranty program. One beautiful package!

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As part of Ford Motor Company's commitment to your total satisfaction, participating Ford Dealers stand behind their work, in writing, with a Lifetime Service Guarantee. No other car companies' dealers, foreign or domestic, offer this kind of security. Nobody. See your participating Ford Dealer for details.

\*Optional; not available in California or with manual transmission. Horsepower based on SAE Standard J1349.





"My Ford Bronco & Me."

"My Bronco II & Me."





# LETTERS

Of agitated hormones, fat and stupid girls, and the Nobel Peace Prize.

**DOUBLE-YOUR-PLEASURE DEPT.** Wait until CBS finds out you blew \$20,000 to put a second engine into a Honda CRX! You guys are weird.

> Mike Anzalone Accountant, CBS Audit Staff Newton, Massachusetts



While at the first glance your two-gunned CRX seems like an expensive curiosity, a moment's ponderance reveals that the car is so eminently practical, it's revolutionary. Think of it. For the relatively small cost of the second motor, you have a car that has twice the life expectancy of its monomotivated cousin, provided it is run primarily on one engine at a time. (All horses could be employed for urban touch-and-go or when manhood is threatened.) Even build one engine for speed and the other for economy: save gas and tote a concealed weapon, too.

Best of all is the absence of angst when you're far from Mr. Goodwrench. Throw a rod? I'll be at the church on time and not even grease up my tux.

Add the four-wheel drive and near-perfect weight distribution and you have a selfcontained Swiss Army knife of a car, so versatile it could never be built here in the land of planned obsolescence and the AAA.

> Tom Fazekas River Edge, New Jersey

Sherman's "Synchronicity" article should have been called "Stupidity." The CRX Si in FYI achieves the same 0-to-60 time as the wasteful and distasteful CR-X<sup>2</sup>. Guys, let the Japanese do it themselves, for a quarter of your end cost.

#### Randy Zussman Cincinnati, Ohio

You obviously never heard the Charles A. Lindbergh engine story. Someone supposedly asked him why he was going to try to fly so far using only one engine. "The more engines you have, the more engine trouble you're going to have," he replied.

Bob Teague Normal, Illinois Amazing. You chose to modify a puddle jumper driven almost exclusively by women and effeminate men. Then you let Racing Beat do most of the work while you took most of the credit—a feat tantamount to *Motor Trend* using SU-2000 and letting Shell Oil do all their advertising. And to what end? To add 600 pounds and almost triple the price tag so the car would accelerate quicker (by your own admission, it didn't handle better or stop quicker). This "masterpiece" was entirely out of character for a magazine of *Car and Driver*'s caliber.

> Tim Rolf Oak Park, Michigan

Would it be possible to put transmission 1 (front engine) in drive and transmission 2 (rear engine) in reverse, and, if so, if a person were to stomp the gas pedal, would you have two cars for the price of one ... or what?

Doug Finch, Jeremy Jetton, and Tom Smith Fayetteville, Indiana

Instead of doubling the power output of the Honda by using twice the number of engines, would you consider publishing twice a month? Of course, my wife would be twice as mad, because I'd be twice as busy staying up twice as late to read twice the number of articles. But I'd be twice as happy and so would you, as you could get twice the salaries. So is it a deal, or am I asking two much?

Gregg Ambrose New Britain, Connecticut Sounds great. But rather than double our salaries we'd double the staff. Everybody knows that two Ed.s are better than one—Ed.

#### EIGHT ISN'T ENOUGH?

Regarding your intriguing search for the best sports coupe, I assume that you excluded the Honda Prelude due to its \$12,000 (or less) price. Kind of embarrassing, right? Most of the Audi Coupe GT's refined nature can be found in the Prelude for several thousand dollars less. Any coupe that can receive the glowing praise you showered on the Honda in last July's "Best-Handling Imported Car" comparison belongs in the hunt for "best in class." Brian Richardson Bensalem, Pennsylvania

What a treat! I received *Car and Driver* and my Audi Coupe GT on the same day. The Coupe goes way beyond its statistics to reward its driver with an incredibly satisfying experience. It's silky smooth in every situation, and its steering should be analyzed by every automaker. The car isn't very fast, but, once rolling, it will accelerate past more powerful cars with ease. Three cheers to Audi's engineers. It's magic.

Richard L. Amar, D.D.S. Huntington, New York Your test of the eight sports coupes was trash! I am the proud owner of a 1985 Laser, exactly like the one you tested, and I love it! The shifter works fine. The car is not "cheap," "crude," or "junky-feeling," and its suspension is perfect. It's extremely quiet unless I open it up. It does not "drone." I have owned a lot of cars, and this vehicle is built as well as or better than any of them.

By the way, your second- and third-highest-scoring engines blew up. Which ones did you grade, the ones that blew or the ones that stayed together?

Back in '79 you told us how great the Xcars were. After we all bought them, you told us they weren't so great. Next came the Vette. Then, about a year ago, you told us the Daytona/Laser was great, and now it's junk. I'm beginning to wonder if you know what you're talking about.

Dale W. Crabtree Cuyahoga Falls, Ohio

Your comparison crew must have been smoking those German cigarettes again. How anyone could rate the Audi Coupe second in exterior design is beyond belief.

The best thing you can say about the Coupe's looks is that they are nondescript. But, in fact, that is the best thing about the Coupe. Its super-Chevette profile makes it a real Q-ship. I've seen it torpedo the unwary and unsuspecting.

Milton Alexander Southfield, Michigan

P.S. What's the point of putting the cars through ten categories of evaluation and then throwing the scores out the window with a single "overall rating"? Unless ... Have another puff, mein Herr?

The wrong Camaro was chosen. Instead of the Berlinetta, the F41-equipped Sport Coupe should have been used. It has better handling and is free of the arcade-style instruments and the silly pivot-mounted radio. The Z28-like instruments and radio are much more to the taste of the enthusiast.

My grandmother, who will be 77 this year, likes her F41 Sport Coupe even better than her '68 Camaro, which she drove for fifteen years and 160,000 miles.

Jim Grafton Huntington Beach, California

Your report strengthened my opinion that the Camaro Berlinetta is a car for girls who are fat and stupid.

> M. Pirelli Bakersfield, California

The Coupe GT has about as much business being proclaimed "Best Sports Coupe" as I have winning the Nobel Peace Prize. It is slow, its performance on the skidpad was mediocre, and it is expensive. The most pathetic thing about it is that its

# A RUNNING COMMENTARY ON THE VIRTUES OF BALANCED PERFORMANCE

"... Merkur is going to pile into the upscale sports sedan market - now occupied by such cars as the BMW 318i and 325e, the Saab Turbo, the Volvo Turbo, the Pontiac 6000 STE, and the Audi 4000 Quattro - like a runaway freight train."

> -Brock Yates, Car and Driver

"...the autobahn heritage shows to good advantage. We wish that all cars sold in this country could be developed in such an environment."

> - Tony Swan, Editor, Motor Trend

"For your money you will get an extremely neutral handling sedan that's both substantially roomier and quicker than the Bimmer, with the same Made in Germany decals for your friends to envy."

> -George Levy, Editor, AutoWeek

#### "The Merkur is about perfect."

- David E. Davis, Jr., Editor, *Car and Driver*, in naming Merkur XR4Ti One Of The Ten Best Cars For 1985

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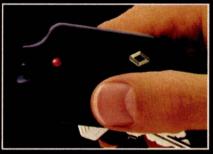
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#### LETTERS

misguided owners will be totally humiliated if they ever cross the path of a GLH Turbo, which doesn't even cost ten grand.

The Mustang SVO, on the other hand, is a strong runner, a great handler, and a totally no-nonsense road machine. Boy George would probably pick the Audi, but Chuck Norris or Bruce Springsteen would take the SVO.

> Duncan Von Peed Killeen, Texas

I read. I drove. I bought. I love. I thank. Audi Coupe GT Dallas, Texas

You guys are fickle. You state that such and such a car is the greatest. Later you pick at it and fall in lust all over again with some new lovely. You forget your previous mad infatuation.

This irks readers who look to you as gurus of proper automotive thought. Nothing is as unsavory as sashaying down the lane in your baby knowing that your literary pals loved her—only to have these same moguls bad-mouth her weeks later.

You love the one-night stand and seem incapable of any meaningful, permanent relationship. You're continually falling head over heels for the next one that comes along, as thoughts of the previous model evaporate in a pall of agitated hormones.

Dr. Freud accuses people like you of "having sexual relations with their cars." Hell, I enjoy a juicy affair or two. Write on about your newest conquests, your continuing "sexual exploits."

In the affairs of the road, readers should ease up looking to you for "the best." In sex there is no "best." It is all "best."

G.D. Hoffman

San Bernardino, California We always knew we were having fun, but until now we didn't realize why. Thanks to you and to that Freud guy you go to—Ed.

#### **OMNIPOTENCE**

I read with amazement that you guys have finally recognized a truly fast, fairly priced, fun car, the Omni GLH Turbo. I have been bragging to my friends and destroying GTIs, ZXs, etc., for months now. Prior to buying my GLH, I was the proud owner of a 1984 Horizon, with a 2.2-liter engine and a five-speed, and even in this car I blew the doors off of many a competitor. My hat is off to Chrysler: it has given the American public some fast, fun cars, and you don't need a second mortgage to buy one.

> Manny Roybal Spring Valley, California

I applaud the return of Chrysler "muscle" cars. Cheap but fast. Who needs all those expensive extras when the real thrill is pulling out past a Firebird and watching the driver's jaw drop as you fly by in an econobox? I love it! The GLH is a perfect woman's car—room for the groceries and kids, good on gas, looks like a regular car, yet goes like hell.

> Jennifer Schoenfeldt Oakfield, Wisconsin

We finally start getting some reasonably priced, reasonably sized, well-powered, and at least adequately suspended highperformance street machines, and Chrysler decides to bring back that infantile macho-masturbation toy, the Road Runner. And Car and Driver praises it: "If you screw up, the hand-eye coordination of Mikhail Baryshnikov . . . might be enough to keep you on the pavement, but don't count on it." And: "It's a teen-ager's dream: cheap to buy and operate, yet bubbling over with exuberant speed." Bubbling over? The only things I see bubbling over in your envisioned teen-agers are their severed carotids when they put their heads through the windshield.

Producing cheap (read: big engine, inadequate suspension, and to hell with everything else) muscle cars that can't stay on the road only gives ammunition to the anticar Naderites who want us driving 55-mph Checker Marathons. Chrysler, if you want to produce a GTI beater, give it more than a one-dimensional superiority. How long do you think that turboed 2.2 will last in the hands of an 18-year-old (or a 35-year-old who thinks like an 18-year-old)?

A friend owned a new 1968 Road Runner. He won lots of street drags. He also paid his insurance company an annual sum that, if it had been paid to the Department of Defense, would have reversed the outcome of the Tet offensive. When he sold his Road Runner, its body was like new. That's because it was: every body part and panel had been replaced at least once. That includes the roof.

Thank you for allowing me this opportunity to vent my spleen.

> George Heth Granite City, Illinois

The truth is that the GLH Turbo is the most hideous-looking entity in the world! Ameer Bhutto

Buckingham, England

You ever see a vented spleen?-Ed.

#### **IMPULSIVE REMARKS**

Having just purchased an Isuzu Impulse (non-turbo model), I can attest in part to the accuracy of Bedard's report. The car's looks turn heads and make people smile. The non-turbo car works well also, but the turbocharger, tightened suspension, and better seats, all at a price of \$13,000, have made this piece of Japanese—er, Italian art the automotive bargain of the year. Thanks, Isuzu and Mr. Giugiaro, for putting the whole thing together. John C. Seguin

Atlanta, Georgia

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#### LETTERS

#### PORSCHE POWER

Bravo, Csaba Csere! Great article on the Porsche 928S. Just one thing: next time, photograph the most awesome car in the world in color.

> **Greg Sorrentino** Seaford, New York

Faster is better, as you say, but better is too expensive. If you're going to tease us, give us centerfolds of these dream machines.

**Christian Chiles** Oxford, Georgia

Quick! Tell me, I need to know now! Is it normal to have sexual fantasies centering on the new Porsche 928S?! Please tell me! Do I need professional help?

Shannon Brown

York, Pennsylvania No, you need a woman. Or, if you are a woman, a man. That will be \$75, and we'll see you next month-Ed.

#### ALFA BITS

The Alfa GTV6 deserves better than the short shrift you gave it in your short take. To be sure, the Audi Coupe and the Toyota Supra (the top two finishers in your sports-coupe comparison-which omitted the Alfa altogether!) are both good cars. I drove them extensively and even had a Supra on order before coming to my senses and getting an Alfa instead. The key determinant was that the Alfa made me grin like a schoolboy. Some 8000 miles later, it still does. Try to say that about any Toyota or Audi.

Fortunately, I have had none of the problems you encountered, and I think it's unfair to dismiss this fine car on the basis of minor nit-picks. Did you notice that your Alfa didn't lunch a rod like your test Starion, or pack it in like the 300ZX? Yet you glossed over these gross deficiencies in your glowing reports on these cars.

Next time, try the Alfa in a comparison test. I'm sure this venerable thoroughbred will surprise a lot of the new interlopers.

Raleigh M. Neville Arlington, Virginia

Csere's report hit most of Alfa's problems on the nose. After 15,000 miles, my '84 GTV6 refuses to shift into second (up or down) when cold and always has to be double-clutched down. The car is sadly underbraked for a high-speed automobile. The electrical gear is a joke: when I hit my brake pedal, the turn signal goes on. Sometimes the car refuses to shut off (though it's done it at 80-plus mph on a whim). The windshield-wiper lever is knocked seven out of ten times when I try to turn the key on. The leather upholstery is shot on the driver's side; the seat-and-steering-wheel configuration isn't quite as good as Csere describes. Awful.

Am I sorry I bought it? Not sure: it's still

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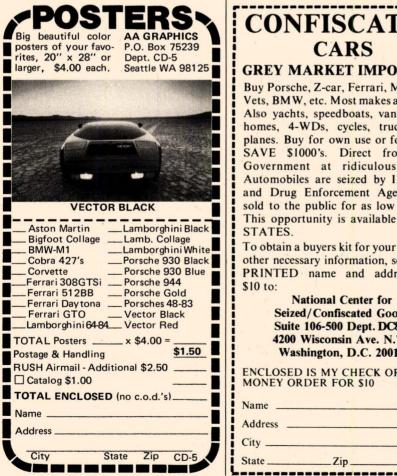
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a hell of a lot of pure driving machine for the money. Would I do it again? Never. Paul Lederer Pine Valley, California

As a potential replacement for my ailing eight-year-old Alfetta GTV, I tested a 300ZX, which apparently qualifies as a "modern" GT car. In brief, the body looks silly, the dash resembles a bad video game, the whorehouse interior gave me a headache, and the thing drove like an appliance. Luckily, I soon found a spotless used GTV6 and grabbed it at a bargain price. It looks terrific, handles sweetly on P6s, and the engine howls with delight when I open the throttle (me too).

While I don't debate the facts of your piece, I do question your emphasis regarding what a GT car is all about. A microwave oven is cleaner and easier than a charcoal grill, but it's no way to do a steak. As far as GT essentials go, the Alfa is ahead of most competitors.

> Raymond J. Boniface, M.D. Pittsburgh, Pennsylvania

#### **MUSEUM PIECES**

I recently traveled to Germany to help a friend pick up his new BMW 325. The last thing I did before boarding the flight was to pick up the May issue of *Car and Driver*. After reading "The Automobile Louvre," I knew the Musée National de l'Automobile was one place we had to see. It turned out to be well worth the trip.

You folks helped make our European trip enjoyable. Of course, the new BMW wasn't bad, either.

> Tom Rogers Lewisville, Texas

Workers at the Schlumpf factory undoubtedly had many things to complain about, but the color of their houses was *not* among them. *Caca d'oie* must be the most fashionable "decorator" color ever formulated. Royal mistresses dressed to show themselves against it at Versailles; it covered the walls of the most brilliant salons; clavecins by Blanchet and Taskin were painted in it. Only it goes under the more aristocratic name *merde d'oie. Caca* is baby talk. You can read about this color in scholarly English monographs, where it is identified forthrightly as "goose-shit green."

> Harry Randall Kalamazoo, Michigan

I took Davis's advice last fall and went to France. While there, I visited the opulent Schlumpf museum.

In that shrine, dedicated not only to *le pur* sang and Maman Schlumpf but to the perpetuation of Gallic elitism, sits one American vehicle: a solitary 1916 Harley-Davidson with sidecar. It's in as mint condition as the two Royales.

Hans and Fritz may have treated their

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> William H. Longvard Clemmons, North Carolina

#### **BAXTER'S BROUGHAM**

Regarding Gordon Baxter's column, I too was from a Ford family. Then I was con-vinced by my "smarter" friends that GM was sexier. Two GMs later (both turkeys of the highest order), there's a Ford in my future again. And I think I've figured out the problem: GM's research-and-development department consists of the poor suckers who buy its cars. That leaves its people free to dream up such great innovations as Corvairs, Vegas, and little numbers that have to have their engines lifted to change the spark plugs.

Jerry Flowers Nashville, Tennessee

I have the sister ship to Baxter's LTD, the Mercury, and I couldn't be more pleased with it, even though my wife calls it an old farty car. I bought it in February 1984, and it now has 39,000 miles on it. Total repairs are \$208.

> James D. Tighe Woburn, Massachusetts

It is time someone had a long talk with Baxter. It is true that big cars have their place, but fake convertible tops are ugly and stupid. No matter how many geeks mistake them for the real thing.

Steve Johnson Fairfield, Ohio

#### **DETROIT DISSENT**

My reaction to Brock Yates's column regarding the recovery of Detroit can best be summed up with those words immortalized by Joan Rivers: "Ohh, barf, barf, aarrgh, you've got to be kidding!" Detroit has had so many renaissances that it named its fanciest downtown building after them.

I and some friends fell for all this "new era in Detroit" crap back in the Seventies. I ended up with an '80 Chevy Citation (most recalled car in history), which was built in Ypsilanti, Michigan (worst plant in GM history), and was sold to me by Long Chevrolet (world's largest car dealership, per Guinness), which promptly went bankrupt due to massive employee theft. A co-worker who bought an '80 K-car didn't fare much better, keeping it for only two years; he would have sold it sooner, but he had to wait for dry weather so he could get it running. Two out of the three Mustang owners I know got rid of them within the first year.

GM sweats the details because it can't work them out. The Corvair was a "clean sheet of paper" project, too; so were the Vega and the X-bodies. All good ideas and likable cars, and all abandoned the minute something went wrong.

Who's going to manage Saturn? The

best people available. Well, that would be the folks who built the diesel cars; they're real available.

I'll wait till GM's new breed stops flapping its gums and actually does something before trading in my Saab.

> Max Moen Chicago, Illinois

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#### FOR YOUR MISINFORMATION

International ignorance reigns supreme at Car and Driver! It was not enough to insult two-thirds of the world's population with your "Cars from Backward Nations" drivel in the January issue. Nor was it sufficient to attack Canada and its workers in Mr. Davis's February column. Now, you have conveniently moved the capital of Israel from Jerusalem to Tel Aviv (FYI, May). Somehow, you seem to have missed the debate over the past ten years or so as to whether the U.S. government should move its embassy to Jerusalem.

Better stick to writing about cars, a subject on which you are not quite as ignorant. Eugene F. Elander

Windsor, Connecticut

#### ADS NAUSEAM

Would you please stop those mindless Special Advertising Sections in your otherwise fine magazine? You know what it looks, like? It looks like Ed. needs to fill up a few more pages, and so he hires Taylor-Constantine (a combo that seems to be stepping on its own fuel line) to go out and scare up some advertising and then babble away at the same literary level as Hot Rod magazine. Car and Driver doesn't need people who explain the obvious.

> Dan Stuckey Wingham, Ontario

Being a lubrication engineer with a major oil company, I would like to correct the "Motor Oil" section for the sake of the gullible masses.

1. There are three types of crude oil, not two: paraffinic, naphthenic, and asphaltic.

2. Paraffinic crude is taken from five major areas around the world, not from the Pennsylvania fields, which have been drained for years.

3. Not all synthetic oils come from petroleum stocks. Of the following six synthetics, only the last comes from oil crude: esters, silicones, polyalkaline glycol, fluorinated polyether, ethers, and synthetic hydrocarbons.

4. Additive packages make up from two to thirteen percent of the total oil volume, not 30 percent.

> **Bill McCain** Indianapolis, Indiana

Why are you polluting America's finest car magazine with those ignorant, insulting Special Advertising Sections? "For every gallon of gasoline you burn, you're burn-

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00-84 2003 75, 30030, all with W126 body 77-84 200, 230/E, 250, 280/E/CE, 300D/CD all with W123 body <b>Porsche</b> (only with Boge shot 72-84 911, 912 All 914/4, 914/6 75-82 924 except Turbo	38 40 38 40 cks o.e.) 97 74 97 74 82 59	Audi 84-85 5000 (new body) 80-83 5000 Turbo 79-84 4000	63 4 63 4 52 4
79-82 826 Mercedes Benz 80-84 3005K/SEL/SEC 50085/SEL/SEC 80-84 2805/SE_3005D, all with W126 body 280/E/CE, 300D/Cb 280/E/CE, 300D/Cb 30/E/CE, 30/E/CE, 30/E	38 40 38 40 cks o.e.) 97 74 97 74 82 59 104 59 112 119	Audi 84-85 5000 (new body) 80-83 5000 Turbo 79-84 4000	63 4 63 4 52 4 75 4 74 7 74 7 75 7
80'-84' 2003' 35, 300'30, all with W126 body 280',2'-(5, 300)/Cb 280',2'-(5, 300)/Cb arwith W12 body 280',2'-(5, 300)/Cb arwith W12 body 280',2'-(5, 300)/Cb arwith W12 body 280',2'-(5, 300)/Cb 280',2'-(5, 3		Audi 84-85 5000 (new body) 80-83 5000 Turbo 79-84 4000	63 4 63 4 52 4 75 4 74 7 74 7 75 7
Renault 72-82 R5 (Le Car) Saab	44 52	Audi 84-85 5000 (new body) 80-83 5000 Turbo 79-84 4000	63 4 63 4 52 7 75 4 75 7 74 7 75 7 75 7 75 7 75 7 71 7 71 7
Renault 72-82 R5 (Le Car) Saab 68-84 99,900 including Turbo	44 52 52 52	Audi 84-85 5000 (new body) 80-83 5000 Turbo 79-84 4000	63 4 63 4 52 7 75 4 75 7 74 7 75 7 75 7 75 7 75 7 71 7 71 7
Renault 72-82 R5 (Le Car) Saab 68-84 99,900 including Turbo Toyota 83-84 Celica GTS (indrear)	44 52	Audi 44-85 5000 (new body) 80-83 5000 Turbo 79-84 4000 EMW 66-76 1600,2000,2002 5565 72-76 52500,2800,3,05 69-74 2800C5,3,055 80-82 633C5i 80-82 633C5i 80-82 633C5i 589 77-79 320i 589 77-79 320i 589 575 84-85 318i 520 520 520 520 520 520 520 520	63 4 63 4 52 4 75 4 75 7 74 7 75 7 71 7 71 7 71 7 71 7 71 7 71 7 70 7
Renault 72-82 R5 (Le Car) Saab 68-84 99,900 including Turbo Toyota 83-84 Celica GTS (indrear)	44 52 52 52 89 59 89 52	Audi 44-85 5000 (new body) 80-83 5000 Turbo 79-84 4000 EMW 66-76 1600,2000,2002 5565 72-76 52500,2800,3,05 69-74 2800C5,3,055 80-82 633C5i 80-82 633C5i 80-82 633C5i 589 77-79 320i 589 77-79 320i 589 575 84-85 318i 520 520 520 520 520 520 520 520	63 4 63 4 52 4 75 4 75 7 74 7 75 7 71 7 75 7 71 7 71 7 71 7 71 7 71
Renault 72-82 R5 (Le Car) Saab 68-84 99,900 including Turbo Toyota 83-84 Celica GTS (indrear)	44 52 52 52 89 59 89 52	Audi 44-85 5000 (new body) 80-83 5000 Turbo 79-84 4000 EMW 66-76 1600,2000,2002 5565 72-76 52500,2800,3,05 69-74 2800C5,3,055 80-82 633C5i 80-82 633C5i 80-82 633C5i 589 77-79 320i 589 77-79 320i 589 575 84-85 318i 520 520 520 520 520 520 520 520	63 4 63 4 52 4 75 4 75 7 77 7 75 7 77 7 71 5 71 7 71 5 71 7 71 7
Renault 72-82 R5 (Le Car) Saab 68-84 99,900 including Turbo Toyota 83-84 Celica GTS (indrear)	44 52 52 52 89 59 89 52	Audi 84-85 5000 (new body) 80-83 500 (new body) 80-80 (new body) 80-80 (new body) 80-80 (new body) 80-80 (new	63 4 63 4 52 4 75 4 75 7 74 7 75 7 71 7 75 7 71 7 71 7 71 7 71 7 71
Renault 72-82 R5 (Le Car) Saab 63-84 93-90 including Turbo 78-84 Celica GTS (ind. rear) 82-84 Celica GTS (ind. rear) 82-84 Celica except GTS Volkswagen 75-84 Rabbit, Scirocco 75-84 Rabbit, Scirocco 75-84 Rabbit GTI, Jetta 82-84 Quantum 82-84 Quantum 92-94 Quantum 94-94 Quantum	44         52           52         52           89         59           89         52           67         44           74         67           74         74           82         74           44         52	Audi 84-85 5000 (new body) 80-83 500 (new body) 80-80 (new body) 80-80 (new body) 80-80 (new body) 80-80 (new	63 4 63 4 52 7 75 7 74 7 75 7 75 7 75 7 75 7 75 7 71 5 71 5 71
Renault           72-82         R5 (Le Car)           Saab         9,900 including Turbo           Toyota         83-84 (Selica GTS (ind. rear)           82-84 (Selica except GTS         900           Volkowagen Geette         75-84 Abbit, Scinoco           75-84 Abbit, Scinoco         75-84 Abbit GTI, Jetta           80-84 (Vanagon         90-84 (Vanagon           Yolvo         75-84 240, 260 series	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59	Audi 84-85 5000 (new body) 80-83 5000 (new body) 80-84 5000 (new body) 80-85 5000 (new b	63 4 63 4 52 4 75 4 75 7 77 7 75 7 77 7 71 5 71 7 71 5 71 7 71 7
Renault 72-82 R5 (Le Car) Saab 63-84 93-90 including Turbo 78-84 Celica GTS (ind. rear) 82-84 Celica GTS (ind. rear) 82-84 Celica except GTS Volkswagen 75-84 Rabbit, Scirocco 75-84 Rabbit, Scirocco 75-84 Rabbit GTI, Jetta 82-84 Quantum 82-84 Quantum 92-94 Quantum 94-94 Quantum	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59	Audi 44-85 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-84 4000 EMW 66-76 1600, 2000, 2002 8565 72-76 5303, 3055 80-83 5055 80-83 5055 80-83 5055 80-83 505 80-83 505 80-85 80-	63         4           63         52           75         1           74         7           75         7           71         7           71         7           73         4           47         4           52         1           52         1
Renault 72-82 R5 (Le Car) Sab 63-84 93-90 including Turbo 63-84 82-84 Celica GTS (ind. rear) 82-84 Celica GTS (ind. rear) 82-84 Celica except GTS 75-84 Rabbit, Scirocco 75-84 Rabbit, Scirocco 75-84 Rabbit GTI, Jetta 83-84 Quantum 83-84 Quantum 75-84 Aubantum 75-84 240, 260 series Phone for fitments not listed h	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59	Audi 84-85 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-84 5000 (new body) 80-85 500 (new body	63         4           63         4           75         7           74         7           75         7           77         7           77         7           71         1           70         7           71         1           73         4           47         4           52         1           52         1           52         1           52         1           52         1           52         1           52         1           52         1           60         1           52         1           52         1           52         1           80         1           54         1
Renault           72-82         R5 (Le Car)           Saab         9,900 including Turbo           Toyota         83-84 (Selica GTS (ind. rear)           82-84 (Selica except GTS         900           Volkowagen Geette         75-84 Abbit, Scinoco           75-84 Abbit, Scinoco         75-84 Abbit GTI, Jetta           80-84 (Vanagon         90-84 (Vanagon           Yolvo         75-84 240, 260 series	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59	Audi 84-85 5000 (new body) 80-83 500 (new body	63         4           52         4           75         74           75         75           75         77           70         77           71         71           71         71           73         4           47         4           52         5           80         8           75         75
Renault 72-82 R5 (Le Car) Sab 63-84 93-90 including Turbo 63-84 82-84 Celica GTS (ind. rear) 82-84 Celica GTS (ind. rear) 82-84 Celica except GTS 75-84 Rabbit, Scirocco 75-84 Rabbit, Scirocco 75-84 Rabbit GTI, Jetta 83-84 Quantum 83-84 Quantum 75-84 Aubantum 75-84 240, 260 series Phone for fitments not listed h	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59	Audi 84-85 5000 (new body) 80-83 500 (new body	63         4           52         4           75         74           75         75           75         77           70         77           71         71           71         71           73         4           47         4           52         5           80         8           75         75
Renault 72-82 R5 (Le Car) Sab 68-84 99,900 including Turbo Toyota 83-84 (Jelica GTS (ind. rear) 83-84 (Jelica GTS) 84-84 (Jelica GTS) 75-80 Supper Beatle 75-84 Rabbit. Scinocco 75-84 Rabbit. Scinocco 75-84 Rabbit GTI. Jetta 82-84 Quantum 80-84 Vanagon Volvo 75-84 240, 260 series Phone for fitments not listed h	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59 ere.	Audi Audi 84-85 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-83 5000 (new body) 80-82 5000	63         4           52         4           75         74           75         75           75         77           70         77           71         71           71         71           73         4           47         4           52         5           80         8           75         75
Renault 72-82 R5 (Le Car) Sab 68-84 99,900 including Turbo Toyota 83-84 Celica GTS (ind. rear) 83-84 Celica except GTS With State With State 75-84 Rabbit, Scinoco 75-84 Rabbit, Scinoco 75-84 Rabbit, Scinoco 75-84 Rabbit, Scinoco 75-84 Autout GTI, Jetta 82-84 Quantum 80-84 Vanagon Volvo 75-84 240, 260 series Phone for fitments not listed h BOCCIS Turbo TS Shock Absorbel	44 52 52 52 89 59 89 52 67 44 74 67 74 74 44 52 89 59 ere.	Audi Audi 44-85 5000 (new body) 80-83 5000	63 4 4 5 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5 5 5
Tenauli 72-82 R5 (Le Car) Saab 62-84 99,900 including Turbo 78-84 82-84 Celica 6TS (Ind. rear) 82-84 Celica 6TS (Ind. rear) 82-84 Celica except 0TS 75-84 Rabbit, Scirocco 75-84 Rabbit	44 52 52 52 89 59 89 52 67 44 74 67 74 74 44 52 89 59 ere.	Audi Audi 44-85 5000 (new body) 80-83 5000	63 4 4 5 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5 5 5
Renault 72-82 R5 (Le Car) Saab 63-84 99,900 including Turbo 78-84 82-84 Celica GTS (ind. rear) 82-84 Celica GTS (ind. rear) 82-84 Celica except GTS 75-84 Rabbit, Scirocco 75-84 Rabbit, Scirocco 75-85 Zelica Function Colores Sciences Sciences Audi 77-57 95 Sciroce except Turbo 77-982 Sciroce except Turbo	44 52 52 52 89 59 89 52 67 44 74 67 74 74 44 52 89 59 ere.	Audi Audi 44-85 5000 (new body) 80-83 5000	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Henault           72-82 R5 (Le Car)           Saab           G8-84 99,900 including Turbo           Toyta           Robit Strate           Saab           Saab           G8-84 99,900 including Turbo           Toyta           Saab	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59 ere. S F R S41 \$25 43 31 43 28	Audi Audi 44-85 5000 (new body) 80-83 5000	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Henault           72-82 R5 (Le Car)           Saab           G8-84 99,900 including Turbo           Toyta           Robit Strate           Saab           Saab           G8-84 99,900 including Turbo           Toyta           Saab	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59 ere. S F R S 43 31 43 28 27 28 38 38	Audi Audi 44-85 5000 (new body) 80-83 5000	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Henault           72-82 R5 (Le Car)           Saab           72-82 R5 (Le Car)           Saab           F8-84 Qaica GTS (Ind. rear)           82-84 Celica GTS (Ind. rear)           92-94 Celica GTS (Ind. rear)           92-95 Celica GTS (Ind. rear)	44 52 52 52 89 59 52 67 44 74 67 74 74 89 59 ere.	Audi Audi 44-85 5000 (new body) 80-83 5000	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Henault           72-82 R5 (Le Car)           Saab           72-82 R5 (Le Car)           Saab           F6-83 up 900 including Turbo           F3-84 Abita Except IGTS           Volkswagen           76-80 Super Beetle           75-84 Rabbit Cit1, Jetta           82-84 Celica except IGTS           Volkswagen           76-80 Super Beetle           75-84 Rabbit Cit1, Jetta           82-84 Celica except IGTS           Volto           75-84 Rabbit Cit1, Jetta           82-84 Celica EGS           Phone for fitments not listed h           FUPto           75-84 Rabbit Cit1, Jetta           82-84 Quantum           92-93 GGG           92-94 Capita           92-95 Cap	44 52 52 52 89 59 89 52 67 44 74 67 74 74 82 74 44 52 89 59 ere. S F R S 43 31 43 28 27 28 38 38	Audi Audi Audi Audi Audi Borther	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Henault           72-82         R5 (Le Car)           Saab         Saab           72-82         R5 (Le Car)           Saab         Since 15 (Ind. rear)           82-84         Policia except GTS           92-84         Policia except GTS           90-84         Vanagon           Yolvo         Policia           92-84         Outor           75-84         Policia           92-84         Outor           Yolvo         Policia           92-84         Outor           93-80         Policia           94-84         Prices ea.           75-87         Policia           94-83         4000           94-83<4000         Prices ea.           75-97         Policia           96-76         1600, 2000, 2002           97-84         23001           97-84         23001	44 52 52 52 89 59 89 52 67 44 74 67 74 74 44 52 89 59 ere. S F R S S F R S S S F R S S S 2 74 74 74 74 74 74 74 74 74 74 74 74 74	Audi Audi Audi Audi Audi Borther	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Henault           72-82         R5 (Le Car)           Saab         Saab           72-82         R5 (Le Car)           Saab         Since 15 (Ind. rear)           82-84         Policia except GTS           92-84         Policia except GTS           90-84         Vanagon           Yolvo         Policia           92-84         Outor           75-84         Policia           92-84         Outor           Yolvo         Policia           92-84         Outor           93-80         Policia           94-84         Prices ea.           75-87         Policia           94-83         4000           94-83<4000         Prices ea.           75-97         Policia           96-76         1600, 2000, 2002           97-84         23001           97-84         23001	44 52 52 52 89 59 87 52 67 44 74 67 74 74 44 52 89 59 89 52 89 59 87 52 89 59 87 52 89 59 87 52 89 59 89 59 89 59 89 59 89 59 89 52 89 59 89 52 89 52 89 59 89 52 89 52 80 52 80 80 80 80 80 80 80 80 80 80 80 80 80	Audi Audi Audi Audi Audi Borther	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Henault           72-82 R5 (Le Car)           Saab           72-82 R5 (Le Car)           Saab           76-80 Support           Res 49,900 including Turbo           70/12           Res 49,900 including Turbo           70/12           78-81 Support           78-82 Support           78-80 Support           78-80 Support           78-81 Aubit Scirocco           75-84 Rabbit GTI, Jetta           82-84 Quantum           80-84 Vanagon           Yolvo           75-84 Rabbit GTI, Jetta           82-84 Quantum           80-84 Vanagon           Yolvo           75-84 Rabbit GTI, Jetta           82-84 Quantum           80-84 Vanagon           Yolvo           75-84 Staba           80-84 Vanagon           Yolvo           900 GE GB           Turbo TS           Shock Absorbel           Audt         prices ea.           77-579 5000           67-76 1600, 2000, 2002           75-81 5301, 528           77-82 3200           62-76 1600, 2000, 2002           78-82 300, 528 <td< th=""><td>44 52 52 52 89 59 89 52 67 44 74 67 74 74 44 52 89 59 ere. S F R S S F R S S S F R S S S 2 74 74 74 74 74 74 74 74 74 74 74 74 74</td><td>Audi Audi Audi Audi Audi Audi Borther Bor</td><td>63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5</td></td<>	44 52 52 52 89 59 89 52 67 44 74 67 74 74 44 52 89 59 ere. S F R S S F R S S S F R S S S 2 74 74 74 74 74 74 74 74 74 74 74 74 74	Audi Audi Audi Audi Audi Audi Borther Bor	63 4 4 5 5 2 5 2 5 2 5 2 5 5 3 5 5 5 5 5 5 5 5
Bit Classes           72-82         R5 (Le Car)           Saab         72-82           72-82         R5 (Le Car)           Saab         Ge-84           99,900         including Turbo           76-80         Super Beetle           75-84         Rabbit Scirocco           75-84         Rabbit GTI, Jetta           82-84         Quantum           80-84         Vanagon           Vibso         240, 260 series           Phone for fitments not listed h         Image State           Shock         Absorbel           Audi         prices ea.           75-85         Shock Absorbel           Audi         prices ea.           75-75         5000 except Turbo           Bit         Go-76           75-82         5000 except Turbo           Bit         Go-76           75-82         3200           Capri         73-78           79-82         2802           79-82         2802           78-72         2802           78-82         2802           79-82         2802           79-82         2802           75-81         530	44 52 52 52 52 89 59 59 89 59 59 89 59 59 67 44 74 67 47 82 74 74 82 74 74 82 74 74 82 74 74 82 74 74 82 74 74 83 74 74 84 52 89 59 9 9 9 7 8 8 8 3 8 39 59 9 9 9 9 9 8 8 9 9 9 9 9 9 9 9 9 9 9 9	Audi 2000 (new body) 80-83 5000 (new body) 80-84 5000 2000 2002 5565 76-76 5500 2800 3.05 77-78 5305, 633051 80-83 505, 633051 80-83 505, 633051 80-83 505, 633051 80-83 5001 5281 80-83 3201 575 80-83 3005 80-83 500 500 500 80-80 500 500 500 80-80 500 500 500 500 80-70 500 500 500 500 80-70 500 500 500 500 500 500 500 500 500 5	63         4           63         4           63         4           75         1           77         7           77         7           47         4           52         2           52         2           52         2           52         2           52         2           52         3
Bit Classes           72-82         R5 (Le Car)           Saab         72-82           72-82         R5 (Le Car)           Saab         Ge-84           99,900         including Turbo           76-80         Super Beetle           75-84         Rabbit Scirocco           75-84         Rabbit GTI, Jetta           82-84         Quantum           80-84         Vanagon           Vibso         240, 260 series           Phone for fitments not listed h         Image State           Shock         Absorbel           Audi         prices ea.           75-85         Shock Absorbel           Audi         prices ea.           75-75         5000 except Turbo           Bit         Go-76           75-82         5000 except Turbo           Bit         Go-76           75-82         3200           Capri         73-78           79-82         2802           79-82         2802           78-72         2802           78-82         2802           79-82         2802           79-82         2802           75-81         530	44 52 52 52 52 52 52 52 52 52 52 52 52 52	Audi 2000 (new body) 80-83 5000 (new body) 80-84 5000 2000 2002 5565 76-76 5500 2800 3.05 77-78 5305, 633051 80-83 505, 633051 80-83 505, 633051 80-83 505, 633051 80-83 5001 5281 80-83 3201 575 80-83 3005 80-83 500 500 500 80-80 500 500 500 80-80 500 500 500 500 80-70 500 500 500 500 80-70 500 500 500 500 500 500 500 500 500 5	63 4 4 6 5 2 7 5 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Bit State         Construction           State         72-82 R5 (Le Car)           State         72-82 R5 (Le Car)           State         78-84 Applicate           State         78-85 (Le Car)           State	44 52 52 52 52 89 59 89 59 89 57 44 71 67 44 71 67 44 72 67 44 89 59 89 59 89 59 89 59 80 50 80 50 80 80 50 80 80 80 80 80 80 80 80 80 80 80 80 80	Audi 2000 (new body) 80-83 5000 (new body) 80-84 5000 2000 2002 5565 76-76 5500 2800 3.05 77-78 5305, 633051 80-83 505, 633051 80-83 505, 633051 80-83 505, 633051 80-83 5001 5281 80-83 3201 575 80-83 3005 80-83 500 500 500 80-80 500 500 500 80-80 500 500 500 500 80-70 500 500 500 500 80-70 500 500 500 500 500 500 500 500 500 5	63 4 4 6 5 2 7 5 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Bit State         Construction           State         72-82 R5 (Le Car)           State         72-82 R5 (Le Car)           State         78-84 Applicate           State         78-85 (Le Car)           State	44 52 52 52 52 89 59 89 59 89 57 44 71 67 44 71 67 44 72 67 44 89 59 89 59 89 59 89 59 80 50 80 50 80 80 50 80 80 80 80 80 80 80 80 80 80 80 80 80	Audi Audi	63         4           63         4           63         4           75         1           77         7           77         7           47         4           52         2           52         2           52         2           52         2           52         2           52         3
Bit Classes           72-82         R5 (Le Car)           Saab         72-82           72-82         R5 (Le Car)           Saab         Ge-84           99,900         including Turbo           76-80         Super Beetle           75-84         Rabbit Scirocco           75-84         Rabbit GTI, Jetta           82-84         Quantum           80-84         Vanagon           Vibso         240, 260 series           Phone for fitments not listed h         Image State           Shock         Absorbel           Audi         prices ea.           75-85         Shock Absorbel           Audi         prices ea.           75-75         5000 except Turbo           Bit         Go-76           75-82         5000 except Turbo           Bit         Go-76           75-82         3200           Capri         73-78           79-82         2802           79-82         2802           78-72         2802           78-82         2802           79-82         2802           79-82         2802           75-81         530	44 52 52 52 52 89 59 89 59 89 57 44 71 67 44 71 67 44 72 67 44 89 59 89 59 89 59 89 59 80 50 80 50 80 80 50 80 80 80 80 80 80 80 80 80 80 80 80 80	Audi Audi Audi Audi Audi Audi Borther Bor	633 4 4 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7

Kit has preassembled shocks/springs

45347517515450

73 45

41 40

39

38 39

71

34

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#### **Pirelli P3**

Steel belted	radial to	ubeless blackw	all.
155SR12	\$30	165SR15	\$41
145SR13	28	165/70SR13	35
155SR13	32	175/70SR13	39
165SR13	35	185/70SR13	43
175SR13	38	175/70SR14	40
165SR14	39	185/70SR14	46
175SR14	41	195/70SR14	51
185SR14	43	185/70SR15	50
155SR15	36		

#### **Pirelli CN36**





#### Steel belted 225/50VR15 \$172 285/50VR15 \$220 225/50VR15 220 225/50VR16 187 265/50VR16 213 285/40VR15 212 345/35VR15 243 \$110 130 141 176 107 152 60VR13



Fulda Y-2000

Steel belted ra	idial t	udeless blackw	all.	Text
185/70VR15	S88	205/60VR15	\$95	185
185/60HR13	62	215/60VR15	107	195
205/60HR13	75	205/55VR16	140	205
205/60VR13		195/50VR15	82	185/
185/60HR14	71	205/50VR15	130	205/
195/60HR14	77	225/50VR15	135	185
205/60HR14	83	225/50VR16	149	195
205/60HR15	93			215

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155SR12 145SR13 155SR13 165SR13 165SR14 175SR14 185SR14 185SR14

Steel belted radial t 175/70HR13 \$50 185/70HR13 55 185/70HR14 62 195/70HR14 70 195/70VR14 87 205/70HR14 76 205/70VR14 94 185/60HR13 58

## Steel belted radial tubeless blackwall. 185/70HR14 \$76 205/70VR15 \$115 195/70HR14 \$1 215/70VR15 \$118 205/70HR14 \$2 \$215/70VR15 \$118

#### **Pirelli P77**

		DOOD (TOUDIO	
P185/75HR14	\$65		
P195/75HR14	70	P185/70HR14b	66
P205/75HR15b	80	P195/70HR14b	67
P205/75HR15	76	P195/70HR14	65
P215/75HR15	86	P205/70HR14b	75
P175/70HR13b		P205/70HR14	72
P185/70HR13b		P225/70HR15b	93
P205/70HR13b	66	P225/70HR15	89



#### **Pirelli P8**

#### Steel belted radial tubeless blackwall. 185/65SR15 \$59 | 185/65TR15 \$65



	BMW	OUNTO D
	320i	6Jx13 C
	3201	6Jx15 C
TR. CONTRACTOR	320i 318i	7Jx15 C 6Jx14 D
	318i, 325e	61/2 Jx14 D
	318i, 325e	6Jx15 D
USA	318i, 325e	7Jx15 D
blackwall.	5, 6 and 7 series	7Jx14 C
VR15 \$111	5, 6 and 7 series 5, 6 and 7 series	7Jx15 C
VR15 123	5, 6 and 7 series	7Jx16 C 8Jx16 C
VR16 176 VR15 122	Mercedes Benz (**	
VR15 161	190 models	6Jx14 D
VR15 175	190 models	7Jx15 D
VR16 195	All** with 6-61/2" oe	61/2 Jx 14 C
	All** with 61/2" oe All** with 61/2" oe	7Jx15 C 7Jx16 C
	Porsche	JXID C
	911SC, Turbo, 944	7Jx15 C
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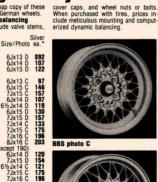


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Rial type N for front wheel drive © 1985 Euro-Tire, Inc



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ing nearly 15 gallons of air"? "A stiffer front [anti-roll] bar will decrease understeer"? C'mon, guys, you know better. If you don't edit that stuff, don't print it in your magazine.

If you don't have enough good writing to fill each issue, *I'll* write for you. So consider yourself warned: stop printing those sections or I'll flood your office with unsolicited manuscripts.

> Mike McGowan Lombard, Illinois

In truth, for every gallon of gasoline, you burn nearly nine thousand gallons of air. And, of course, a stiffer front anti-roll bar generally increases understeer—Ed.

#### **CHIP SHOT**

Your letter from Mr. Fred Rogers (May), stating that a Porsche 928 costs twice as much as a Corvette because it has twice as many seats, is absurd. I own a Mazda 626, which also has twice as many seats but costs far less than a Corvette. I am a computer programmer, so I know a bit about this.

> Harry McCobb Houston, Texas

#### TUCK-AND-ROLL DEPT.

My wife married me because I owned a Triumph TR3. We could rejuvenate ourselves in a Ford Ghia Barchetta. Is there any chance that the face-lifted '86 EXP will look like a Barchetta?

D.S. Van Dusen Ottawa, Ontario Face lifts of Fords have mixed results. Look at Betty—Ed.

#### PERSONS-OF-FEW-WORDS DEPT.

I haven't read your magazine, but I'm told it's marvelous. Keep up the good work. Bob Chieger

Seattle, Washington

What have you got against "The Dukes of Hazzard"?

Ted Turner Atlanta, Georgia P.S. Do you like your job? *Quit clowning, Ralph—Ed.* 

Women just have more endurance! Cyndi Rader Kettering, Ohio Everybody's counting on you, Cyndi—Ed.

.veryboay's counting on you, Cynai—Ea.

#### WOOLLY BULLY

An Australian scientist has reported that a sheep emits, daily, enough methane gas to drive a pickup truck 40 kilometers. The next report I expect to hear from down under is that pickups are being equipped with bales of hay and suitably plumbed sheep.

Ron Warren Mississauga, Ontario

And then, no doubt, they'll be fitted with ramtuned intake manifolds and heavy-duty ewe joints—Ed.

#### **Photographers:**

## Join the 10 Best.

Next January, *Car and Driver* will publish its fourth annual "Ten Best" issue, and we will once again feature the Ten Best Photographs. As we did last year, we're asking you to participate by sending us your best automotive photos.

"Best" can mean a number of things. When C/D's distinguished panel of judges meets to consider your submissions, we'll be looking for a wide range of qualities—technical artistry, exciting action, humor, truth, beauty, you name it. We're imposing only two basic restrictions: Since this is becoming an annual event, only photos taken within the past year are eligible. And we want photographs by *amateurs only*. Professional automotive photographers need not apply.

Here's what you do:

Select what you judge to be your best automotive photographs. They can feature production cars, race cars, or even no cars at all—so long as they have some connection to the world of cars and drivers. To *each* photo you submit, attach a piece of paper giving the following information:

- Your name, address, and phone number.
- 2. A brief description of the subject of the photo.
- As much technical information as possible—camera type, lens, film, exposure, special effects, and so on.

We're interested in both color and black-and-white photos. If you submit color, slides are preferable to prints, but either is acceptable. If you send slides, we advise you to send goodquality duplicates. Because of the volume of submissions we expect to receive, we will not be able to return any of your photographs.

You may submit up to five photos. Send them to:

Ten Best Photos Car and Driver

2002 Hogback Road

Ann Arbor, Michigan 48104 All entries must be postmarked by

August 15. The winners will not be announced until the January issue.

Once again, we have no prize money to award, no Porsche Turbos, no dates with Jean Lindamood. All we can promise the ten winners is fame, glory, and immortality.

So hit us with your best shots, and see what develops next January.



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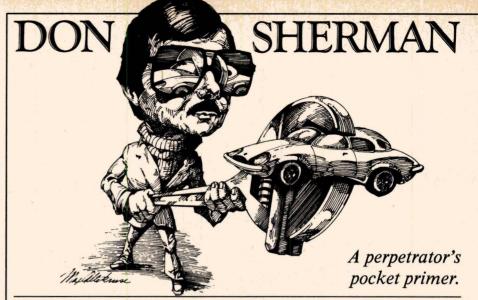
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• I don't consider myself a hardened criminal, but our legal system does find it necessary to call me in for consultation now and then. During the 25 years that I've held an operator's license, I've made countless court appearances and learned several of the system's fine points. This experience is simply too good to waste on the preservation of only one driver's license (mine), so I offer you the following: Don Sherman's own alleged perpetrator's survival guide.

There is one and only one goal you must keep in mind when facing the judiciary: to maintain the cleanest-possible conviction record. Doing so will reap untold benefits. You'll be able to drive farther and faster before your driving privileges are in jeopardy. You'll stand a better chance of avoiding the exorbitant premiums that car-insurance companies levy against those drivers deemed to be high risks. Last, your cash contributions to the extravagant building plans of your city, county, or state government will be minimized.

By the way, if the charge against you is "driving while intoxicated," you're barking up the wrong tree for sympathy. I suggest you plead guilty, ask for a cranky judge, and beg the court for cruel and unusual punishment. When you're freed from incarceration, sign up for an intensive rehabilitation program. I don't mind if drunks drive nails or golf balls, but I hate to share the road with them.

It's the light-duty offender who is far more likely to benefit from this tip sheet: those of you who accidentally voted no on the 55-mph issue in the presence of an officer of the law; hapless individuals apprehended while researching their automobiles' adhesion limits; and guys like me, who rub the enforcement arm's funny bone on occasion.

To start with, I'd like to warn you about three very popular beat-the-system strategies that have in my experience been terrific time and money wasters. First of all, you should forget about begging, pleading, or arguing with the arresting officer. Most cops are besieged with an Oscar-winning

performance nearly every time they flash their red lights, so there's little hope of winning a roadside reprieve unless you happen to be very pregnant and can cry convincingly on cue. Likewise, the legal counsel I've retained in the past to safeguard my interests has never really sold me on its worth. Lawyers' fees typically eat up any savings in fines and insurance costs, so I've found it more fruitful to defend my interests in propria persona. Finally, judges have little patience for contemporary theories as to why radar can't accurately measure the speed of an automobile. The courts are so jampacked with real crimes that speeding cases are inconsequential, and most judges prefer to sweep you off their dockets as quickly as possible.

But let's say you've watched every episode of "Perry Mason" ever aired, and you're eager to take your ten-over ticket to the Supreme Court for the justice you so richly deserve. The documentation you'll need to front a legitimate defense is but a phone call away; Electrolert, the maker of Fuzzbuster-brand radar detectors, will happily forward to you the Legal Information Index on Police Speed Radar, an exhaustive stack of materials compiled by Electrolert and the Dade County, Florida, public defender's office. Call 513-667-2461, and have your checkbook ready to cover the \$35 copying cost for this 650-page perpetrator's CARE package.

The one strategy that I've found to be practically sure-fire is to plead not guilty to all traffic tickets. This sets in motion a chain of events that is far preferable to mailing off a fine in an envelope. Typically, you enter a plea by telephone, and a clerk schedules your day in court at that time. If you're given a choice of an informal hearing before a magistrate, a formal hearing before a judge, or a formal hearing before a jury, go for broke: demand a jury. If you choose either a judge or a jury, the arresting officer will be required to be present to testify against you, and in the lucky event that he fails to show, your case will be dismissed on the spot! Most courts allow you at least one

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delay-and-reschedule move, which can be a very effective gambit in helping the officer to forget to show up or forget the pertinent details of the case.

In the event that the delay ploy doesn't work and the officer appears as scheduled, ready and eager to defame your character, you've still got one last ace to play before confronting the judge or the jury. During the pretrial conference, the prosecuting attorney will typically offer you a chance to plea-bargain, a procedure that is known on the other side of the bench as "let's make a deal." You see, the prosecutor has no more interest in contesting a trivial traffic case than you do. He is doubtless loaded down with plenty of rape, murder, and robbery cases-actual felonies with real victims-so it's in his interest to hustle you and your annoying "not guilty" plea out the door as fast as he can.

The deal is that you admit responsibility to a lesser charge. It's officially called a "negotiated plea," and there's something in it for everyone. The judge doesn't have to listen to your radar theories, the prosecutor gets a conviction without actually lifting a finger to prepare his case, the police officer wastes no further time in court, and you, the defendant, pay a lesser fine and accumulate fewer points on your license.

To get the most out of plea bargaining, you must be prepared. Dress well enough that your opponents will take you seriously but not so well that they'll be inclined to dig deeply into your pocket. The guys I've seen wearing Grateful Dead T-shirts, iridescent tattoos, and ragged-bottomed jeans invariably go directly to jail, while gray slacks, a blue blazer, and a nice tie will usually help you get off with a small contribution to the policemen's retirement fund. Study the points system and know exactly what sort of break you're after. For example, I recently negotiated a 72-mph, two-point ticket down to a 59-mph, zero-point "energy law" violation by being on my toes when the prosecutor turned his attention to my pesky case. The guilty plea I offered (59 mph) was within the allowable limits of accommodation, so the prosecutor agreed without hesitation. I paid a fine and left, a free man.

If you don't get all you want out of the prosecutor, it's still possible to dicker with the judge. Some states have what's called a deferred sentence, where you're found guilty of the original charge but no conviction is entered against your record if you are cited for no additional violations in the next six months. Traffic school is another escape route worth suggesting to the magistrate. If he sentences you to take a basictraining course, you'll be indoctrinated with gory crash films and bored to tears with defensive-driving lectures, but it beats fines and points against your record.

In the end, right and wrong fade in importance to how well one works the system. And since it is, after all, *our* system, we might as well work it to our advantage.

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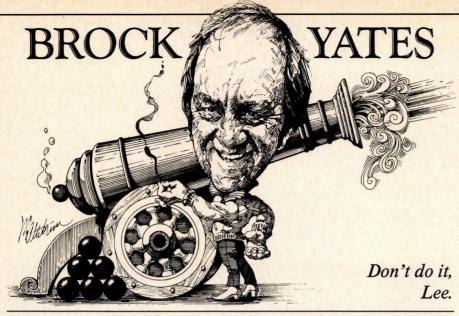
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• By most accounts, George Romney was a solid automobile executive. That is, until he succumbed to a terminal case of presidential fever.

Likewise, by almost universal acclaim, Lee Iacocca is an automobile executive of Herculean dimensions. The question is, will he too be bowled over by that dreaded malady that has wasted so many heroes of the people?

The careers of the two men are not without parallel. Romney, you may recall, was the voice in the wilderness during the fin binge of the 1950s who called for smaller, lighter, more efficient cars from Detroit. As the boss of the new American Motors formed in 1954 from the ruins of Nash-Kelvinator and Hudson—he honchoed the sales of his smallish Rambler from about 80,000 in 1955 to over 500,000 five years later. His apparent prescience in foreseeing the shift to "compact" cars made him a smiling, square-jawed David who stunned, if not felled, the Goliaths of the Big Three with a barrage of Americans, Rebels, and Ambassador V-8s—which were, by the way, dull and stupid machines down to their very last grommets. No matter: Romney's executive skills, coupled with his gritty good looks, led him into the political arena, first as governor of Michigan, then as a serious political candidate for the presidency in 1964 and 1968. Sadly—for Romney fans at least—his gamble for the White House came up snake eyes when the forthright Mormon confessed publicly that he had been "brainwashed" by the Pentagon about the progress of the war in Vietnam. That single remark in 1968 was seized upon by the press as a sign of colossal naïveté, and Romney was hectored out of the political arena, never to be heard from again.

Now we have active chatter that Mr. Iacocca is interested in a change of residence to 1600 Pennsylvania Avenue. He is, after all, on a classic American roll: superstar corporate boss, spellbinding orator, best-selling author, and celebrity of international stature. He is the first American businessman since the days of the original Henry Ford to be admired by the working class as a man who is not another egobloated, pinstriped board-room pirate. He is perceived as a "real guy"-an invaluable political asset shared in recent presidential history only by John F. Kennedy and Ronald Reagan. This, plus his storybook bailout of Chrysler Corporation, has thrust him to the forefront as a possible candidate on the Democratic ticket in 1988.

But can a big-time car guy make it in the national political scene? The UAW, the

# THESE ORIGINAL EQUIPMENT TIRES ARE WE THINK YOU'LL FIND TH



Available as original equipment tires on Audi, BMW, Jaguar, Lambo Pirelli does not advocate exceeding posted speed limits. 3' x 2' poster reprints of this photograph are av NADA, the Chrysler Dealer Council, Ralph Nader, and NHTSA are cuddly lap dogs in comparison with the rabid curs of the press who will leap for Iacocca's throat if he becomes a formal candidate. Suddenly all the talk about union contracts and frontwheel-drive H-bodies will become idle chatter. There will be gruesomely tough questions about Nicaragua, Gorbachev, Israel, and Star Wars. And there will be an unending barrage of queries about the Byzantine days at Ford and all the rumors of kickbacks and payoffs and shady business dealings. Suddenly an army of investigative reporters will be probing his background as they did Geraldine Ferraro'slooking for those associations with "the boys" that can automatically prejudice the public career of any Italian-American.

If Henry Ford II is inclined toward revenge for the pasting he took in Iacocca's megaseller, he will get his chance. So far he has stood by the family motto-"Never complain, never explain"-but this could change radically if Iacocca announces his candidacy. Not that Henry would show up on "Face the Nation" to blow the whistle. He would be more subtle-and more devastating. Suddenly Dearborn would become a wellspring of hundreds of "Deep Throats," "undisclosed sources," "former employees," and "insiders," whose lurid tales about Iacocca's Ford adventures would serve as retribution for his portraval of Henry II as a drunken, racist paranoid. The Bunkie Knudsen internecine warfare, the Mustang "creation," the Pinto fuel tanks, the emissions cheating, and other memories of Iacocca's stewardship would become national issues that could haunt the candidate—particularly if he bobbled his defense in the manner of Romney's "brainwashed" remark.

Lee Iacocca is a very tough man. One does not rise to the top of an animal farm like the Old Ford Motor Company and then dragoon a plug horse like the Old Chrysler Corporation back onto its feet by behaving like Rebecca of Sunnybrook Farm. Tough men make enemies. Sigmund Freud once observed, "Many enemies, much honor." That is a meaningful sentiment, but it can be terribly costly when subjecting oneself to the puritanical-and often hypocritical-interrogations and inquisitions of the Washington media. It has become an obsession of the Fourth Estate to prove that all mortals have feet of clay, and Iacocca, given his controversial background, candor, and combative nature (which would prompt him to cross swords with his pompous inquisitors rather than gracefully parry their thrusts, à la Reagan) would be a plump and inviting target.

Historically, auto men have not done well in national politics. Henry Ford I turned his well-intentioned Peace Ship into a farce and lost his 1918 bid for the U.S. Senate. "Engine Charlie" Wilson, the former General Motors president who served effectively as Eisenhower's secretary of defense, is best remembered for his remark, "For years I thought what was good for our country was good for General Motors, and vice versa." The liberal press quoted this statement out of context and pilloried Wilson for it, portraying him as a throwback to the Holy Roman Empire. Former Ford president Robert McNamara held the same Cabinet post under Kennedy and Johnson and turned the Vietnam War into an idiot game of computer readouts. The father of the Falcon then went on to lead the Third World into hopeless debt as president of the World Bank.

One hopes that Lee Iacocca will not follow George Romney onto the chicken-andpeas circuit, shamelessly hustling primary delegates and staging unctuous song-anddance routines for the NEA, the AFL-CIO, NOW, the NAACP, and other power brokers in the Democratic party. Better that he continue to drive Chrysler at full speed while further broadening his abilities as a politically astute national spokesman. He might accept a convention draft as a citizen candidate, but we hope he will not seek the nomination. Ideally, he will hold out for one position: secretary of defense. There his ass-kicking leadership style would best serve not only him but, more important, the nation.

Warts and all, Lee Iacocca is a national hero. Let's hope that he behaves like one. And that we treat him like one.



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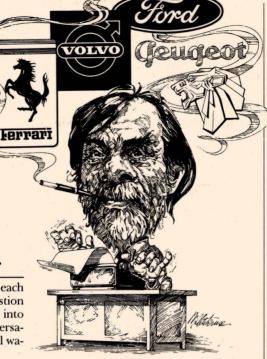
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# WARREN WEITH

#### The disappearing car nut.

• Where have all the car nuts gone, each and every one? This, possibly, is a question asked only by old cranks. It popped into mind while eavesdropping on a conversation between two young men at a local watering hole recently.

What prompted this ungentlemanly conduct on my part was the fact that the talk was about cars—though at first I had thought it was about a home entertainment center, because phrases such as "Dolby sound," "quadraphonic speakers," "modular phone," and "Recaro seating" kept coming to the fore. I waited, all ears, for the talk to move to things like power-to-weight ratios, unsprung weight, overhead cams, torque curves, all those magic words that seemed to fill my mind when I was their age. It never did.

I wondered what they would think if I interrupted to ask if they changed to hot plugs when faced with a lot of city driving, or if they knew the real secret involved in balancing twin SU carburetors. Or if they knew the SU carburetor at all. They probably would tag me as a crazy, gray-bearded gnome, one of those "walkie-talkies" you see in the great cities of America.

But the SU carburetor! Surely they would know about that. Books had been published, magazine articles by the score. It had been a red-letter day when I mastered the SU. Its tapered needle, hydraulic dashpot—filled with a very special oil. Oh, I had a wonderful time with that amazingly crude device. And when you had worked your way up to owning a car that had two of them—which had to be balanced—life just couldn't be any richer.

They required attention. Had to be kept sighing and sucking up that 40-cent-a-gallon high-octane in unison, which meant almost daily twiddling. An avocation for a car nut. And a vocation for the hairy-handed local Englishman who periodically put it all right after you had reduced it to something that spat and banged through the bellmouthed air intakes.

Then there was something called, if memory serves, a Tecalemit fitting. This

little brass doodad let you adapt a lever-action grease gun to any of the chassis's lube fittings. And any vehicle worthy of a car nut had dozens of those little darlings. It was glorious! You could roll around under your machine working the lever of the gun until each fitting went "pop" and deposited the excess on your upturned face. Wonderful! What a sense of accomplishment. How smooth the steering, how supple the suspension when you were done. Until the first stretch of rain-swept road washed all that lovingly deposited grease away.

Then there were oil changes, valve adjustments, and the never-ending search for spark plugs of just the right temperature range. It was all a wonderful worry. Not to mention tires. Dunlop? Pirelli? Possibly Michelin? A constant source of conversation—even though you could only afford one at a time, which drove the struggling dealers of these odd brands up the wall. If all this seems a bit obsessive, all I can say is that it didn't at the time.

What did seem obsessive, at the time, was my friend Gordon—and his race car. Gordon lived in a two-room walk-up apartment in Greenwich Village. Gordon was a good type, but I did think he suffered a bit from monomania.

You see, he was building a Formula 3 single-seat race car in his tiny, glorified bed-sitter. Space wasn't the big problem, though. A Formula 3—the granddaddy of today's Formula Ford and Formula V machines—was a minuscule and fairly simple amalgam of parts powered by a hefty single-cylinder motorcycle engine mounted about two inches behind the driver. The size, in a word, was right, considering the factory space Gordon had available.

It was the welding, brazing, burning, hacking, and sawing needed to achieve that size where the difficulties came in. Gordon, in his lock-step march to the starting grid, just hadn't bothered to tell his landlord, or the other tenants, about his little hobby. This slight memory lapse necessitated scheduling various bits of construction during the absence of neighbors, hiding large chunks of race car on the days the landlord was due, and hauling sheets of aluminum up the air shaft. I suppose it helped that the owner/builder/driver was a packaging engineer in the real world.

At any rate, all the finished pieces were finally lumped down the stairs to the street, and everything, wonder of wonders, fitted together perfectly. There it was: a race car built in a Greenwich Village fourth-floor walk-up. By a world-class car nut.

Not quite in the same league, but close, is the Prince of Polish. He shall remain nameless because he happens to be my brother-in-law, and he'd probably seek legal counsel if I invaded his privacy. But that's not the point. What is, is the way he kept an early Porsche he once owned. It sat alone, locked away in the family garage. It was used only on state occasions. When undergoing a polish job, an act that resembled a religious ceremony, its small bits of chrome were removed so that the sheetmetal underneath could also receive its share of buffing and stroking.

But the high point was when the owner realized that, every time the garage doors were opened, dust, and possibly the spores of rust and deterioration, wafted in and fell on his car. His answer was to set a track in the ceiling—much like those that encircle hospital beds—so that the car could be completely enclosed from floor to ceiling by heavy canvas drapes.

Effective? Yes. Obsessive? No, not if you're working your way up into today's small world of the complete car nut. Why has car nuttiness waned? Where are the newcomers, the beginners in the noble observance of automotive worship?

I think they've been stunned and frightened away by science. If not stunned, at least blinded. Take what happened to me not too long ago.

I was driving a new car through one of those end-of-winter days when everything that has been frozen and stuck to the road suddenly becomes unfrozen and stuck to one's windshield. Not many miles went by before the windshield washer went dry. No problem, thought I. I'll just nip into the next service station, pop the hood, and then fill the little plastic bottle. Not a bad scenario. Except that I couldn't find the bottle among all that high-tech hooha. Neither could the young pump jockey.

I put it to you: where, and on what sort of vehicle, can today's neophyte car nut learn the rudiments of his art? Now, if a business can be built around renting and leasing pre-dented cars (see Rent-a-Wreck and its various imitators), surely there is money to be made by selling or renting pre-hightech automobiles to people who yearn to become auto addicts.

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# FOR YOUR INFORMATION

### NEW & IMPROVED

• Porsche is currently laying the finishing touches on the second-generation 928S, which will be launched at the Frankfurt Auto Show in September. The V-8 coupe receives a revised front end, with flush-fitting turn signals, fog lamps, and driving lamps and a deeper wraparound spoiler. In the back are a more prominent air dam and bigger taillights.

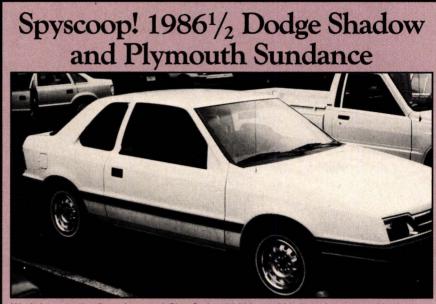
• In 1987, Porsche is expected to unwrap its latest **911 developments**, including body-color 959-style soft bumpers, sill extensions, additional air intakes, new wheels, and a restyled droop-snoot front end. The options list for the heavily revised 911 will feature ABS, six-speed and automatic transmissions, four-wheel drive, and adjustable ride height. The new 3.3-liter four-valve engine is believed to develop 285 bhp and is expected to propel the low-drag coupe from 0 to 60 mph in less than five seconds and to a top speed of 160 mph.

And the **Turbo**, you ask? The car will get a **twin-turbo**, 350-bhp engine eventually, but not before Porsche fits a catalyst and exports it to the U.S. as a 280-bhp 1986 model.

 Also earmarked for eager U.S. fans is the 942 cabrio (FYI, January), which will be produced by Baur GmbH in Stuttgart. The open-air Porsche-for-the-peasants, which comes with a targa-type roof that can be dismantled piece by piece, may bow in Europe next spring.

• Austin Rover Cars of North America, which will next year launch the **Sovereign** notchback, developed jointly with Honda, will be headed by Norman Braman, described by a press bulletin as an "American automobile magnate." Braman Enterprises, which consists of 24 dealerships and car-related operations, will be responsible for establishing a nationwide sales-and-service organization.

Initially, Austin Rover will bring in only the Sovereign four-door sedan, powered by a 2.5-



We bring you the first photos of Chrysler's 19861/2 notchback sedan, named by lacocca himself, it is said. What began as a program to replace the Omni/Horizon line evolved into a small luxury car. Still uncertain are plans to offer both two- and four-door models, though both were spotted by our Sun Belt snoops. Those in the know say the Pcar's motive force will be Chrysler's 145-horsepower, 2.2-liter turbo four-cylinder.



liter, 165-hp Honda V-6 engine. Toward the end of the decade, the lineup will be completed by a five-door hatch, a two-door notchback coupe, and a long-wheelbase limousine.



• Forget what we told you in March. When Dodge's mid-size **Dakota pickup** bows next spring, it will be offered with a choice of two **new engines:** a 2.5-liter four-cylinder (based

## Fresh! 1986<sup>1</sup>/<sub>2</sub> Pontiac Fiero GT





Taking advantage of the Fiero's removable body panels, Pontiac creates a new persona for the Fiero GT in '861/2 by changing the skin from the B-pillars rearward and by adding unusual glass-paneled flying buttresses. Base engine is still the 2.8-liter V-6. A turbo V-6, an improved suspension, and sixteen-inch tires may come later.

#### FYI

# The Liberty and Alpha Projects

#### Chrysler and Ford cross swords with Saturn.

 It was but a matter of time. Chrysler chairman Lee lacocca, hoping obviously to steal some of GM's Saturn thunder, leaked the word to Wall Street analysts in March that his company plans to beat Saturn to market in the late Eighties with its Liberty smallcar project.

lacocca showed the analysts a Liberty prototype—a small, plastic-bodied twodoor hatchback powered by a 1.6-liter three-cylinder engine derived from Chrysler's 2.2-liter four. Several weeks later, though, the chairman backtracked: "I don't think there will be a Liberty car per se." Rather, he said, elements of Liberty's costsaving techniques will be incorporated into Chrysler's future small-car projects.

Ford officials, meanwhile, have confirmed that their Alpha program will parallel Saturn and its advanced manufacturing concepts, though no Alpha car is likely to see production before 1990. Elements of the Alpha are already being incorporated into the Taurus assembly plants in Atlanta and Chicago.

The rationale behind all three programs is similar: to develop new ways of designing, engineering, building, and selling cars that are faster and cheaper than the present systems, in order to compete better with low-priced Japanese imports.

At the moment, much of the manufacturing development work in connection with Saturn, Liberty, and Alpha has focused on machine vision (robots that "see"), artificial intelligence (computers that "think"), and flexible automation (machines that can be programmed to handle different tasks), with computer-aided design and manufacturing systems assisting engineers at every stage of the development process. The new plants for these projects will make extensive use of modular assembly: large groups of components (interiors, for example) will be built at substations, and the modules will be installed later on the finalassembly line.

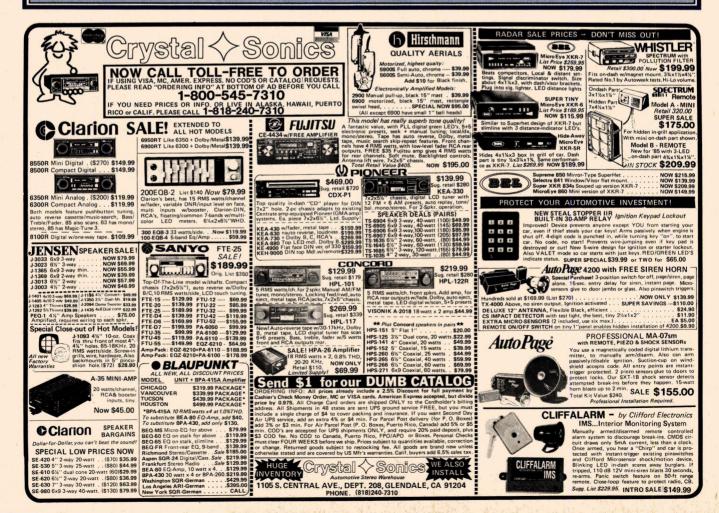
There are elements of irony in Liberty and Alpha. Unlike GM, Ford and Chrysler plan to tap the expertise of overseas affiliates in developing their future small cars—Ford in cooperation with its European automotive operations and Ghia design studio, Chrysler with Mitsubishi and its new Korean partner, Samsung. And despite all the flag-waving hype about "import fighters," there is no guarantee that Liberty and Alpha will be produced in the States, even though both companies have asked the UAW to cooperate in planning and development.

The objective of Alpha, says Paul Guy, director of Ford's manufacturing, engineering, and systems office, "is to produce a cost-competitive, high-quality, world-class small car—not necessarily a domestic small car." Guy adds: "This is a worldwide effort. The [Alpha] concepts and technology will be made available to all our worldwide operations." (Ford's Japanese affiliate, Mazda, will be an exception. Although it may supply parts for some future small cars, it will have no role in Alpha planning, Guy says.)

lacocca is more blunt. As Chrysler's Omni/Horizon twins are phased out over the next two years, he says, "the bulk of our low-end [cars] will be from Mitsubishi or from Korea." One Chrysler insider says Concept 90, a forerunner of Liberty, was to have been renamed Yankee, but the idea was scrapped as Mitsubishi's potential role began to grow as a major partner in Chrysler's future small-car programs.

lacocca's strategy is clear. "To compete with American and Japanese automakers," he told reporters in March, "we have to go to the Far East... and fast."

-Paul Lienert



on the 2.2) and a 3.9-liter V-6. A five-speed gearbox will be standard, and four-wheel drive will be optional. Although the Dakota's wheelbase is only a few inches longer than that of the compact Chevy S-10 and Ford Ranger, it will feature a full eight-foot bed.

 Pontiac's much rumored "people van" may be approved for production as early as the 1989 model year, according to the GM grapevine. Unlike the Astro/Safari models, Pontiac's entry will be a wagonlike front-driver, probably pulled off the mid-size 6000 platform or the new W-body, which debuts in 1987.

· And while we're on the subject: GM's program to replace most of its current mid-size models in the late 1980s will cost around \$7 billion and will be staggered over three years. First up is a new front-drive two-door in the fall of 1987 to succeed the Cutlass/Regal/Grand Prix. Engine choices are said to include an upsized 2.2-liter version of the Cavalier's fourcylinder, as well as a high-output 3.3-liter V-6 built from the current 2.8-liter. Both new engines will have port fuel injection. All divisions but Cadillac will get the four-door variety a year later, replacing the current A-cars (Celebrity, Ciera, 6000, and Century).

 Sometime this fall, VW and the Spanish carmaker SEAT are expected to announce their wedding plans, giving the Germans a strong foothold in Europe's fourth-biggest car-producing nation. In 1982, two years after splitting with Fiat, SEAT became the importer for Volkswagen and Audi cars and started producing Polos, Passats, and Santanas under license. The company, which hopes to produce some 400,000 cars next year, is now owned by the Spanish state holding company, INI, which must drastically reduce its \$1 billion in debts before it can expect VW to accept its hand in marriage. Initially, the Germans may only grab a 51-percent majority, worth about \$1.5 billion, but VW is expected to take over the rest at an agreed price in five years.

SEAT plans to enter the North American market in 1988 with two brand-new models, a five-door hatchback and a four-door sedan,



sister yachts, the Buick Riviera (above) and the Cadillac Eldorado (below), both front-drivers. All three cars will be built on the same Poletown assembly line.



said to be "Latin in looks but German in character." Marketing chief Juan José Diaz Ruiz is at present searching for an importer (Saab, Audi, and BMW are high on his list) to market the cars here, first in the Sun Belt and later in New England. Diaz Ruiz hopes the fully loaded SEATs-body design by Giugiaro, engine design by Porsche-will find 12,000 buyers in the first year, and he looks for annual sales of at least 60,000 by 1990.

#### TECHNOID

 Ford is reportedly considering multipoint fuel injection and supercharging for its 3.8-liter

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V-6, for possible use in the Thunderbird and Cougar in 1987 or 1988. Ford may also produce a transverse version of the blown 3.8-liter for use in the '87 Mercury Sable.

· Ford's Dearborn engineers, meanwhile, are looking at a possible 24-valve configuration for the new 3.0-liter "Vulcan" V-6 designed for the Taurus, with an assist from Yamaha, but have no plans now to do a domestic sixteenvalve head for four-bangers. Chrysler has already signed Lotus to help engineer its sixteen-valve fours, due in '88, and Olds has ordered tooling for the sixteen-valve 2.3-liter four it will debut in '87.

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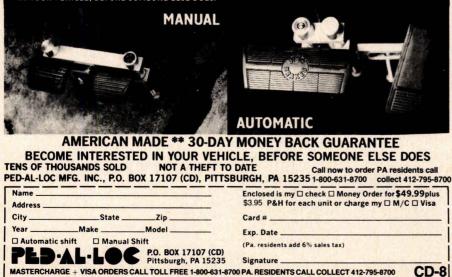
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#### FYI

for the new twin-engined Golf, recently completed by the Wolfsburg motorsports division. After earlier Jetta and Scirocco efforts, this silhouette racer is the third experimental VW vehicle powered by two engines. Since VW's own four-valve unit is still not ready for production, it fitted two tuned 200-bhp powerhouses prepared by Oettinger. The front engine is coupled to an automatic transmission, the rear to a fivespeed manual gearbox. Equipped with a very short final-drive ratio, the 2500-pound bimotor Golf is said to go from 0 to 60 mph in just over four seconds.

• Mercedes-Benz is experimenting with gasturbine power for possible future use. A 150bhp gas turbine is being tested in a roadgoing M-B 200, with reports from within that it is "very refined."

 Honda will introduce a new fuel-squeezing semiautomatic transmission in its 1.2-liter City this fall. The transaxle is a four-speed with an extra set of overdrive gears for the top three speeds. From second to fourth, the car shifts automatically from low to high and vice versa, depending on vehicle speed, for greater efficiency. Japanese government tests show that 65 mpg is possible at a steady 55 mph.

• Delco air-suspension equipment will be used in various 1987-model Audis, according to the grapevine.

· Renault is rumored to be negotiating the sale of engines produced at its new \$350 million plant in northern Mexico to General Motors. It is also considering shutting the plant down altogether. It was intended that the Mexican factory would assemble 1000 engines a day-80 percent for AMC stateside and 20 percent for Renault in Mexico, Troubled times for both manufacturers have caused a 50-percent slump in output.

#### CASH FLOW

 La Régie Renault lost a record twelve billion francs last year (over a billion bucks), but chairman Georges Besse, who took over from Bernard Hanon in a surprise move in January, says that the French will honor their commitment to AMC instead of selling off the Jeep division to Chrysler, as had been speculated. Last year's losses (which came on top of long-term debts amounting to over \$10 billion) were largely generated by the truck-and-bus division. Since the car-assembly plants are currently running at only 70 percent of capacity-despite the introductions within the past year of the R25, the R5, the Alpine V-6, and the Espace-M. Besse is expected to lay off 15,000 more workers by year's end.

• Ford and Fiat are currently talking about long-term cooperation and perhaps even a merger. It seems certain that joint parts production will go way beyond the current CVT venture, but managers from both companies have been unusually tight-lipped when asked about interlocking capital arrangements.

Fiat boss Gianni Agnelli, who has previously failed in attempts to collaborate with VW and Citroën, said in a recent NBC interview that only three or four European carmakers will sur-



vive until the year 2000. Together with Ford, the Fiat-Lancia-Ferrari group, with over oneguarter of the Old World's new-car market, would probably be one of them.

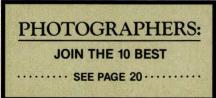
One of the attractions Ford could offer Fiat is access to its U.S. dealer network. Ford, on the other hand, is reportedly interested in the advanced Fiat FIRE 1000 engine line, which the Italians originally intended to produce together with Peugeot. There are 101 more potential links, but the line thus far from both corporate headquarters is: "We're still talking."

· Chrysler says it will jointly build small cars in the U.S. with its Japanese affiliate, Mitsubishi, beginning in the 1989 model year at an unspecified site in the Midwest. The \$500 million venture will initially assemble a sporty subcompact based on the replacement for the Mitsubishi Mirage/Colt and will turn out 180,000 units a year, to be split equally between the partners. The deal also calls for Chrysler to increase its share of the Japanese automaker from 15 to 24 percent.

 Chrysler has also inked a pact to buy parts for its U.S. cars from the conglomerate Samsung and is negotiating the possible joint manufacture of four-cylinder engines and minivans in China. The partnership with Samsung may lead eventually to the production of Korean subcompacts for the American market, though the ventures in China are targeted specifically at cars for that country, according to Chrysler execs.

 The French auto giant Peugeot has become only the fourth vehicle manufacturer (after AMC, VW, and Daihatsu) to win a joint-assembly venture in China. In conjunction with the Guangzhou (Canton) Automobile Works, Peugeot will build 504 wagons and pickups from knocked-down kits, beginning next year, with an expanded line of models planned for '88.

 The Big Three watched profits slip a bit in the first quarter. GM earnings dipped to \$1.1 billion from \$1.6 billion the previous year; Ford, to \$783 million from \$897 million; and Chrysler, to \$508 million from \$706 million. AMC's return last year to profitability reversed itself in the first quarter of 1985 as the company posted a loss of \$29 million; layoffs and other costcutting measures, including the possible clos-



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ing of its Kenosha, Wisconsin, plant, have been announced.

• Big profits spell **big bonuses** for top U.S. auto executives. The Big Three reaped record profits last year, totaling nearly \$10 billion, and paid their top officers accordingly: **GM chairman Roger Smith** was awarded \$1.1 million in salary and bonuses. Retiring Ford chairman **Philip Caldwell** made \$1.6 million, and new chairman **Donald Petersen** took home \$1.2 million. Chrysler boss **Lee lacocca** pocketed a



¿Quién es más macho? <u>You</u> can be el más macho when you roll down the boulevard in your Mecham Macho T/A. If you really think macho can be bought, call Mecham Racing, in Arizona (602–842–1324), for details.

mere \$1.2 million in '84 salary and '83 bonuses, but his total compensation last year, including stock options, was well over \$5 million.

#### SAFETY FIRST

• But do they know that red means stop? Posts with nine-inch red reflector strips are being erected at deer crossings in the 6500-acre Ashdown Forest in Sussex, England. The forest's Board of Conservators hopes that reflections of headlights on the strips will **alert deer** to the dangers of going into the road.

### GAS PAINS

 According to Romanian radio, a ban on buying gas for private motorists in the Eastern European country from January through March



Great Road Signs: What road? Where? Are you sure you want to turn right? Do you really know where you are, friend?

saved eighteen million gallons of gasoline. When the ban was lifted, drivers were advised to "take care" and that their reflexes might be slower "because of lack of practice." The expected rush to the roads did not occur: too many dead batteries.

## MOVERS & SHAKERS

 Longtime Nissan president Takashi Ishihara, a senior spokesman for Japanese in-CAR and DRIVER

## VW Vanagon Syncro

#### Camping in the Alps, anyone?

• The most versatile people mover Volkswagen has ever built wears the shoebox body of the aging but still impressive Vanagon. The well-made, spacious Vanagon seats up to eight adults; an independent suspension provides a lovely balance of handling, roadholding, and ride comfort; and the rear-mounted, water-cooled engine is durable, guiet, and comparatively frugal. Although traction has always been one of the strong points of the Vanagon's rear-engine, rear-wheel-drive layout, VW has recently released a four-wheel-drive version, planned for U.S. introduction within six months, which can cope with deep snow, sand, or mud while barely impairing the vehicle's on-road performance.

The Vanagon Syncro was developed together with the Austrian four-by-four specialists at Steyr-Daimler-Puch, makers of the Haflinger and Pinzgauer off-roaders, the Mercedes-Puch G-wagen, and a variety of four-by-four applications for Fiat, Lancia, and Honda, to name only a few. Unlike most of its Japanese and U.S. rivals, the allwheel-drive Vanagon does without a manually activated front-wheel drive, a transfer case, or a center differential.

S-D-P chief engineer Jürgen Stockmar, of Audi Quattro fame, explains: "Instead of using a third differential, we opted for a viscous coupling which is integrated into the front-axle differential. The key component is a fluid shear coupling consisting of a number of working surfaces formed by interleaved plates, operating in a drum containing a secret-recipe silicon fluid. The viscous control unit restricts the speed differential between the front and rear outputs, and it also protects the driveline from overloading due to windup and shock." (AMC has used a similar coupling in the Eagle for six years.)

To accommodate the four-by-four hardware, suspension travel was increased by 0.7 inches, and the ground clearance was raised to a comforting 7.5 inches. The frontaxle assembly is all new, consisting of double transverse links, coil springs, telescopic shock absorbers, and an anti-roll bar. Together with the one-piece prop shaft, the equal-length front driveshafts, the frontaxle differential, and various skid plates,

Manufacturer: Volkswager Wolfsburg,	werk AG West Germany
	4-wheel-drive, 8-passenger,
<b>Base price (West German</b>	y): \$10,000 (estimated)
	um block and heads, 1x2-bbl
Displacement	117 cu in, 1915cc
	75 bhp @ 4600 rpm
	5-speed
	179.9 in



the four-by-four assembly pushes the Vanagon's curb weight up by about 300 pounds. To make room for the complex front axle, the gas tank was transferred to the rear, where it now embraces the fivespeed gearbox. (This is the standard Vanagon's four-speed transmission, with an added 6.0:1 "creeper" gear.) Although the spare wheel was also moved from the front to the back, the Vanagon Syncro still claims a weight distribution of 50/50.

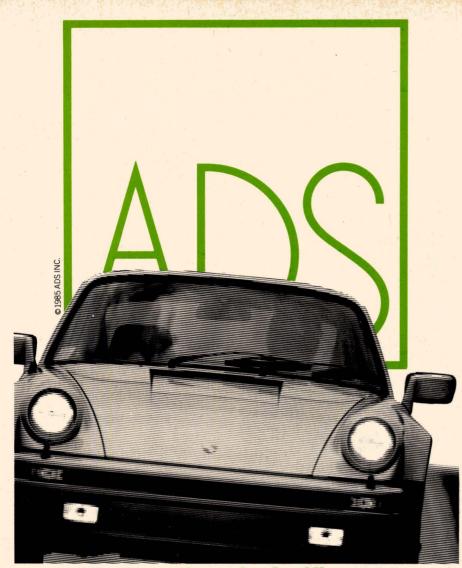
The four-wheel-drive Vanagon is available with three different engines: a 67-bhp, 1.6-liter turbo-diesel, a 75-bhp, 1.9-liter waterboxer, and a 108-bhp, 2.1-liter injected gas version. Normally, the bulk of the Vanagon's meager power is relayed straight to its rear wheels. In the dry, your only clue to the Vanagon Syncro's mountain-goat identity is a bit of sluggishness brought on by the added weight and by the slightly greater friction resulting from its extra parts. As soon as a driving wheel encounters a patch of low-friction surface, though, the true virtues of the Syncro driveline become obvious. The viscous coupling resists rear-wheel spin so that the allwheel-drive VW can claw its way through wet and steep hairpin turns or across a snowy farm trail with the best of them. Apart from providing a degree of traction any fulltime off-roader could be proud of, the VW-S-D-P "thinking" 4x4 system also improves directional stability, handling, and braking. And if the going gets really tough, there are pneumatically operated differential locks front and rear to supply extra traction until you run out of ground clearance.

Weight does have its advantage: together with the longer spring travel, it gives the Vanagon Syncro even better ride comfort than its two-wheel-drive sister. The Vanagon has never been particularly fast or economical, but it has always been one of the most sensible and versatile workhorses money can buy. The 4x4 option enhances its appeal even further. —Georg Kacher

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944 Colgan bra			79.00		
914 Heavy duty clutch p	backage		164.50		
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36

#### FYI

dustry as head of the Japan Auto Manufacturers Association, has been elevated to chairman of Nissan. He is succeeded by protégé Yutaka Kume.

• Dr. Marina Whitman has become the highest-ranking female auto executive, succeeding Elmer Johnson as GM's group vice-president in charge of public affairs. Johnson has replaced William Hoglund (now president of Saturn Corporation) as operating-staffs group vice-president.

• W. Paul Tippett has voluntarily removed himself from the day-to-day running of AMC, though he continues as chairman of the corporation.

#### **U-TURNS**

 Wanted: a few good men and women highly qualified as manufacturing and quality-control executives, with an aptitude for languages, particularly Serbo-Croatian, willing to relocate



Peugeot's hot 205 hatch will soon be on the streets of Europe in four-door and ragtop editions, from the looks of these spyshots. Insiders say the convertible will have a targa bar à la VW Cabrio and will be launched next February. The sedan, a stretched 205, replaces the Talbot Horizon this fall, but with a Peugeot badge.



to Yugoslavia. Salary: up to \$100,000 a year. In fact, if you're qualified enough, Zastava will assign you a full-time translator. Although employed by Yugo America, Inc., of Montvale, New Jersey, the people Yugo seeks will be based at the Zastava factory southwest of Belgrade, where they will oversee the production of Yugo cars and try to bring about "long-term improvements in manufacturing and quality standards" for existing and upcoming models. If you're sick of living in New Jersey, call Yugo America executive vice-president Tony Ciminera at 201–391–8100.

### QUOTES

• While visiting Japan, Chrysler chairman Lee lacocca explained the company's new joint venture with Mitsubishi: "Reagan and GM told me to go to Japan, and goddamn it, I came...fast!"



 The Japanese counterparts of the pocket rockets so popular in Europe started to show up in Tokyo neighborhoods a few years ago. Now, having turbocharged virtually every small sedan in the 1.2-to-1.6-liter class, Japanese carmakers are turning to twin-cam engines for fun and games.

The first was Toyota, which put the responsive 1.6-liter 4A-GEU DOHC four in the rear-drive Corolla (longitudinally) and the rear-drive MR2 (transversely) with great success. So much success that it has now popped the twin-cammer under the hood of the three-door and five-door FX hatchbacks, recent additions to the frontdrive Corolla family. The two-box FX body. designed to replace the Tercel in Toyota's export markets, shares its fenders and hood with the other front-drive Corolla models. Its floorpan is based on the frontdrive sedan, though shortened at the rear, so the two also share wheelbase, track, and overall width.

The suspension is a coil-strut combination at each corner, but to cope with the extra power of the twin-cam, the FX-GT version's body has been stiffened by adding rods that connect the top of each front strut tower to the fire wall. Uprated springs and dampers, plus four disc brakes (ventilated in front), complete the tuneup.

The FX-GT is not a town car, for its ride is somewhat harsh at urban velocities. The sixteen-valve engine comes to life around 2000 rpm, but the real on-the-cam burst of

Manufacturer: Toyota Motor Corporation Toyota City, Japan
Vehicle type: front-engine, front-wheel-drive, 4-passen- ger, 3-door sedan
Price (Japan): \$6100 (base: \$5700)
Engine type: 4-in-line, iron block and aluminum head, fuel injection
Displacement
Power (JIS) 130 bhp @ 6600 rpm
Transmission
Wheelbase
Length 156.3 in
Curb weight

torgue is felt (and heard) above 5000 rpm. With the sweet-revving engine coupled to the short (4.3:1) final-drive, you hit the 7700-rpm rev limiter in a matter of seconds when accelerating through the lower gears. The manufacturer claims that the FX-GT passes the guarter-mile in 16.2 secondsslower than the twin-cam, sixteen-valve Civic's claimed 15.7-second quarter-mile time, but the FX-GT feels as though it offers more punch. The FX-GT engine spins at 3400 rpm when cruising at 60 mph in fifth gear. The noise can be quite intrusive, though the engine can still pull off a strong pass from this speed without necessitating a downshift.

But the FX-GT is not only a straight-line machine. The car feels at home on the sinuous mountain roads near Mount Fuji, and this terrain is where we enjoyed the Corolla FX-GT most. Shod with optional 185/60R-14 tires on alloy wheels, the car demonstrates phenomenal roadholding and topclass handling. The steering is nicely weighted, accurate, and sharp. Understeer is moderate, and the car goes precisely where it is pointed. Lift-throttle tuck-in tendencies are well suppressed, and the rear wheels grip tenaciously. Even in extreme circumstances traction is plentiful, and it seems that all the power is being delivered to the road. Close to the limit of adhesion, the FX-GT breezes through a corner in a controlled four-wheel drift, easily managed with steering and throttle.

The only area where the car falls short is its somewhat mundane shape. At a glance, the FX-GT appears to be simply a breadand-butter Corolla fitted with a peppy twincam unit. Still, the overall package lives up to its promise of affordable excitement. Now imagine the perfection of the FX-GT's dynamic qualities mated to the innovative styling of the Honda Civic.

-Yasushi Ishiwatari

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Introducing the COMPETITOR<sup>™</sup> from Mickey Thompson Tires. For over 2 decades, we've produced some of the winningest street, strip, off road, and even land speed record tires in the world.

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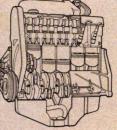
Best of all, the special high-speed traction compound gets softer and stickier as it warms up. For handling that glues you to the road.

Experience the ultimate street performance sports tire...Mickey Thompson Tire's COMPETITOR. The dawn of new performance for your car.



Many automakers can't seem to grasp the distinction between technology and gadgetry. So, they offer the illusion of performance rather than its substance.

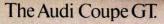
Fortunately, there is an alternative for the serious enthusiast: The Audi Coupe GT, the automobile Car and Driver has named "the best sports Coupe in America."



Once behind the wheel. you'll know you're in for an © 1985 Audi

unprecedented driving experience. The Coupe's CIS-E fuel-injected, five-cylinder engine and close-ratio, five-speed transmission deliver a ride that is smooth and effortless. You notice immediately that the steering is crisp and responsive. Handling and directional control, superb. All just what you'd expect from a precision-engineered German sports coupe.

And it delivers this kind of performance anywhere. Mountain passes, hairpin turns, or city traffic makes very little difference.



The reason is the optimal balancing of Audi's acclaimed front-wheel drive and sports suspension system, and power assisted rack-and-pinion steering.

Of course, there's more to the Audi Coupe GT than what's under its hood. For this is an automobile that appeals to the senses as well, with sleek aerodynamic styling that unfolds in a bold silhouette.

While inside, creature comforts like power windows, a four-speaker stereo system, ergonomically designed sport seats, and air conditioning create an atmosphere of civilized luxury unmatched by anything else in its class. As *Car and Driver* says, "the car feels like money."

Manufacturer's suggested retail price is \$15,250. (Title, taxes, transp., reg., dealer delivery charges additional.) For your nearest dealer call 1-(800)- FOR-AUDI in the continental U.S.

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## CAR DRIVER PREVIEW TEST

# 1986 Oldsmobile Toronado

#### Oldsmobilists will think they've died and gone to Hawaii.

• After twenty years of life in the forefront, making America safe for front-wheel drive, it's clear that the Toronado has done its job. Front-wheel drive is like weeds in the garden now. It's everywhere. So who needs the Toronado anymore?

This is one of the industry's most obscure cars. Production during 1984 totaled 48,100, which outnumbered Cadillac's Seville (39,997) and Chevrolet's Corvette (34,962). But its body mates—the Eldo and the Riv—give it a pretty good drubbing in the market, outselling it by 75 and 25 percent, respectively. Apart from front-wheel drive, which for years Olds was careful not to mention in its advertising, it has always seemed to us that the Toronado has not had a very well-defined slot.

The average Toronado buyer in 1984 was 50 years old and earned \$51,300 a year. Men made up 80 percent of the mix, college graduates 42 percent, and married people 74 percent. The trend is older, more money, and more females as principal drivers. In fact, the percentage of females as principal drivers doubled to 51 percent from 1977 to 1984.

For a high-buck Detroit car, this isn't a bad owner profile. The average buyer isn't so old that he's going to die off before he can buy another one—which is getting to be the case with some Cadillacs—and the number of females is seen as a hopeful sign





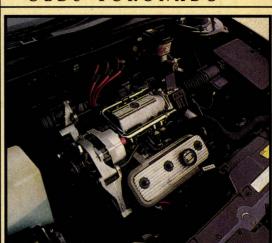
now that the marketers have observed which of the sexes lives longer and ends up with all the money. So Oldsmobile's business plan for this

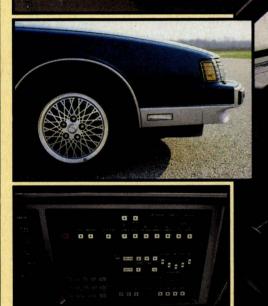
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So Oldsmobile's business plan for this new Toronado is not so much to change the owner body as to expand it. And the assumption is that an expansion will bring in more younger than older buyers, simply because the country has more younger than older people revolving the doors of the dealerships these days. Knowing that



#### OLDS TORONADO





intent, we thought it might be interesting to go through the new model and evaluate it accordingly,

The 1986 Toronado is based on the new GM-30 platform (the Calais, the Somerset Regal, and the Grand Am are GM-20s), and it's about as new as anything ever gets in Detroit. The powertrain has been seen before—Buick's transverse 3.8-liter V-6 and a four-speed automatic—but all the rest is fresh.

Compared with Toronados of yore, this one is downsized to Toys "R" Us dimensions. Even compared with the 1985 model, it's a compact: 18.2 inches shorter overall, 6.1 inches shorter in wheelbase, 1.7 inches lower, 0.7 inches narrower, and 545 pounds lighter. The interior dimensions are about 1.5 inches wider in the shoulders but substantially shorter in rear-seat leg and knee room, enough so tall guys will complain now.

Mechanically, the new Toro has certain design features that you would expect of any new luxury Detroiter. For example, the front and rear suspensions are mounted on crossmembers that are isolated from the underbody, limiting the amount of road noise that can get through.

It also has some mechanical features that you would hope for but might not get elsewhere. Four-wheel disc brakes, for example. An independent rear suspension, for another example. And an automatic loadleveling system on the rear. (Incidentally, a transverse leaf spring made of fiberglass holds the rear of the car up.) Moreover, some serious attention has been paid to aerodynamics: GM's preliminary testing suggests a drag coefficient of 0.36, an improvement of 35 percent over the preceding model. Still another feature is a windshield made of anti-lacerative glass. A transparent plastic membrane affixed to its inner surface prevents crash victims from actually contacting the broken edges.

The Toronado also offers some equipment that might be regarded as fun by some drivers. For the first time, three "levels" of suspension are in the catalog: standard, for the normal Oldsmobilists, who'd rather not feel the road; level two, for those who'd prefer to have their feet on the ground; and level three (as our test car was equipped), for those who want "maximum handling." Goodyear Eagle GT tires are available as well.

If you like video games, the standardequipment electronic dashboard should be fun, too. It has a digital speedometer, bar graphs for fuel, oil pressure, temperature, and voltage, and a tachometer that is invisible unless you bring it to life with the touch of a button. If you like audio games as well, the vocal warning system might be amusing the first time or two. Might be. But it's an option, and it has poor diction, and we wouldn't recommend it even if it sounded like Tom Brokaw, because you can get all the nagging you want in this life for free.

So far, we've talked about the Toronado's equipment as hardware, not as a source of joy for its driver. The staff consensus on the joy question comes down to a matter of expectations. If you're an Oldsmobile sort with a strong slice of heartland values and not much interest in driver involvement, one trip around the block in



this car and you'll think you've died and gone to Hawaii. If you'd rather take a twohanded grip on your machine and *drive*, though, the Toronado is a little reluctant.

The Toronado on the road is pretty much what you'd expect of an Oldsmobile. It's very quiet at cruising speed, the transmission upshifts are detectable only because of the changes in engine pitch, and the stereo fills the compartment with tolerably good sound. Performance is okay with a quarter-mile acceleration of 17.5 seconds at 78 mph, "okay" is sufficient approbation—and the engine sings a surprisingly lusty song at full throttle. There are no engine options: the standard V-6 has sequential-squirt fuel injection, a distributorless ignition system, and 150 horsepower on the spec sheet.

If there is any surprise, it's the Toronado's ride. No whipped-cream roads when you check level three on the order form. The Eagle GTs are sporting tires, and the shocks are more restrictive than you might expect. So you feel the bumps. Road adhesion is good—0.79 g on the

## The Poletown Plant

#### High tech comes to Hamtramck.

• There is no "You Are Here" arrow on the map in plant manager Earl Harper's office. The old map, circa 1929, shows an industrial section of Detroit and Hamtramck ("Ham-*tram*-ick") known variously as Polonia or Little Warsaw or Poletown, named after the Polish immigrants who settled here at the turn of the century to work in area factories.

In 1929, as now, Detroit's industry was automobiles, and the map tells us that Little Warsaw was home to Hupp, Maxwell, Packard, Cadillac, and the old Dodge Main plant. All are gone now. If Earl Harper's map were updated, the arrow would show us standing in GM's new 77-acre Hamtramck assembly plant, which will soon be turning out the 1986 Toronado, along with the Buick Riviera and Cadillac's Seville and Eldorado.

For a brief moment, until the General builds its next space-age manufacturing complex, it's safe to say that Poletown (a nickname destined to stick to this plant like pirogi to your ribs) is GM's most automated facility, boasting more than 2000 programmable devices. The sci-fi starts at the main gate, where bar-code readers record the contents of about 430 incoming trucks daily, each laden with parts for the day's production run.

Inside the mammoth Poletown plant, computers rule the roost. Sixty unmanned forklifts, called Automated Guided Vehicles, trundle raw materials and parts wherever they are needed. Of Poletown's 260 robots, two-thirds are at work in the body shop, mostly welding. Ten of the robot welders are assigned to the Comau Robogate, a massive framing station that holds the structural components of each body in perfect position while they're fused together. Each car passes next through the Perceptron, a checking station equipped with 121 'seeing" robots that check body openings and build tolerances. The Perceptron's rejects go to the "verification room," where their dimensions are electronically compared with the engineering data base in an effort to pinpoint supplier, design, and production problems before they become serious.

After passing through a pressurized "superclean" room, the cars are divided among eight paint booths, where 80 robots are capable of spraying 60 cars an hour. (Humans paint the second colors of all two-tone paint schemes.) Another dozen or so robots are programmed to perform the worst grunt work in general assembly: installing windshields and rear windows, mounting tires, installing rearaxle bushings and various moldings, dispensing vital fluids, and the like. Several more seeing robots check each car's front-end alignment and install headlights, grilles, and front-end trim.

The entire plant is linked by a GMdeveloped communications system. Only six AT&T telephone lines connect Poletown with the outside world.

The price of progress was typically dear. The Poletown project ultimately displaced more than 3400 people and bulldozed 1362 homes, 143 businesses, sixteen churches, a hospital, and two schools. (Of the 465 acres marked for urban renewal along the Detroit-Hamtramck border, 360 now belong to GM.) A storm of public protest raged from 1980 to 1982, postponing production for two years, pushing the cost of the plant from \$500 million to \$600 million, and attracting the attention of Gray Panthers leader Maggie Kuhn and Ralph Nader. The consumer crusader set up shop in a neighborhood church to fan the flames of discontent.

"GM has totally intimidated the city government," Nader told the press.

"Ralph Nader is psychotic in his hatred of GM," retorted Detroit mayor Coleman Young. "Whenever you mention GM, he foams at the mouth."

Eventually the protests subsided, and Poletown came together. On the day of our visit, about 100 prototypes are spread throughout the system as 1986model production draws near. Conveyors rumble overhead, empty—to "run them in," as Harper puts it. The single shift of 1700 employees will gradually swell to two shifts of 2500 workers each, as Poletown reaches its modest 60-carper-day goal.

The only remnant of the past on the grounds of the assembly plant is a small Jewish cemetery, Beth Olem.

The cemetery and Earl Harper's map, that is.

"Tve stood and looked at this map for an hour," the plant manager muses. "You can almost see the families living in these little houses, walking to work at Dodge Main and Detroit Steel."

Mayor Young was less sentimental about the demise of the colorful but rundown Little Warsaw neighborhood when the city of Detroit began buying up property for the plant. "The residents of Poletown are voting with their feet," he told the press. "They left."

-Jean Lindamood

#### OLDS TORONADO

## **Technical Highlights**

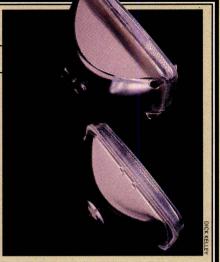
#### GM's brighter outlook.

• Two years ago, a federal agency made a move that will eventually change the face of practically every new automobile on the American market. The National Highway Traffic Safety Administration finally relaxed its clenched-fist grip on design standards for headlamps, giving car manufacturers unprecedented flexibility to create special lighting packages to suit the trends toward smaller cars and more efficient air penetration. The Ford Motor Company had anticipated this regulatory shift with its 1984 Continental Mark VII by designing two completely different lighting systems, covering both go and no-go eventualities; that machine hit the showrooms soon after the 1983 decree with the smoothest prow this side of the autobahn. Various Japanese and European brands wasted little time in picking up the gauntlet, making 1985 very much the year of the aero nose.

GM took its time to tool up for the special-headlamp era, but finally the Oldsmobile Toronado is ready to deliver the General's new lighting technology to the buying public. Hidden under the Toro's folding eyelids are four compact rectangular lamps, designated "F-type" by their maker, GM's Guide Division. Sleek these lamps are not—they still present a bluff face to the wind—but they are smaller, lighter, cheaper to manufacture, and far more efficient than conventional light sources.

At first glance, the new lamps appear to be standard 4.0-by-6.5-inch quad beams built to a slightly lower profile. The F design is in fact almost as tall and as wide as a conventional lamp, measuring 3.6 by 5.9 inches, but it is significantly shallower. Its net volume is only half that of a conventional lamp's, and it weighs five ounces less.

While the Guide engineers were creating the new package, they also found a way to incorporate up-to-date lighting technology. Both the low- and the highbeam F-lamps are of course halogen designs, using a sealed glass-lens-and-parabolic-reflector assembly filled with a mixture of inert gas and a halogen compound. The low-beam units depart from normal practice by using one instead of two filaments per lamp, making it practical to locate the light source in the ideal photometric location. (In a conventional dual-filament lamp, which uses one of the elements for the low-beam mode and the other for high-beam operation, neither filament can be positioned pre-



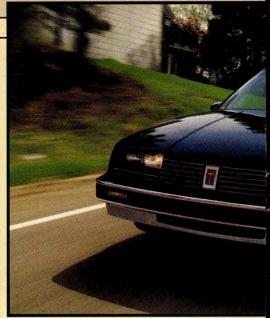
The F-type headlamp saves five ounces and half the volume of a normal quad beam.



cisely at the focal point of the parabolic reflector, so performance is inevitably sacrificed.) Furthermore, the filaments in both the low- and the high-beam Flamps are positioned on longitudinal (rather than transverse) axes, so they do a better job of filling the corners of the reflectors with light. Finally, the lowbeam filaments operate at higher wattage than conventional elements, intensifying output. Each produces 15,000 candela of illumination from 55 watts of electrical power, in comparison with a standard rectangular low-beam's 12,000-candela output from 45 watts of power. GM's F-type high-beam lamp uses 65 watts to produce 150,000 candela, the maximum allowed by NHTSA.

Although GM would have preferred a four-lamp high-beam setup for both performance and appearance reasons, its Ftype low-beams are so efficient that the feds were concerned that they might produce too much illumination if used in conjunction with another pair of lamps in the high-beam mode. Not wishing to risk the government's wrath, General Motors took the path of least resistance: two outboard lamps for the low-beam mode and two inboard lamps for highbeam illumination.

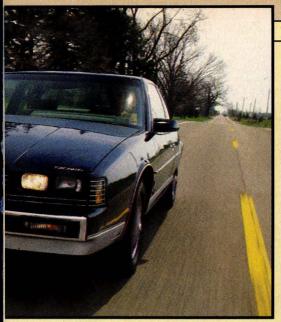
If placing the new Guide Division Flamps behind covers on the Toronado seems a bit like hiding one's candle under a bushel, take heart: the new design will grace several other cars during the 1986 and subsequent model years. Watch for it this fall on the AMC Alliance and Encore, the Buick Skyhawk, Century, and Riviera, the Jeep Wagoneer, and some Pontiac Sunbirds. —Don Sherman



skidpad—which is largely due to the tires. Adhesion would probably be really good if not for the substantial understeer tuned into the chassis, which uses up the front tires' capability while the rears are still loafing. But this is an Oldsmobile, after all, and in that context the handling is probably a reasonable compromise.

Even with the hard-ride package, however, we don't think the Toronado has the handling and the performance to make it a favorite with enthusiastic drivers. The expansion of market that Oldsmobile is seeking will have to come from elsewhere. There are a couple of likely targets. Those who want the latest fall fashions, for one. The new sheetmetal is quite a tasty interpretation of what a late-Eighties Detroiter might look like. It still has GM's trademark chopped-off roof, but the bubble-backlight theme borrowed from the GM-20 adds a new trick. The rest of the car has been sculptured in remarkably good taste, given the flights of fancy that have appeared on past examples, and it looks even more aerodynamic than it is. The simple, horizontal-element grille, with doors for the headlights, and the equally simple horizontal taillights running full width across the back, and the minimalist identifying badges sprinkled about the exterior-all show a self-restraint on the part of the styling department that is out of character for this nameplate. Is this really a Toronado? Or even an Oldsmobile? Those who have shunned the Krome King look will have no reason to avoid the Toronado now, and that represents growth potential.

Oldsmobile's other ace will be played toward the high-tech crowd. The all-electronic instrument panel is meant to be a major gesture to these folks. It does become the dominant characteristic of the car when you're in the driver's seat, and it's legible enough and complete enough that you can hardly complain about it from a functional standpoint. It works. The question therefore becomes, Do you like it? Or



would you rather have numbers and needles? Our experience suggests that the world's car buyers break apart rather sharply on this question, with the car enthusiasts usually coming down on the side of analog instruments. But if electronics represents excitement in your view, the Toronado has it.

In fact, the Toronado is quite sophisticated electronically, with a "body computer" to act as overall coordinator of such independent functions as temperature control, instrument panel, engine control, service diagnostics, and even voice alert. One of the payoffs of this advanced system, Oldsmobile says, is that the nagging "fasten seatbelts" and "door ajar" warnings aren't given until the engine is running and the transmission is in gear. That's good. That's the way those warnings should have been delivered years ago. If it takes a body computer to do the job right, fine, put in the body computer. But this is one more piece of equipment, like lug nuts and ball joints, that most customers would just as soon not know about. Let's just say that the Toronado's high tech is more than skindeep and be done with it.

This discussion of electronics, however, does serve as a reminder of how car fashions change over the years. Electronics is what's happening today. And looking over the Toronado, you see a number of other contrasts with the car of twenty years ago. Obviously, Detroit-style personal luxury coupes aren't behemoths anymore. They aren't pillarless hardtops anymore, either: the Toronado has a thick B-pillar. And they don't make grand gestures with coach lights and vinyl roofs anymore, either; the option sheet doesn't even mention such simulated luxuries.

From all of this you might conclude that, although the Toronado nameplate is twenty years of age now, the automobile to which it is attached has been brought very much in step with the times, as Oldsmobile sees them. -Patrick Bedard



Vehicle type: front-engine. front-wheel-drive. 6-passenger. 2-door sedan

Price as tested: \$20,000 (estimated)

Options on test car: electronic AM/FM-stereo radio/cassette, metallic paint, rear defroster, power passenger-seat recliner, P215/60R-15 Goodyear Eagle GT tires, power locks, power trunk release and pull-down

Standard accessories: power steering, windows, and driver's seat, A/C, cruise control, tilt steering

Sound system: Delco AM/FM-stereo radio/cassette, 6 speakers

#### ENGINE

Type V-6, iron block and heads
Bore x stroke
Displacement
Compression ratio
Engine-control system Buick electronic
Emissions controls 3-way catalytic converter, feedback
fuel-air-ratio control, EGR
Valve gear pushrods, hydraulic lifters
Power (SAE net) 150 bhp @ 4400 rpm
Torque (SAE net) 190 lb-ft @ 2000 rpm
Redline

#### DRIVETRAIN

Transr	nission	4-speed	automatic v	with lockup torque
				converter
Final-d	rive ratio			2.84:1
Gear	Ratio	Mph/1000	rpm	Max. test speed
1	2.92	8.7	44	mph (5000 rpm)
11	1.57	16.2	81	mph (5000 rpm)
III	1.00	25.4	110	mph (4350 rpm)
IV	0.70	36.3	105	mph (2900 rpm)

#### DIMENSIONS AND CAPACITIES

107.9 in Wheelbase 59.9/59.9 in Track, F/R

1070 -

#### CHASSIS/BODY

Type unit construction with 2 rubber-isolated subframes
Body materialwelded steel stampings
INTERIOR
SAE volume, front seat
rear seat
trunk space 14 cu ft
Front seats
Seat adjustments fore and aft, seatback angle,
front height, rear height
General comfort poor fair good excellent
Fore-and-aft support poor fair good excellent
Lateral support poor fair good excellent
SUSPENSION
F: ind, strut located by a control arm, coil springs,
anti-roll bar
R: ind, strut located by a control arm, transverse
leaf spring, anti-roll bar
STEERING

S	Т	E	E	R	1	N	I	1

STEERING	
Туре г	ack-and-pinion, power-assisted
Turns lock-to-lock	2.9
Turning circle curb-to-curb .	38.9 ft
BRAKES	
F:	10.2 x 1.0-in vented disc
R:	10.0 x 0.5-in disc
Power assist	vacuum

#### WHEELS AND TIRES

6.0 x 15 in Wheel size . Tires .... Goodyear Eagle GT, P215/60R-15

## CAR AND DRIVER TEST RESULTS

ACCELERATION	Seconds   HANDLING
Zero to 30 mph	3.1 Roadholding, 300-ft-dia skidpad
40 mph	
50 mph	
60 mph	104
70 mph	14 A COAST-DOWN MEASOREMENTS
80 mph	10.0 noau norsepower @ 50 mph
90 mph	27.0
100 mph	
Top-gear passing time, 30–50 mph	
50–70 mph	
Standing ¼-mile	
Top speed	
BRAKING	INTERIOR SOUND LEVEL
70–0 mph @ impending lockup	
Modulation	
Fadenone mode	
Front-rear balance	r fair good 70-mph coasting

.... 0.79 g

moderate excessive

..... 5 hp

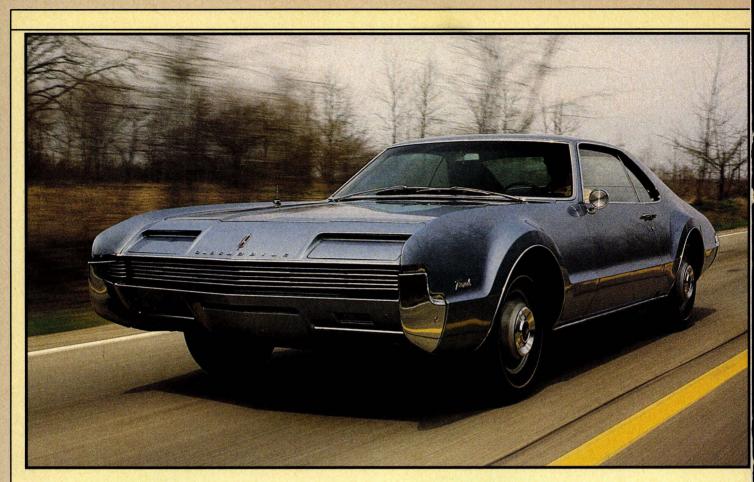
..... 13 hp ..... 28 hp

..... 18 mpg ..... 26 mpg

..... 46 dBA 73 dBA

65 dBA

64 dBA



# 1966 Oldsmobile Toronado

#### When men were men, cars were cars, and GM feared no technological frontier.

• The pop tune "Anything Goes" could well have been the GM engineering staff's theme song during the zippy 1960s. For once, the tech team was in power, and it cranked out an awesome array of aluminum engine components, four-speed transmissions, four-wheel disc brakes, flexible driveshafts, a monster four-cylinder, an overhead cam in-line six, a V-6, and even one rear-engined automobile.

Oldsmobile's day in the sun dawned in the fall of 1965 with the unveiling of the original Toronado. The big and brawny Olds two-door wore fender flares large enough to house drag slicks, a greenhouse whose tumblehome started at knee level, a fast tail section, and hidden headlamps. This radical styling, which needed no chrome to make its statement, set the stage for the engineers, who created the most advanced Olds chassis in history. Power came from a fairly conventional "rocket" V-8, but the mighty Olds engine sent its 475 pounds-feet of torque (SAE gross) to the pavement through the front wheels. At a time when any Citroën or Renault engineer worth his slide rule would have sworn that two liters and 2500 pounds defined the practical upper limit for front-wheel drive, Oldsmobile brought it to Americans in a seven-liter, two-ton macadam mauler.

The late John Beltz, Oldsmobile's chief engineer at the time of the Toronado's introduction, summed up the division's intentions as follows: "The Toronado venture was born of the desire to create a better automobile, one with more usable room and improved roadworthiness. We were after a big step forward. This meant approaching the design unfettered by commitment to traditional arrangement."

America was well into its second serving of compact cars in 1965, so it might seem strange that the Olds engineering staff bypassed its own miniaturized big car, the F-85, after conducting initial front-wheeldrive experiments with that line, and instead focused its attention on the creation of a full-size, front-drive "luxury sports car." Such upscale big cars as the Buick Riviera and Ford Thunderbird were selling very well at the time, however, and market research suggested that their buyers might be swayed by radically new and different technology.

With this philosophy in mind, the

Toronado was engineered with no holds barred. The big V-8 wore a brand-new-for-1966 Rochester Quadrajet carburetor with secondary barrels almost large enough to swallow your fist. It drove a Turbo Hydramatic transmission that was slid forward and reversed in orientation to allow it to snuggle tightly against the driver's side of the engine block. A conventional torque converter mounted to the engine's crankshaft drove the transmission through a two-inch-wide link chain. A compact differential case bolted to the output end of the transmission sent power to the wheels via massive U-jointed half-shafts. Other special features included torsion-bar front springs, single-leaf rear springs damped by four shock absorbers, massive finned castiron brake drums, and a planetary-gearset differential. A year into production, front disc brakes and radial tires were added to the Toronado's equipment list.

As luck would have it, this early foray into the uncharted reaches of front-wheel drive has not been lost to the ravages of time. At least one example is still available for evaluation because some kind souls at Oldsmobile were sensible enough to pre-



serve the very first Toronado to leave the assembly line. We couldn't think of a better way to document twenty years of domestic front-drive progress (or the lack of it) than to test this old survivor, so we rolled Toro numero uno onto the test track.

Wearing pale-blue paint and 26,000 miles on the clock, the old Olds is still a head turner. It may be its huge size, its bold looks, or simply fond memories from the past, but people still gawk as if naked ladies were painted on the hood.

Stretched doors were invented for this car. The idea was to provide a spacious entry to both the front and the rear seats in keeping with the newfound packaging efficiency. Three and a half inches longer than normal doors of the day, they are indeed handy for entry, but they're also heavy enough to crush the unsuspecting if swung open against a grade.

Inside, the Toro's claim to fame is a wallto-wall flat floor. Unfortunately, the seating department must not have gotten the word about this important breakthrough, because it offered the public a choice of buckets or a very bad bench in front. Our test car had the latter, and its center position lacked belts and was made uncomfortable by the hinges and the seams necessary to permit the center armrest to fold down.

To help fill up the wide, flat floor, the Toronado had a throttle pedal large enough to control a Greyhound bus. The gas and brake pedals are trimmed in chrome, as are the steering wheel and just about every instrument-panel component. All in all, though, the fascia is simple and understated for a mid-Sixties design. Most of the forward wall is painted matte black. There isn't an "Oldsmobile" script in sight, and extraneous decoration is limited to a fiery rocket in the steering-wheel hub and a low-key Toronado badge for each door panel. The speedometer is the most unusual sight in the instrument panel; it's a weird numerals-on-a-drum device that rolls up your speed like a grocery store's produce scales. Hit the big, wide pedal, and the velocity digits revolve down and out of sight to a maximum reading of 130 mph.

The engine's 385 SAE-gross horsepower is offset by a prodigious 4682 pounds of curb weight, so mashing the throttle unleashes a confrontation akin to the irresistible force hammering against the immovable object. Off-the-mark performance is sluggish, but accelerate in top gear and the Toro feels like an overloaded eighteenwheeler cresting Grapevine Pass. There's a distant moan from the huge four-barrel, the body structure quivers with anticipation, and the early digital speedometer goes blurry. We didn't give up until we saw the far side of 120 mph, where the engine's 10.5:1 compression ratio objected violently to contemporary gasoline.

What you really want to know, though, is "How's she handle?" The good news is that stiff springs, firm shocks, and a hefty front anti-roll bar keep the lean angles under tight control. The taut suspension has little else to offer, however. Every expansion joint hammers through the solid-feeling tires into the passenger cell, and cornering limits are modest even for 1966. Understeer starts when the steering wheel is but a few degrees off center, and truly destructive levels of tire abrasion are the next step up the lateral-acceleration scale. We

# Volkswagen makes an open and shut case for sportiness. In either case, you get a dazzling array of Wolfsburg

Limited Edition extras: The open case of the Cabriolet sports a full leather interior, alloy wheels, metallic paint, power steering, and much more. The shut case of the Scirocco holds an AM/FM cassette stereo, air conditioning, rear windshield wiper, power steering, alloy wheels and much more.

In every case, the German-engineered performance is standard equipment. And in any case, you'll pay less for these sporty Volkswagens than you'd expect. Which is one more reason to get one while the limited supply lasts. We rest our cases.

## The Wolfsburg Limited Edition Wit's not a car. Cabriolet and Scirocco. It's a Volkswagen.

All Volkswagens are covered by a limited 2-year Unlimited - mileage Protection Plan. See dealer for details. © 1985 Volkswagen of America. Seatbelts save lives.



#### 1966 TORONADO

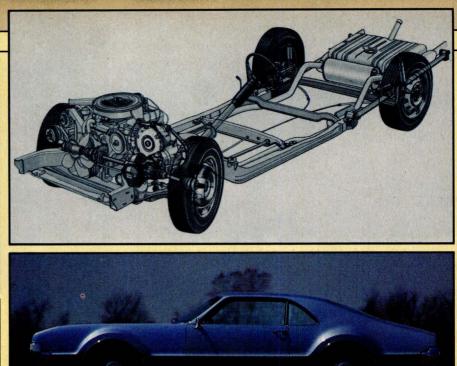


measured 0.61 g on the skidpad, and the square-shouldered Firestone Delux Champions hated every second of it. The rubber is somewhat more comfortable when steered straight ahead and while braking, though the self-energized effect of four huge drums buried deep within the reverse-dish wheels conspires against short stopping distances. It takes a delicate touch at the pedal to avoid rear lockup and a ready awareness that brake fade is a very real fact of old-car life. Thank the Lord for radials, disc brakes, and today's anti-lock hardware.

The Toronado may not turn in a particularly impressive test-track report card, but it's a remarkable front-driver in day-to-day terms. The propulsion and steering systems must share the front tires' adhesion, but each operates without interfering with the other. There is no torque steer or unwanted change of path, no matter what throttle setting you choose. Lift off in the middle of a hard turn, and you feel no effect through the steering wheel. (In fact, you never feel anything through the Toro's wheel, thanks to the grossly overassisted power steering of the day.) All in all, it's easy to see why so many Toronado owners installed their snow tires on the wrong axle: other than the lack of a driveline hump, there's virtually no reminder that this is a front-driver. In fact, if a few X-car engineers had taken a refresher course in this car, GM's second major stab at front drive might have been more successful.

Unfortunately, big companies don't always build on past accomplishments, and this is the sad end to the 1966 Toronado tale. The gurus at GM allowed first Cadillac (with the Eldorado) and then Buick (with the Riviera) to sap the Toronado's frontdrive claim to fame, while Oldsmobile itself systematically frittered away its classic styling. Today, the Toronado is a clone car, one of three corporate sister ships with no particular distinction of its own. Except for the historic one: domestic front-wheel drive was pioneered here, and in its day, the Toronado was a job well done.

-Don Sherman



Vehicle type: front-engine, front-wheel-drive, 4-passenger, 2-door sedan

Price as tested: \$6000 (1966, estimated; base: \$4585)

#### ENGINE

Туре	V-8, iron block and heads
Bore x stroke 4.13 x 3	.98 in, 104.8 x 101.1mm
Displacement	425 cu in, 6967cc
Compression ratio	10.5:1
Carburetion 1x	4-bbl Rochester Quadrajet
Emissions controls	none
Valve gear	pushrods, hydraulic lifters
Power (SAE gross)	385 bhp @ 4800 rpm
Torque (SAE gross)	475 lb-ft @ 3200 rpm

#### DRIVETRAIN

Transn	nission		3-speed automatic										
Final-d	rive ratio		3.21:1										
Gear	Ratio	Mph/1000 rpm	Max. test speed										
1	2.48	10.4	52 mph (5000 rpm)										
11	1.48	17.4	87 mph (5000 rpm)										
III	1.00	25.7	122 mph (4750 rpm)										
DIMEN	ISIONS A	ND CAPACITIES											
Wheelt	base		119.0 in										
Track,	F/R		63.5/63.0 in										
Length			211.0 in										

Length 211.0 in
Width
Height
Ground clearance 5.0 in
Curb weight
Weight distribution, F/R 61.1/38.9%
Fuel capacity
Oil capacity 6.0 qt
Water capacity17.5 qt

CH			

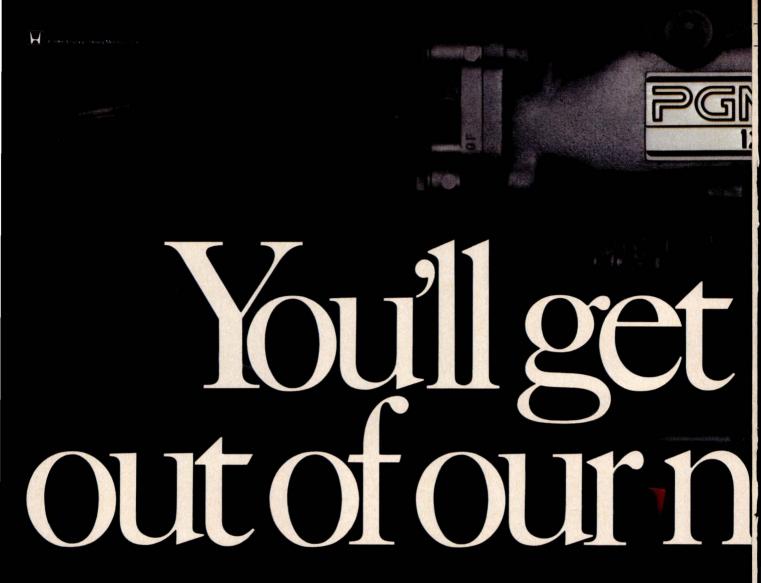
Type       three-quarter-length frame with rubber-isolated body         Body material	CHASSIS/BODT
Body material	Type three-quarter-length frame with
INTERIOR         SAE volume, front seat       54 cu ft         rear seat       44 cu ft         trunk space       15 cu ft         Front seats       bench         Seat adjustments       fore and aft, front height,         rear height       General comfort         General comfort       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         R:       rigid axle, semi-elliptic single-leaf springs         STEERING       Type         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	rubber-isolated body
INTERIOR         SAE volume, front seat       54 cu ft         rear seat       44 cu ft         trunk space       15 cu ft         Front seats       bench         Seat adjustments       fore and aft, front height,         rear height       General comfort         General comfort       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         R:       rigid axle, semi-elliptic single-leaf springs         STEERING       Type         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	Body material
SAE volume, front seat       54 cu ft         rear seat       44 cu ft         trunk space       15 cu ft         Front seats       bench         Seat adjustments       fore and aft, front height, rear height         General comfort       poor fair good excellent         Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         F:       rigid axle, semi-elliptic single-leaf springs         STEERING       7ype         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         F:       11.0 x 2.0-in finned drum         Power assist       .vacuum	
SAE volume, front seat       54 cu ft         rear seat       44 cu ft         trunk space       15 cu ft         Front seats       bench         Seat adjustments       fore and aft, front height, rear height         General comfort       poor fair good excellent         Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         F:       rigid axle, semi-elliptic single-leaf springs         STEERING       7ype         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         F:       11.0 x 2.0-in finned drum         Power assist       .vacuum	INTERIOR
rear seat       44 cu ft         trunk space       15 cu ft         Front seats       bench         Seat adjustments       fore and aft, front height,         rear height       rear height         General comfort       poor fair good excellent         Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         R:       rigid axle, semi-elliptic single-leaf springs         STEERING       Turns lock-to-lock         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       F:         F:       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	
trunk space       15 cu ft         Front seats       bench         Seat adjustments       fore and aft, front height, rear height         General comfort       poor fair good excellent         Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         F:       rigid axle, semi-elliptic single-leaf springs         STEERING       Type         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       F:         F:       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	
Front seats       bench         Seat adjustments       fore and aft, front height, rear height         General comfort       poor fair good excellent         Fore-and-aft support       poor fair good excellent         Events       poor fair good excellent         SUSPENSION       F:         F:	
Seat adjustments       fore and aft, front height, rear height         General comfort       poor fair good excellent         Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         F:       ind, unequal-length control arms, torsion bars, anti-roll bar         R:       rigid axle, semi-elliptic single-leaf springs         STEERING       Jype         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       F:         F:       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	
rear height General comfort	
General comfort       poor fair good excellent         Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       F:         F:	Seat adjustments fore and aft, front height,
Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       poor fair good excellent         F:	rear height
Fore-and-aft support       poor fair good excellent         Lateral support       poor fair good excellent         SUSPENSION       poor fair good excellent         F:	General comfort
Lateral support       poor fair good excellent         SUSPENSION       F:         F:	
SUSPENSION         F:      ind, unequal-length control arms, torsion bars, anti-roll bar         R:      rigid axle, semi-elliptic single-leaf springs         STEERING         Type      recirculating ball, power-assisted         Turning circle curb-to-curb       43.0 ft         BRAKES         F:	
F:      ind, unequal-length control arms, torsion bars, anti-roll bar         R:      rigid axle, semi-elliptic single-leaf springs         STEERING       Type         Type      recirculating ball, power-assisted         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	Lateral support
F:      ind, unequal-length control arms, torsion bars, anti-roll bar         R:      rigid axle, semi-elliptic single-leaf springs         STEERING       Type         Type      recirculating ball, power-assisted         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	CHEDENCION
anti-roll bar         R:       rigid axle, semi-elliptic single-leaf springs         STEERING         Type       recirculating ball, power-assisted         Turning circle curb-to-curb       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       F:         R:       11.0 x 2.8-in finned drum         Power assist       .vacuum	
R:       rigid axle, semi-elliptic single-leaf springs         STEERING       Type         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	
STEERING         Type       recirculating ball, power-assisted         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	
Type       recirculating ball, power-assisted         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	R: rigid axle, semi-elliptic single-leaf springs
Type       recirculating ball, power-assisted         Turns lock-to-lock       3.5         Turning circle curb-to-curb       43.0 ft         BRAKES       11.0 x 2.8-in finned drum         R:       11.0 x 2.0-in finned drum         Power assist       .vacuum	
Turns lock-to-lock         3.5           Turning circle curb-to-curb         43.0 ft           BRAKES         11.0 x 2.8-in finned drum           R:         11.0 x 2.0-in finned drum           Power assist         .vacuum	STEERING
Turning circle curb-to-curb         43.0 ft           BRAKES         F:         11.0 x 2.8-in finned drum           R:         11.0 x 2.0-in finned drum           Power assist         .vacuum	Type recirculating ball, power-assisted
Turning circle curb-to-curb         43.0 ft           BRAKES         F:         11.0 x 2.8-in finned drum           R:         11.0 x 2.0-in finned drum           Power assist         .vacuum	Turns lock-to-lock
BRAKES           F:	
F:         11.0 x 2.8-in finned drum           R:         11.0 x 2.0-in finned drum           Power assist         .vacuum	
F:         11.0 x 2.8-in finned drum           R:         11.0 x 2.0-in finned drum           Power assist         .vacuum	PRAKES
R:11.0 x 2.0-in finned drum Power assistvacuum	
Power assistvacuum	
WHEELS AND TIRES	Power assistvacuum
WHEELS AND TIRES	
Wheel size 6.0 x 15 in	Wheel size 6.0 x 15 in
Wheel type stamped steel	Wheel type stamped steel
Tires Eirestone Dolux Champion 9 95 15	Tires Firestone Delux Champion, 8.85-15
	Thes Thestone Delux onampion, 0.05*15

#### CAR AND DRIVER TEST RESULTS

Test inflation pressures, F/R.

ACCELERATION Seconds	Fade none moderate heavy
Zero to 30 mph 2.9	Front-rear balance poor fair good
60 mph 8.2	and the second
100 mph 22.9	COAST-DOWN MEASUREMENTS
Top-gear passing time, 30–50 mph 4.4	Road horsepower @ 30 mph 8 hp
50–70 mph 5.4	50 mph 21 hp
Standing ¼-mile	70 mph
Top speed	
	FUEL ECONOMY
HANDLING	C/D observed
Roadholding, 300-ft-dia skidpad 0.61 g	A CARL CONTRACTOR OF A CARL
Understeerminimal moderate excessive	INTERIOR SOUND LEVEL
	Idle 50 dBA
BRAKING	Full-throttle acceleration
70-0 mph @ impending lockup 324 ft	70-mph cruising
Modulation none	70-mph coasting

24/24 psi





Open the door. You'll see power windows. And power mirrors. They are new. Try the driver's seat. It will adjust everyway but loose. It's new. Grab the steering wheel. Just off your right thumb is the cruise control switch. New. Turn your attention to the dash panel. Nested there is one of our very best AM/FM



# a big kick ewinterior.

HONDA MOTOR CO.

stereo cassette players with a graphic equalizer. Close by it you'll find the air conditioning controls. Overhead is the familiar power Moonroof. And beneath your feet rests thick pile carpeting. Reach for the hood release. Within its interior is a new 2.0 liter engine with Honda programmed fuel injection. This is the new Prelude Si. Before there was only one Prelude. Now there are two. Put your foot in it.



# CAMEL LIGHTS It's a whole new world.

Today's Camel Lights, unexpectedly mild.

Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health. 20 FILTER CIGARETTES

CAMEL LIGHTS

> LOW TAR CAMEL TASTE

# Honda Accord SE-i

#### The final bow for Honda's second-generation mini-Mercedes.

• Veterans at American Honda still muse about the wild days of the mid-1970s, when Ford and General Motors were buying up so many of the wondrous new Accords that they were beginning to dig into the regular dealer allotments. The brilliant hatchbacks and sedans were being hauled to places like Dearborn and Warren, where they were dissected in search of ways to create counterfeits under such labels as Escort, Lynx, Cavalier, J2000, Skyhawk, Firenza, and Cimarron. Whether the secrets of the Accord were successfully plumbed by the boys in Detroit can be debated, but it cannot be disputed that the vehicle under examination was a watershed automobile. Like the Model T and the Volkswagen Beetle before it, the Accord was so special that



it altered the ways in which cars would be built and sold.

The Accord was Honda's second big winner in three years. The hunchbacked little Civic, introduced in 1973 as a brilliant update of the Austin Mini, was the first real automobile built by the famed motorcycle manufacturer. Like its larger successor, the Civic sparkled with quality and innovative engineering. The pair from Hamamatsu were among the most important automobiles produced in the turbulent Seventies. They forced every manufacturer in the world to rethink their product lines and to develop the kind of small, efficient, useful automobiles that now dominate the world markets. Today there is not a major mainstream car builder that does not sell its own version of the Honda Accord, whether or not it cares to admit it.

It is hard to believe how quickly Honda moved once it got serious about manufacturing automobiles. The competition had barely adjusted to the presence of the three-door Accord when a dazzling little four-door arrived-a car that was incessantly described as a miniature Mercedes-Benz. The jewel-like Prelude coupe was introduced next. Then came a new, upsized, and more expensive line of Accords in 1981, along with a giant assembly plant in Marysville, Ohio. An outburst of brash little Civic wagons, demi-vans, and shirtpocket sports coupes followed. In keeping with its motorcycle-manufacturing traditions, which seemed to demand that Honda spit out a revolutionary new bike about every fifteen minutes, the carmaking arm of the company has been generating daredevil concepts with ever-increasing speed. And it appears that this business has only just begun.

In this sense, the Accord we're examining here is something of a graybeard, although that is about to change. With an allnew model due on these shores this fall, it seems appropriate that we take a final look at the second-generation effort, a car that has served the Japanese trade balance and a multitude of customers so well.

Honda calls it SE-i. (In attempting to decipher the garble of the initial wars, one speculates that Honda has borrowed the "SE" from the old Mercedes-Benz designation for "fuel-injected sedan" and added a lower-case "i"—which also means "injected"—for good measure.) The SE-i is the ne plus ultra of Hondas, a car that has shed the well-rounded nature of the original Accord and replaced it with a contemporary plethora of gadgets. With the ex-

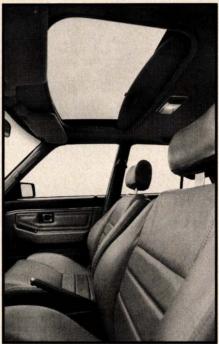
AUGUST 1985

ACCORD SE-i



ception of power seats and a digital dash, the SE-i is adorned with every electrohydraulic gewgaw, from automatic door locks to a power sunroof (with retractable screen) to a lighted vanity mirror. The Accord SE-i is, in the vernacular of any Pontiac salesman worth his houndstooth sport coat, "loaded." You've got your A/C, your PS, your PW, your cruise control, your rear-window defroster, your power mirrors, your leather seats, your alloy wheels, and your four-speaker stereo standard. And you've got your base sticker just a few bucks under \$13,000. This ain't no lowball Civic, baby. Strictly an uptown Honda, and with a price tag to match.

It would be out of character, however, for Honda simply to load a normal Accord with every power option known to man and pawn it off under a new label. There has to be more, and in the case of the SE-i, the bonus is a fuel-injection tweak on the standard SOHC 1.8-liter four-cylinder engine. Power output has been increased from 86 to 101 hp, and torque is up from 99 to 108 pounds-feet. Given a curb weight of 2469 pounds, 101 Honda horses turn the Accord into a serious performer. Proper use of the silky five-speed gearbox and the impressive 6300-rpm redline will produce 0to-60 times of just under ten seconds and turn the Accord into a legitimate urban guerrilla when necessary. And the threevalve, electronically injected engine is sufficiently torquey to haul four passengers along a level Interstate in fifth gear at 75 to



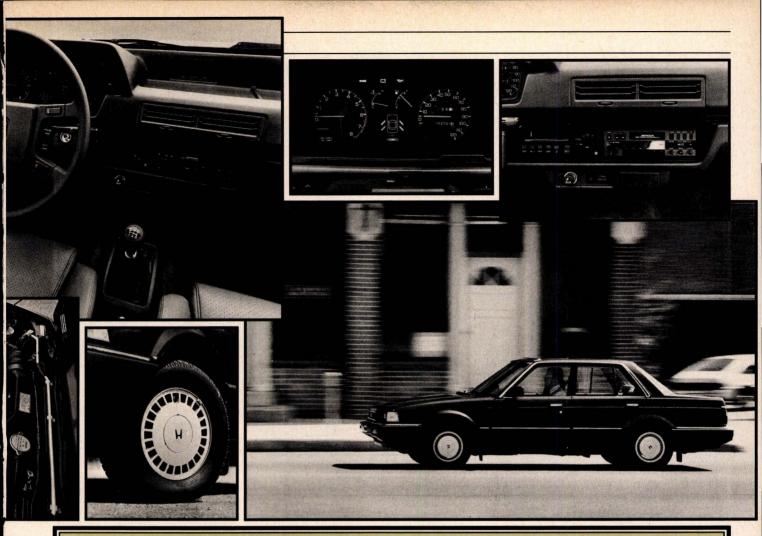
**CAR**<sup>M</sup>**D**RIVER

80 miles per hour with a minimum of wind noise and bother.

But make no mistake: Honda did not intend the SE-i for the sports-sedan market, and it succeeded in avoiding that target by a wide margin. There is a soft, almost genteel feel about the car, enhanced by power steering that is feathery at low speeds and by an anesthetized suspension that would make an Oldsmobile ride-and-handling engineer green with envy. Imprudent applications of power in slow corners can chirp the inside front tire and evoke faint memories of the torque-steer evils of earlier fwd machines. The relatively ordinary disc/drum brake combination generates only fair results, due to a bias imbalance that favors the rear axle. The Accord SE-i seems to be adequately shod with its Michelin MX L 185/70R-13 radials, but energetic cornering quickly degenerates into the traditional front-wheel-drive understeer, and the wide rubber appears to be of little assistance.

As we have said, though, this is a mainstream sedan, and Honda has not become the producer of the best-selling, most prestigious subcompacts in the nation by catering to a small claque of high-rev nuts. The emphasis remains on comfort and Kiwanian perceptions of power-assisted utility, not on tigerish maneuverability and cornering. (For the latter characteristics, Honda offers the CRX Si.) The Accord can, however, be employed as a solid highway cruiser. There is plenty of power, as noted; sufficient room for four adults, provided those assigned to the back seats have never played in the NBA; and luggage space that is exceptional for a car of this size. Full points go to Honda for offering a 15.8-gallon fuel tank. This is substantially larger than the fuel cells of the direct competition, such as the Toyota Camry (13.8 gallons), the Nissan Stanza (14.3 gallons), and the GM J-cars (13.6 gallons). Combined with real-world highway consumption of more than 25 mpg, 400-mile runs between gas stations are not impossible. That is, if your back can stand it. Six-footers will find the front seats skimpy, with low backs and insufficient thigh support for long-distance driving.

While hard-core door slammers will never confuse the coupling of a Honda latch



## Number One in '88?

#### Toyota's still out front, but Honda's coming up fast.

• The Honda Motor Company, perhaps the most innovative and independent of Japan's automakers, has a lofty goal for its American Honda subsidiary: it wants it to surpass the giant Toyota Motor Company as the leading Japanese automotive power in the U.S. by 1988.

Last year Honda passed the Nissan Motor Company to grab the numbertwo slot in the States, with combined sales of imports and U.S.-built Accords totaling more than 500,000—an impressive performance for a company that sells only three basic car lines here (Accord, Civic, and Prelude). Even more impressive, Honda's aggressive strategy calls for annual U.S. sales to hit 700,000 by 1987 and perhaps 900,000 by 1990, compared with Toyota's 558,000 U.S. sales in 1984.

Honda has a two-pronged battle plan for the States: Next April, it will launch a series of new models here through an upscale sales network called Acura (pronounced "Ak-yer-uh"), similar to Ford's Merkur franchise, that could provide 150,000 to 200,000 additional sales a year by 1988–89. And in 1987, it will double the annual capacity at its Marysville, Ohio, assembly plant to 300,000 units and add Civics to the line there.

The first of the Acura models to be unveiled in April will be the Integra hatchback, a sporty subcompact based on the redesigned home-market Quint. The Integra is slightly smaller than the Accord and will be sold in two- and fourdoor styles, with prices starting at around \$12,000. Power will be supplied by the fuel-injected, DOHC, sixteenvalve 1.6-liter four that powers Japan's home-market Civic Si and CR-X Si.

An April debut is also planned for Honda's HX sedan, a luxury-sports model developed in cooperation with Austin Rover and aimed squarely at the Audi-BMW crowd. Priced at around \$20,000, the HX will share a new 2.4liter V-6 with a high-performance, midengined two-seater that will join the Acura network in 1988.

The Acura models will go on sale initially through about 50 dealers; another 100 dealers will be appointed by the end of the year. Honda hopes to sell 45,000 of the cars in 1986 but predicts sales could increase fourfold as the dealer network expands to about 600.

Meanwhile, Honda has redesigned its best-selling Accord for the 1986 model year. The new series, code-named SE-3, will offer three body styles: hatchback, notchback sedan, and "tall boy" wagon. The new Accord will have a wheelbase about four inches longer than the current model and an overall length up seven inches. Power will come from a 2.0liter version of the Integra's DOHC 1.6; the bigger engine may be shared with the Prelude in '87.

The Prelude, next in line for an overhaul, will be redesigned in 1988, and the Civic is slated for a major face lift about the same time. There is also talk in Japan of selling the '87 replacement for the City hatchback in the States.

Honda's master plan had been contingent on the expiration of import quotas, which had limited its shipments from Japan to about 370,000 cars a year. Now that the quotas have been lifted, Honda could easily ship us up to 600,000 cars a year by 1988, and the Marysville expansion will give it another 300,000.

By then, Honda may have done more than overtake Toyota. It could be firmly entrenched behind Chrysler Corporation as the number-four U.S. automaker. —Paul Lienert ACCORD SE-i





with that of a BMW or a Mercedes, the SE-i is permeated with that traditional air of Honda small-car perfection. Everything fits. Everything works. Everything shimmers. Honda has carried the visual trick of "perceived quality" to a high art, and demand for the new cars, plus the vigorous used-car market, is testimony to the fact that Honda beauty is not skin-deep.

When the second-generation Accord was introduced, its sharply profiled lines were among the cleanest on the market. But now the highways are clogged with imitators, and it takes the sharp eye of a small boy to distinguish the tail of an Accord from that of a Camry or a Stanza or an Isuzu I-Mark or a Mitsubishi Galant or a Mazda 626 or even a Mercedes 190E. That the Accord inspired such imitation is commendable, but now the original is nearly obscured by the copycats. Therefore, one suspects that the new Accord will embody a great leap forward, as has been the case with so many of the recent Honda offerings.

For the time being, we are left with the SE-i, the world's most perfect little fourdoor—the car with which all those GM and Ford engineers frosted their dreams when they were trying to create the Escort and the J-cars. Yes, what we have here is the ultimate Buick Skyhawk: a flawless little Astudent machine that does everything well, except make you care. —Brock Yates



#### COUNTERPOINT

• Beware of Accords bearing leather. Your standard-issue Accord is still a fine piece of work, even though it is beginning to lose its edge in the marketplace. But value is what this car has always been about, and at this lofty price cowhide and all—the goodness-to-dollar ratio is blown all out of whack.

Despite the updating and the refining that go into an SE-i, you can tell that the basic design is starting to age. The Accord's handling and ride comfort are clearly no longer at the very front of the small-sedan league. Honda's own Civic line now surpasses the Accord in space efficiency, and its boxy shape seems a little too familiar. In almost every way, several of the Accord's competitors are pressing in.

This situation points up exactly what this company is made of. No sooner do I begin to detect the slightest dimming in the Accord's aura than comes the announcement that an all-new one will be along in a couple of months. Some car companies don't know how to mess up. —Rich Ceppos

At first blush, a \$13,000 Honda Accord seems a bit pricey, but the SE-i version justifies its cost by providing a satisfying blend of European, Japanese, and American automotive virtues. The new fuel-injected engine develops the power of a strong autobahn runner with the silky smoothness and refinement typical of Honda engines. The gearbox shifts with characteristic Oriental delicacy and precision, the steering and the brakes operate with Germanic accuracy and linearity, and the ride is American-style absorbent.

Inside, the SE-i offers a full dose of

American power assists, along with the usual Japanese conveniences. Yet these potentially decadent features are balanced by the Accord's continental interior styling. The controls and the instruments are uncluttered and logically arranged, and the luxury is conveyed by beautiful hand-stitched leather upholstery. Together, these aspects result in an unusually pleasant car, one that's easily worth its premium price.

-Csaba Csere

Can it be? Genuine stitching on the door panels of the Accord SE-i! Amazing: finely stitched door panels from Japan, the land that brought us plastics on a platter, from meticulously extruded artificial entrees for restaurant windows to less-than-convincing stitching in auto trim panels meticulously extruded from the hydes of common Naugas. In opting for genuine leather in the SE-i, Honda has put a few Naugas out to pasture, and I'm for it.

Honda's seats are okay, but they need a wider range of adjustments. The driving position leaves my legs bent too much and my arms stretched too far, not the best starting point for caressing variable-assist steering that's too light at low speeds and too touchy at all speeds. It overreacts to inputs, bumps, and throttle alike. The suspension and the brakes are a touch spongy, too, but more linear. The five-speed is fine, and the fuel-injected engine is healthy and free of flat spots, pulling with a smooth, eager whine.

The SE-i is not a grand-touring sedan, but it's a good one, and it makes any number of competitors look and feel less good. —Larry Griffin



# THIS MAN GETS A NEW CAR EVERY DAY.

It doesn't take a lot of money. Just a brick, a basic knowledge of wiring and the desire to be part of the most profitable, most efficiently run business in the country.

Auto theft.

Fact is, every 31 seconds a car gets stolen. Stereos disappear even faster. And contrary to popular opinion, it isn't always sports cars, it isn't always random and it isn't always thugs that look like this.

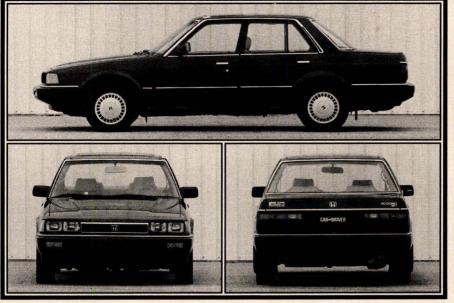
That's why we're introducing Pioneer Mobile Security Systems, a complete line of sophisticated car alarms featuring advanced microprocessor AUGUST 1985

technology. They're backed by our nationwide service network and come in a full range of styles and prices. Everything from our most basic system to one that actually rolls up your windows, locks your doors\* and arms itself at the press of a button.

For the location of your nearest dealer, call (800) 447-4700. And protect yourself with a Pioneer Mobile Security System. Because if you don't, no one else will.



#### ACCORD SE-i



Vehicle type: front-engine, front-wheel-drive, 5-passenger, 4-door sedan

#### Price as tested: \$13,124

Options on test car: base Honda Accord SE-i, \$12,945; freight, \$179.

Standard accessories: power steering, windows, locks, and sunroof, A/C, cruise control, rear defroster

Sound system: Honda AM/FM-stereo radio/cassette, 4 speakers

#### ENGINE

Type 4-in-line, i	
Bore x stroke 3.1	5 x 3.58 in, 80.0 x 91.0mm
Displacement	112 cu in. 1830cc
Compression ratio	
Fuel system H	
Emissions controls 3-way	catalytic converter, feedback
	fuel-air-ratio control, EGR
Valve gear belt-driven s	
	per cylinder
Power (SAE net)	101 bhp @ 5250 rpm
Torque (SAE net)	108 lb-ft @ 2500 rpm
Redline	6300 rpm
DRIVETRAIN	
Transmission	
Final-drive ratio	

Gear	Ratio	Mph/1000 rpm	Max. test speed
1	3.18	5.1	32 mph (6300 rpm)
11	1.94	8.4	53 mph (6300 rpm)
III	1.25	13.0	82 mph (6300 rpm)
IV	0.93	17.5	106 mph (6050 rpm)
V	0.76	21.5	104 mph (4850 rpm)

#### DIMENSIONS AND CAPACITIES

DIMENSION					-			~	•	22		•												
Wheelbase	•			 				Į.									 				96	.5	ir	ı í
Track, F/R		ċ				-		)					1				5	6	9	1/	55	.9	ir	1

Length	175.4 in
Width	
Height	
Frontal area	
Curb weight	
Weight distribution, F/R	
Fuel capacity	
CHASSIS/BODY	
Typeunit constr	uction with 1 rubber-isolated crossmember
Body material	welded steel stampings
INTERIOR	
SAE volume, front seat	48 cu ft
rear seat	
trunk space	12 cu ft
Front seats	
Seat adjustments	fore and aft, seatback angle
A	

#### SUSPENSION

F: ..... ind, strut located by a control arm, coil springs, anti-roll bar R:..... ind, strut located by 1 lateral link and 1 trailing link, coil springs, anti-roll bar

#### STEERING

Туре	r	a	C	k.	·a	I	IC	-	p	in	ic	r	۱,	p	0	w	e	r-:	as	si	st	ed
Turns lock-to-lock																					2	.6
Turning circle curb-to-curb	• •				•	•	•		•	• •	•	•	•			•			3	4	.1	ft

#### BRAKES

#### WHEELS AND TIRES

 Wheel size
 5.0 x 13 in

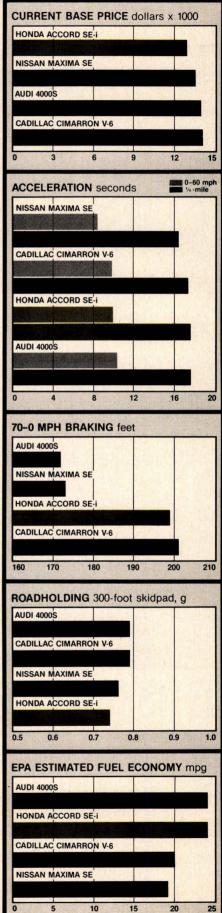
 Tires
 Michelin MX L, P185/70R-13

Modulation..... poor fair good excellent

#### CAR AND DRIVER TEST RESULTS

ACCELERATION	Seconds
Zero to 30 mph	3.2
40 mph	
50 mph	
60 mph	
70 mph	
80 mph	
90 mph	
Top-gear passing time, 30-50 mph	
50-70 mph	
Standing ¼-mile1	7.4 sec @ 77 mph
Top speed	106 mph
HANDLING	
Roadholding, 300-ft-dia skidpad	074 0
Understeerminimal	
BRAKING	
70-0 mph @ impending lockup	199 ft

3.2	Fade none moderate heavy
4.9	Front-rear balancepoor fair good
7.0	
9.9	COAST-DOWN MEASUREMENTS
13.7	Road horsepower @ 30 mph 5 hp
19.0	50 mph 14 hp
27.8	70 mph
11.5	
13.1	FUEL ECONOMY
mph	EPA city driving 24 mpg
mph	EPA highway driving
	C/D observed 23 mpg
74 g	INTERIOR SOUND LEVEL
sive	Idle 47 dBA
	Full-throttle acceleration
	70-mph cruising
99 ft	70-mph coasting
-	



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EEDS THE

# All these winners go with winners: Motorcraft parts.

TEAM ROUSH PROTOFAB

NOtorcrar

Ricky Rudd's NASCAR Motorcraft Thunderbird

Wally Dallenbach Jr. John Jones IMSA Mustang GTO

000 FYEAR

Intorcraft

Motorcraft

Rickie Smith's Motorcraft Pro Stock Thunderbird

MUSTANG

GOODTV

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Motorcraft

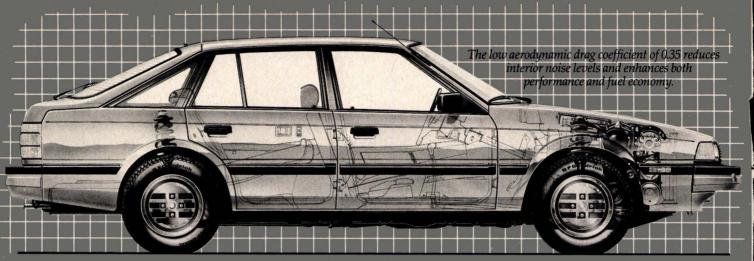
Willy T. Ribbs Chris Kneifel SCCA Trans-Am Mercury Capri

Motorcraft

Motorcraft

SCCA

Ford Carlite BBS



# **The Mazda 626 Touring Sedan.** On paper, it's world class. On an Ozark Mountain highway, it's a world apart.



Unknown ages ago an Ozark princess took a stroll on a wonderful Indian Summer

day. Over softly rounded hills she walked, stepping easily, following the breeze through misty morning valleys, along narrow ridges, to hilltops for views that seemed to extend to the end of eyesight itself. She left only the old Ozark hills to tell of her passing.

And her trail stayed. Today, you can tour the Ozarks where once a princess might have walked. But you'll need a special car to match folklore, court magic, follow superstition.

Like the Mazda 626 Touring Sedan. It is, literally and quite believably, with no peer. Magic of its own.

When Mazda engineers set pen to paper for the Touring Sedan, no prior classification existed. The goal was tough, no compromise allowed: Exquisite, immaculate handling feel and road manners—in a sedan that also achieves an unprecedented level of and-pinion steering. Asymmetrical geometry in front for precisely equal steering feel to the left or right. Twin trapezoidal links in the rear

ity extends the limits of imagination. A large hatchback opens high and wide, split folding rear seatbacks will lay flat together or individ-



design versatility.

There were no easy solutions. But with innovation, imagination and care, they made that goal with brilliance.

The Touring Sedan represents technological state-of-the-science: An overhead camshaft engine. Fully independent suspension. Rackcontribute to exceptional directional stability. Equal-length driveshafts eliminate torque steer. Mazda's Electronic Variable Shock Absorbers allow adjustment of damping rates by a dashboard push button.

The Touring Sedan's chassis pushes the frontier of science; its versatilually. There's room for practically anything any tour might require.

Cloaking all this is a shape with superb aerodynamics, tuned in a wind tunnel to deliver a truly efficient Cd of only 0.35, a number typically associated with sports cars.

Without question, the 626 Touring Sedan is The hatchback opens up, the split rear seatbacks fold down singly or together, and the Touring Sedan will swallow an amazing variety of travel gear. The Touring Sedan's advanced front-drive powertrain features an OHC engine with snappy response and a broad torque curve, and a five-speed gearbox is standard eauivment.

a stunning combination of handling, versatility, and aerodynamic efficiency that defines its own special kind of travel.

And perhaps nowhere is there a tour so special as to search

B

Negative scrub radius contributes to exceptional directional stability, even during hard braking.

the trail of an Ozark princess, to follow a path that man paved and named Arkansas Highway 7. There's special magic here, for sure.

Highway 7 meanders, wriggles, curls, sashays, dances and strolls its way through and along these old hills. There's no dare to travel here; the Ozarks, like always, invite you along easily. Ornery old razorback hogs may be hereabouts. And some of those hollers are so far back in deep woods folks have to pipe in daylight, they say. But the Ozark highways track a course through those comfortable old hills that's as light and gentle as a friendly good morning

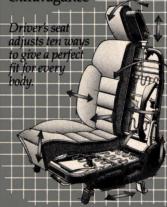
A. Twin trapezoidal link rear suspension provides highly predictable handling behavior. And Electronic Variable Shock Absorbers (EVSA) allow adjustment of damping rates at the touch of a dashmounted button.

> hello in the soft, still air of a warm Arkansas dawn.

And the Touring Sedan runs with these meanderin' roads, flows along with them just as



smeeeooth as warm honey pours on an Indian Summer day. Smeeeooth. From Hot Springs to Jessieville, Russellville to Sand Gap, on to Harrison and Highway 62 for the Victorian extravagance



of Eureka Springs. It's warm honey drivin' and no doubt about it.

Because the 626 Touring Sedan will follow your newest whim or an old road's curves and hills with no more than mere suggestions. And maybe, if the mist hangs in the holler just right, and the sun pokes through a little just so, and it's real quiet, and there's just a *touch* of easy breeze, you might hear a soft, sweet voice whisperin' through the Ozark woods.

With the Touring Sedan, you can follow that princess wherever she goes. 5-Door Touring Sedan ... \$11,245" Luxury Sport Coupe. . . \$10,595 Luxury Sport Sedan . . . \$10,245 Deluxe Sport Coupe. . . \$8845 Deluxe Sport Sedan . . . \$8495

#### MAZDA 626 TOURING SEDAN STANDARD FEATURES

5-speed overdrive transmission • 2-litre OHC engine • Steel-belted radials • Rack-and-pinion steering • Power-assisted front disc brakes • Front and rear anti-sway bars • 10-way adjustable driver's seat • Rear window wiper/ washer • ETR AM/FM/ Cassette deck/power antenna • Dual electric sideview mirrors • Power windows • Cruise control • Power door locks • Tachometer • Trip odometer

- Full cut-pile carpeting
- Halogen headlamps
- 26 est. city mpg/32 est. hwy. mpg\*\*

#### Experienced drivers buckle up.

\*Manufacturer's suggested retail prices. Actual prices set by dealer. Taxes, license, freight, pptions (tires/al. wheels shown) and other dealer charges extra. Prices may change without notice. Availability of vehicles with specific features may vary. \*\*EPA estimates for comparison. Your mileage may vary with trip length, speed and weather. Highway mileage will probahub the lass.



# 1986 Audi 5000 Turbo Quattro

• There's no rest for the weary in the automobile business. Take the case of Audi. In the past ten years this firm has pulled itself out of anonymity and become almost a household name. It now exerts a force in the automotive marketplace far greater than its size or sales would suggest. Like Smith Barney, Audi did it the old-fashioned way: it *earned* it, building cars by which others are judged.

After a string of stunners like the original Quattro Turbo, the 5000S, the Coupe GT, the 4000S Quattro, and the 5000S Turbo, you'd think Audi might ease up a bit. But uh-uh. The only way to keep a hard-won reputation is to live up to it. So right on the coattails of its other successes comes a new benchmark from Ingolstadt: the 5000 Turbo Quattro.

What Audi has done this time around is take everything it's learned about high-performance sedans and apply it to the company flagship, the 5000S Turbo. You've seen all the building blocks before on other Audis: the low-drag shape with the skintight look; the turbocharged, intercooled five-cylinder engine; the full-time fourwheel-drive system; and the anti-lock brakes. The 5000 Turbo Quattro, however, is the first car sold in America to offer all this good stuff in one package.

And this amounts to only half its attraction. What makes the 5000 Quattro great is not the sum of its parts, but the complete whole. The real reason that it warms our editorial heart is the effortless, elegant way it makes its technology work for you. This is one car that can do it all, folks. In fact, its overall performance envelope is so broad, the 5000 Turbo Quattro stands alone among luxury sedans. That's what benchmarks are all about.

The new Audi's lead attribute, of course, is its full-time four-wheel drive. By now, there's not much argument about what allwheel drive can and can't do for a passenger car. Four-wheel drive provides the added dimension of superior bad-weather and bad-road traction—especially in a car with some horsepressure. You go in snow, and nobody pays the tow. When it comes to ultimate dry-road handling and roadholding—we're talking wide-eyed, tire-screaming, at-the-limit maneuvers—rear drive still has the edge. In this respect, front-wheel drive and fourwheel drive are about equal. As far as Audi's philosophical guru, Dr. Ferdinand Piëch, is concerned, the advantages of four-wheel drive outweigh its liabilities by so much that it's clearly the wave of the future. Four-wheel drive is already offered on no fewer than twelve Audi models in Europe. The same trend is now spreading through the U.S. models wearing the four interlocked rings.

Converting the 5000S Turbo to allwheel propulsion was easy in comparison with past efforts, according to Audi. The 5000 series was the first designed in Ingolstadt from the tires up to accept both frontand four-wheel drive. (This fall, a 4wd 5000 wagon will also be offered; the sedan debuts this summer as a 1986 model.) The basic pieces, including the locking center and rear differentials, are the same ones used on other Quattro models. Enough room was left under the 5000 from the outset to accept these components without cutting into interior space, trunk room, and fuel capacity.

A new independent rear suspension is

also part of the deal. The front-wheel-drive version's rigid rear axle has been replaced by a pair of long, T-shaped lower control arms, two short upper lateral links, and two tall coil-shock units. Most of these pieces replace the old hardware while using the original mounting point. The strut front suspension and the rack-and-pinion steering gear are virtually unchanged from the front-drive 5000 setup. Like its fwd brother, the 5000 Quattro is fitted with disc brakes at all four corners.

Step two in the making of the latest Quattro was an aerobics program for the motor. The newest-generation five-cylinder turbo starts at 2226cc, four percent larger than before. This is the same block found in the Coupe GT, and it benefits from twenty-percent-lighter pistons for greater smoothness. With this engine, Audi joins the multitude of carmakers now employing knock sensors and electronic boost control to tailor turbo-boost characteristics more precisely. As a result, the 5000 Quattro engine thumps out a respectable 158 hp at 5500 rpm and 166 poundsfeet of torque at 3000 rpm-up by 18 hp and 17 pounds-feet from the 5000S Turbo engine. This is still below the 175-hp output of the European Turbo engine, but the engineers are at least closing in. (As we go



to press, Audi hasn't decided whether it will implant this engine in the front-drive 5000S Turbo.)

Mated to this new powerplant is something we've longed for on every 5000S Turbo we've ever driven: a five-speed manual gearbox. Until now, the 5000 Turbo's low-end zip has been blunted by a not very efficient three-speed automatic, so a chance to choose from five ratios is a welcome relief. As a matter of fact, anyone wanting a 5000 Turbo Quattro with an automatic is out of luck. Audi won't be able to produce an automatic transmission that's compatible with the rest of the fourwheel-drive system until the 1987 model year at the earliest.

The 5000 Quattro's third techno gem is its Bosch anti-lock braking system. The basic design has been described in detail before on these pages, and the Quattro hasn't deviated much from the equipment used by Mercedes-Benz, BMW, and Porsche. The important components are wheelspeed sensors, a special master cylinder, and a central computer. When ABS senses impending tire lockup during braking, it modulates the hydraulic pressure to the wheel that's about to stop turning. For all but expert drivers, stopping distances should be shorter with ABS, and as long as the tires keep rolling, you don't lose steering control—an obvious benefit in emergency situations.

Race drivers spend their careers perfecting their hard-braking techniques. Now, thanks to ABS, any klutz who can mash a brake pedal can be an expert braker. Taken together, four-wheel drive and anti-lock brakes amount to one of the most important advances in car control—and safety in decades.

There are, however, two situations where ABS might actually work against you. According to Audi engineers, locking the brakes will stop you quicker on gravel roads and on roads covered with more than two inches of fresh snow. For these conditions, an ABS defeat switch is located on the dash face.

Of course, you've got to be able to get to the button in time if disaster strikes. "The only time I ever used it," confides Dr. Piëch, "was coming down a very steep, snow-covered hill very slowly, at the bottom of which was a hairpin turn. I had five, maybe seven seconds with nothing else I could do. It worked." An added safety feature is an amber warning light, located dead center in the instrument cluster, that reminds you when you've shut the ABS down. And every time you start the engine, the system automatically resets itself, so you can't forget to turn it on. Finally, whenever you lock the center and rear differentials—recommended only for getting yourself unstuck—ABS disengages. (Locking the diffs synchronizes all four wheels, making it impossible for the ABS computer to figure the differentials in wheel speeds—a must for proper anti-lock control.)

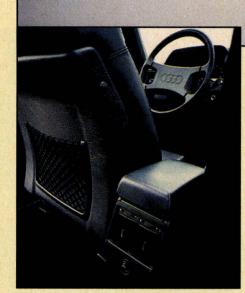
CAR=BRIVER

All of this sober-sided safety talk misses the point of how delightful the new 5000 Turbo Quattro is to drive. Even when road and weather conditions are just peachy, it's a sweetheart—maybe the nicest-driving Audi ever produced.

We say "maybe" because our exposure to it took place during the official two-day press preview in Colorado Springs—which is, for us, fairly unfamiliar territory. The fine-line judgments will have to wait until we've lived with one back at company HQ.

Still, our first impressions are strong ones. The new drivetrain, for instance, is almost everything we'd hoped for. The fwd 5000S Turbo tends to drag its feet coming off the mark, but not the Quattro. Even though the extra driveline equipment adds about 220 pounds, the engine's newfound

#### AUDI 5000 QUATTRO



muscle and five-speed gearbox pay big dividends. The 5000 Quattro is quick on its feet, with a 0-to-60-mph time of 8.2 seconds—an impressive 2.3 seconds faster to 60 than the 5000S Turbo. It's no slouch on the top end either, pulling all the way to 139 mph.

The powerplant's higher level of refinement is also evident from the first twist of the key. No Audi five-cylinder ever ran so smoothly. Up to 5200 rpm it sounds like a million bucks—which is to say it hardly makes any sound at all. From there to the 6500-rpm redline—well, let's call it a halfmillion. The high-rpm behavior isn't as silky as a Mercedes or BMW six, but it's still rich-sounding and a treat for the ears.

Scorching through the canyon roads



around Colorado Springs, the 5000 Quattro showed the confidence that makes novices and old hands alike drive better. This car's stability—in a straight line, carving turns, in hard braking, at any speed high or low—is nothing short of inspiring. Mile after mile at over 100 mph on deserted two-lane, it never bobbled. It's one of the best-handling big cars around.

Curiously, the ABS doesn't really come into play during hard driving on dry roads. That's because you've got to be using the brakes for all they're worth for it to step in, and even experts leave some margin on the street. Still, on the one or two occasions we called on it—once on a surprise patch of grit strewed across a hairpin—it worked as advertised. And it's always reassuring to know it'll keep you from flat-spotting your tires during hero-driver maneuvers.

## A Few Words from the Ace Hannu Mikkola on driving 4wd.

• Any computer nerd can tell you the problem with new technology: it's only as good as the user. Garbage in, garbage out. If you don't know what to do with the machine, it's not going to do anything for you.

So it is with high-performance fourwheel-drive cars. Until now they've been produced in limited numbers and have ended up in the garages of a fortunate few. Only a relative handful of drivers, many of them professional rallyists, have had a chance to discover and develop the techniques for extracting maximum performance from this new breed. Only they can control the machines.

With Audi spreading the all-wheeldrive faith ever further, we thought it was time to delve deeper into the art of fourwheel driving. So we got in touch with a leading expert, Hannu Mikkola, and pressed him for details.

In case you don't know, Mikkola is a professional rally driver, one of the best in the world. The 42-year-old Finn helped develop Audi's original Quattro Turbo 4wd rally car, which went on to change the face of international rallying. He won the World Rally Championship for Drivers in 1983. He has more outright victories than any other rally driver. Brilliance in, brilliance out.

As you might expect, Mikkola has had to develop some special moves to make the most of his 450-hp Quattro Sport rally car. In terms of pure handling goodness, he rates 4wd "worse than rear drive, but better than front drive" on dry pavement. On anything but dry tarmac, though, he says four-wheel drive is the only way to fly.

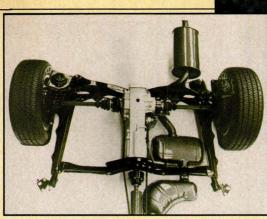
Mikkola makes howling flat out down roads and forest trails he's never seen before sound simple. "On asphalt I use a little left-foot braking. It gets the weight transfer on the nose and helps the turnin. It also keeps the boost up." This is like Joe Montana telling you all it takes is a little spin on the ball to throw a 50-yard touchdown pass.

"On the dirt or gravel roads, I use leftfoot braking all the time to turn the car. Sometimes I lock the wheels, in extreme cases, to help turn it."

Watching Mikkola putting this to the test on a paved racetrack, though, is not



so convincing. Part of the 5000 Quattro preview was held at the Pueblo Motorsports Park, where Mikkola gave rides around a short course. He demonstrated superb car control and remarkable speed, but a good Showroom Stock driver might question some of his racetrack techniques-like left-foot braking in the middle of a sweeper, which jerks the car sideways a bit too much for maximum exit speed. Such gross changes of direction might well keep a rally car on course as it hurtles down an unfamiliar mountain road outside Monte Carlo, but we're not convinced that you should try this on your favorite exit ramp. As for the effects of left-foot braking on loose surfaces, we're sure Mr. Mikkola knows what he's talking about.



T-shaped lower control arms and a rear differential make this 5000 an all-wheel-driver.

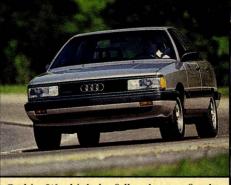
When you slip into the cruise mode, you'll notice that the Quattro is a very peaceful traveling companion. The ride is just right, and wind and engine noise are extremely low. The Quattro is also chock full of luxuries—leather upholstery, a tenspeaker stereo, electrically adjustable sport seats with position memory—and refreshingly free of gimmicks.

About the only faults we can find on first pass have to do with the Quattro's aesthetics. To anyone but the cognoscenti, this extra-special 5000 looks like all those of the two-wheel-drive persuasion. Aside from its flush rectangular headlamps (which cut the drag coefficient from 0.34 to 0.33) and a couple of discreet Quattro badges, it's pure

Mikkola also recognizes the importance of the ABS brakes for street cars and for the civilians who drive them. For his race car, however, he believes that ABS would be no help at all—especially since he must occasionally lock wheels on gravel roads. Besides, the race car's setup (it has no center differential) precludes the use of ABS anyway.

Mikkola's feelings about ABS hold up when I take my turn on the race circuit: there seems to be no advantage in forcing the ABS to come on in hard braking. If you hold the tires just below the threshold of lockup, you might need an extra few feet to slow down for a corner-but everything is calm and collected. Mash on the pedal, though, and the Turbo Quattro goes into a rumba, the brake pedal pulsing out a rapid counterbeat underfoot as it modulates the pressure to all four wheels. Suddenly it's busy behind the wheel, and it's hard to be accurate with the steering. This impression dovetails with what our engineer friends over in the Corvette development group said about the newfor-1986 Corvette ABS: no improvement in road-course times in the dry.

So chalk up another byte of information for the 4wd data bank. We'll interface again as soon as there is something new to report. -RC



Q-ship. We think the folks who pop for the high-tech model will want more spice.

Picking on the Quattro for such picayune shortcomings only goes to show you how far down the road of achievement it's come. The real shame is that Audi will import only 2500 of these beauties each year. Building benchmark cars is always difficult. Buying them, however, should never be. —*Rich Ceppos* 



#### COUNTERPOINT

• I'm coming around. Despite everything "Ferdy" Piëch and the Audi engineering department have told us, I have seen no reason to drive all four wheels of every car. Well-developed front- and rear-wheel-drive packages are plenty capable. Audi's existing front-wheeldrive cars could outhandle and "outfeel" its early four-wheel-drive cars. Then I snagged the current Quattro Turbo coupe and winged from Santa Barbara to Monterey and back on Highway 1 in one glorious afternoon, and I was dazzled by the car's ability to turn a short time into a great distance (and a great time).

Now I have inhaled Michigan in the fluid 5000 Turbo Quattro. It rides better than the fwd 5000 Turbo, is as silent as a catacomb, and has legs on it like Miss California. It does virtually everything right, though I wish it were as tight as a big Mercedes. For short-haul, workaday business, I'd still want a regular 5000S with the no-fuss automatic, but I'll take a Quattro Turbo coupe for a rip-and-tear and a 5000 Turbo Quattro for transcontinental work. Ferdy and the boys are on to something.

-Larry Griffin

It is unusual to find me uncomfortable in the driver's seat of a German car, but I find myself squirming and unhappy behind the wheel of this Audi. It is a superb car, an enormously competent car, but on a drive from, say, Philadelphia to Lake Tahoe, it will all finally boil down to whether the driver is comfortable or not. This driver is not comfortable. The front seats are too short. There is insufficient headroom for a six-plus-footer, due both to the seat height and to the invading presence of the sunroof. The American power-seat adjustments are ill-advised. Mercedes-Benz, BMW, and Porsche do it better. Finally, there is the matter of the GM air-conditioning compressor. We are accustomed to normally aspirated Audis almost stopping in their tracks when the air kicks in, but we really shouldn't feel the compressor's comings and goings in a car this powerful or this sophisticated.

Flawed greatness. -David E. Davis, Jr.

My Jaguar dreams are dimming.

After a little 9000-mile test drive in the new Audi 5000 Quattro, I know what I'll buy for the Lindamood family when I win the Lotto. I have yet to drive a four-door sedan that can match the 5000 Quattro's balance of style, power, comfort, room, and handling at *any* price, let alone one under \$30,000.

In One Lap of America, the 5000 Quattro traveled Interstates, two-lanes, and occasional dirt roads, vacuuming up the Great Plains, charging high into the Rockies, and crossing Death Valley with barely an upward nudge of the temperature gauges.

With its four-wheel drive and ABS, the 5000 Quattro was completely unperturbed in rain and sleet, through blinding snow, and over glare ice. Its ride was top-notch, with surprisingly neutral handling for a four-wheel-drive sedan. There were no oil additions or nervous moments along the way, no niggling irritants when the trip was over. The surprise bonus was a 26-mpg average for the 9000 miles.

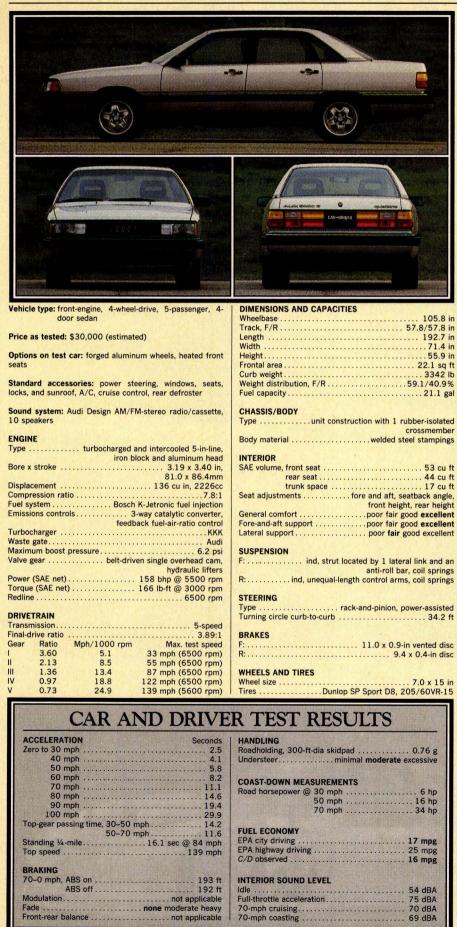
That's my idea of a family car. My mom probably wouldn't have minded one, either. —Jean Lindamood I.

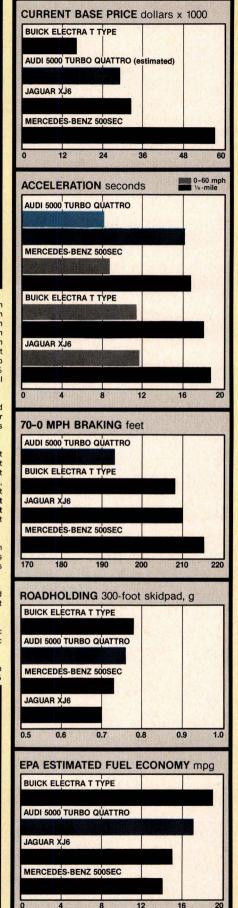
16 mg. "tar", 1.2 mg. nicotine av. per cigarette by FTC method.

Excellence. The best live up to it.

> Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

#### AUDI 5000 QUATTRO







In the four short years since Ford returned to Motorsports, our Sunday drivers and their race-prepared cars and trucks have established an enviable record.

Victories and a new World record

for Bill Elliott's Ford Thunderbird. Six races and six straight victories for the Motorcraft Ford Mustangs. Two NHRA National records for Bob Glidden's Pro-Stock Thunderbird. Two NHRA National records for Kenny Bernstein's Ford Tempobodied Funny Car. Four off-road Championships for Manny Esquerra's Ford Ranger. And, earlier this year, the potential of the Thunderbird convinced three-



Bill Elliott's Daytona 500-winning Ford Thunderbird.



Bob Glidden's record-setting Ford Thunderbird.



The record-setting Motorcraft Ford Mustang of John Jones and Wally Dallenbach Jr.



time NASCAR World Champion Cale Yarborough to come home again to Ford.

We feel these victories, and Cale's return, say a great deal about the basic design of our cars.

About their ability to manage airflow for decreased wind-resistance and improved handling.

Because out there, on the race tracks and off-road courses of America, we are competing against the best that America, Europe and Japan has to offer. But, as our Sunday drivers are proving, we have what it takes to be the best.

Now. And in the future.



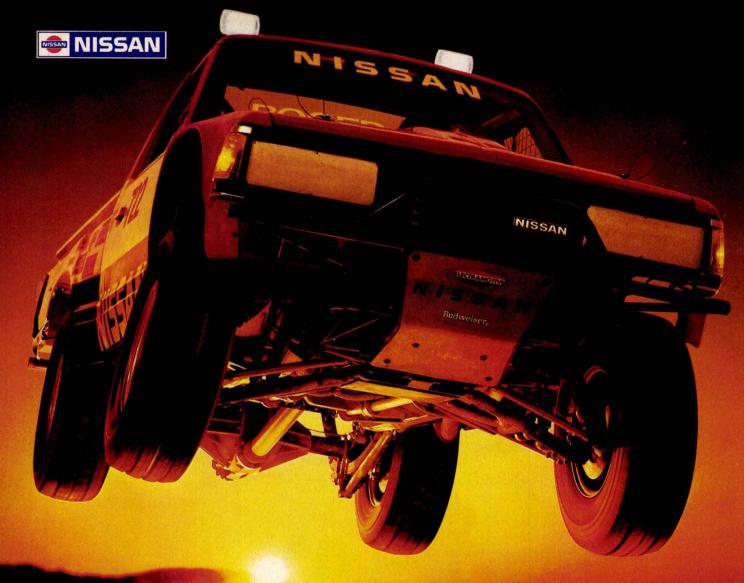
The Ford Thunderbird of three-time World Champion Cale Yarborough.



Kenny Bernstein's record-setting Ford Tempo.



Manny Esquerra's Championship-winning Ford Ranger.

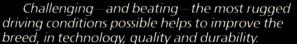


## ROGER MEARS PILOTS ONE OF OUR LABS.

"Tough" isn't something you hang on a truck, it's something you build in. But you have to know where.

Racing helps us learn. The soaring truck above, manned by racing pro Roger Mears, is an off-road racing star. It's also a very special 4-wheeled lab that tests "tough" for a company committed to a relentless search for innovative technology. The company's name is Nissan. And that search takes us to some of the most grueling off-roads in the world.

In fact, through the years, Nissan-built trucks have conquered more of these sanctioned survival courses than any other compact.

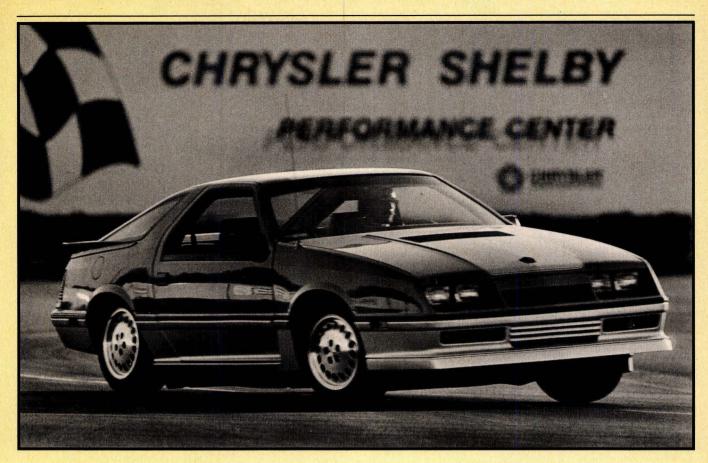


Put another way: when Nissan races, you win. Because the same "tough" that helps Roger's Nissan finish first off the road helps your Nissan last on the street.

**Best extended-service plan available:** up to 5 years/100,000 miles. Ask about Nissan's Security Plus at participating Nissan/Datsun dealers.







## The Chrysler-Shelby Skunkworks

A visit to Chrysler's free-wheeling high-performance think tank.

• Car nuts love to sit around and contemplate automotive what-ifs. What if this car were supercharged? What if a particular engine were endowed with sixteen valves? Wouldn't four-wheel drive really help put the power to the road? Thoughts like these are sustenance for car addicts' minds. They're also the genesis of most of *Car and Driver*'s project cars. Most important, such creative flashes can lead to major automotive advances.

Few car nuts have the means to pursue their dreams, of course, and most car companies, though they may have the means, are unfortunately reluctant to act on new ideas. Most of their engineers are too swamped with new-model introductions to explore interesting technical flings. Even when they do have the time, investigations proceed very slowly inside most car companies, where every move is scrutinized by

## BY CSABA CSERE

innumerable executive councils. Further, in-house development expenses are skyhigh because of heavy overhead costs, in-

Carroll Shelby and Scott Harvey are in close touch with the Shelby center's many projects.



flated salaries, and slow work paces. As a result, the patrons of radical or unsuccessful ideas often attract a lot of unfriendly attention.

Obviously, such conditions do not foster an innovative, free-thinking atmosphere. Chrysler Corporation acknowledged this problem a few years back and concluded that a remote operation was needed. The answer was the Chrysler-Shelby Performance Center established in Santa Fe Springs, California, in November 1982. Two thousand miles separated the center from Chrysler's home base in Highland Park, Michigan, so organizational suffocation and day-to-day engineering concerns were left far behind.

The Shelby center has the responsibility of investigating the feasibility of all new performance concepts submitted to it, both for possible future production and for

AUGUST 1985

PHOTOGRAPHY BY DICK KELLEY

### SHELBY SKUNKWORKS



racing-parts programs. Carroll Shelby (see sidebar) is the titular and spiritual head of the operation, reporting directly to Chrysler's top management, but the working leader is Scott Harvey, a 27-year engineering veteran who has been active in Chrysler's racing programs over the years and has driven in numerous major rallies around the world.

Harvey presides over a small staff consisting of suspension expert Neil Hannemann, engine man Jerry Mallicoat, electronics maven Alex Korol, and Steve Hope, who presides over a team of seven mechanics. This group may seem too small to tackle serious projects, but its size prevents organizational overload. Besides, Harvey's people can call on the resources of the parent company in Detroit, and they also work closely with automotive aftermarket firms all over the country. In effect, they function as project managers for their many undertakings.

The Shelby group operates out of its own facility in a far corner of Chrysler's West Coast new-car preparation area. At its disposal are a small office, a large, wellequipped garage complete with engine build rooms and a machine shop, and a

Lightweight Davtona has a stark, functional interior reminiscent of Shelby's GT350 Mustangs'.

separate building for dynamometers. Next to the office is a freshly paved surface complete with a skidpad and mirror-imaged slalom courses. The place is a car nut's dream come true, and we recently spent a couple days there to see what magical machines this high-performance think tank had spawned.

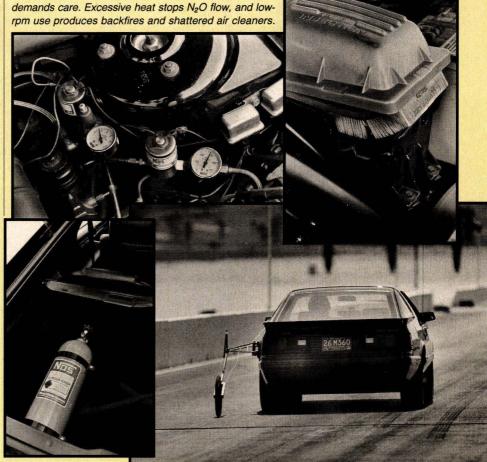
We first took a spin in a lightweight Dodge Daytona, a car patterned after Shelby's GT350 Mustangs of the mid-Sixties. Gone were the air conditioning, the power accessories, the sound insulation, and the rear seat; a roll bar and competition

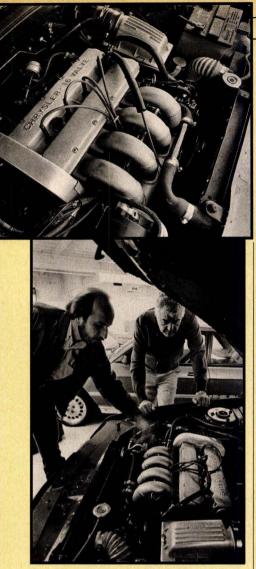
Simple nitrous-oxide system produces copious power but

seatbelts had been added, netting a 200pound weight reduction. Under the hood was Chrysler's second-generation turbocharged engine (scheduled for 1987 production), with an intercooler, 10 psi of boost, and 175 bhp. Goodyear gatorback tires were fitted to help cope with the power, though the suspension wasn't fully set up for them.

This Daytona was no gentleman's express. The noise of the electric fuel pump permeated the cockpit at idle, and various bumps and rattles took over once we were under way, creating a strong bucket-ofbolts impression. But the improved powerto-weight ratio certainly produced much better acceleration than a stock Daytona is capable of. The Shelby people agreed that the car is too crude to be sold as is, but additional weight savings scheduled for the future may allow the return of some insulating material without sacrificing performance.

The next car we sampled was a standard Daytona Turbo fitted with a nitrous-oxide system developed for the Direct Connection catalog. We feel that such systems are a rather crude way to increase power, and the Shelby people don't disagree, but there's no arguing with the cost effectiveness of the approach. For less than \$500, the installation produces a 14.7-second, 97-mph standing quarter-mile, a feat that we reckon requires at least 200 horsepow-





Turbocharged, intercooled, and injected sixteen-valve engine fills Daytona's engine bay.

er. The stock car has 146 horsepower. The nitrous system does have its quirks. The N<sub>2</sub>O flow is activated by a full-throttle switch and is either entirely on or entirely off. When we tried to use it below 3000 rpm, we experienced a backfire that blew the air-filter housing apart and popped the hood. Heat is another problem. The nitrous bottle was mounted in the Daytona's luggage area, where it has no protection from the sun; in our testing, the heat raised the bottle's internal pressure to the point where the solenoid valve no longer operated, rendering the system impotent. Finally, the ten-pound bottle in the Daytona only provided about two minutes of power rush before it was depleted. Still, quirks and all, there is a market for nitrous-oxide injection, and the Shelby center is making sure it's available for Chrysler products.

After returning these two cars, we tried something with more serious implications: a Daytona powered by a twin-cam, sixteenvalve, turbocharged and intercooled version of Chrysler's trusty 2.2-liter four-cylinder. According to Mallicoat, this engine develops 225 bhp, and, judging by this Daytona's performance, we're inclined to

## Carroll Shelby, Godfather

Working behind the scenes to stay on the performance track.

• Carroll Shelby's role in the Chrysler-Shelby Performance Center is more subtle than you might think. Some skeptics have suggested that he's nothing more than a figurehead, lending his performance credentials to the enterprise. Others think he's actively directing the day-to-day operations at the center. In fact, his position lies between the two extremes.

Shelby is the director of the Shelby center, but Scott Harvey, the day-to-day manager, doesn't report to him. Instead, Harvey reports to Don Morrissey, Chrysler's director of Special Vehicle Management, who reports to Jack Withrow, executive vice-president of product development. Shelby, meanwhile, reports straight to the top, to the likes of sales vice-president Ben Bidwell, vice-chairman Jerry Greenwald, and, of course, his old friend Lee Iacocca.

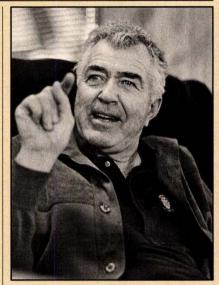
In practice, this means that Harvey gets specific assignments from Chrysler engineering, while Shelby meets with the brass to come up with an overall strategy and adequate funding for the center. In effect, he's a benevolent godfather. He has enough pull to give the Shelby center more leeway than most such organizations enjoy, allowing it to cook up a few projects on its own.

One example is the Omni GLH. According to Harvey, that model was 100 percent Shelby's idea. The first car was built and evaluated at the Shelby center. Although engineering management felt it was too radical, Shelby's connections carried the day.

Considering his involvement with the GLH, we asked why the car didn't carry his name like the Shelby Charger does. He replied: "I don't want any more Shelby-named cars. People think of Cobras when they hear Shelby, and anything else lets them down. Our cars deserve better than that."

He also feels very strong about building affordable performance cars rather than expensive GTs. "I want to build a car for a guy who makes \$20,000 a year, gets married young, has two kids, and still has a love for cars. Nobody's building cars for a guy like that."

This isn't to say that Shelby sees no place for exotic hardware. He feels that sixteen-valve engines, four-wheel drive, and joint ventures with Maserati are necessary to create a high-performance image. Shelby may have a reputation as a



racer and a chili cook, but he's a shrewd businessman who never forgets that profits come from sales.

Unfortunately, building limited-production cars is not Detroit's forte. Still, the man who once had a factory that built Cobras and GT350s thinks that a similar approach might work again. Cars could be converted after their construction by any number of aftermarket entities, much as ASC builds convertibles out of two-door sedans. One of the first efforts at updating the old Shelby American scheme might be a Dodge Lancer with a set of exotic body panels grafted on at Chrysler's West Coast new-car preparation center.

A more ambitious project is the fourwheel-drive conversion of Chrysler vans. Shelby seems interested in setting up a plant to do that one himself. Such a program might have a limited sales goal (in the low thousands), or just enough potential to make a healthy profit for a small company. If demand were to become strong enough, the factory could absorb the production in its high-volume plants. Such an approach would allow Chrysler to explore many market niches without incurring the financial risk of large-volume tooling.

The van-conversion proposal gives Scott Harvey and his people hope that some of their more exotic high-performance efforts might one day see production. With a godfather like Shelby in the organization, a 225-bhp, four-wheeldrive Daytona is bound to become a reality sooner or later. —*CC* 

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## SHELBY SKUNKWORKS

ing to explore the engine's performance potential. Its next goal is an awesome 340 bhp. With this motor heading for production, future Chrysler products shouldn't suffer from any power shortages.

Our next ride brought us back to a contemporary program: a Shelby Charger fitted with an aftermarket supercharger kit that will soon be offered in the Direct Connection catalog. This kit can warm a drag racer's heart in a way no mere turbo can. It uses a small, belt-driven Roots-type blower, breathing through the standard carburetor; the entire assembly protrudes through the hood and is covered by a rearfacing scoop. The open scoop reveals the

Supercharged 2.2-liter Charger has progressive power delivery that's ideal for winding roads.



believe him. Its power is particularly impressive since the calibration of the fuel injection, the ignition timing, and the tuning of the manifolds are purely first cuts. Moreover, the engine operates smoothly throughout the rpm range, will accept full throttle at barely 1000 rpm in top gear, and pulls strongly to 6500 rpm.

The key to this package is the sixteenvalve head designed by Hans Hermann (who also created the Callaway V-8 and the all-conquering BMW Formula 2 motor of the early Seventies). Hermann is one of the few engineers around who are capable of designing a complete engine singlehandedly: with his help, the Shelby people had an assembled powerplant on the test stand only six months after initiating the project. That's the sort of compressed timing that Detroit can only dream about.

The engine has survived Chrysler's brutal 400-hour dynamometer durability test with few problems. It also has promising emissions characteristics and develops power with great ease. The 225-bhp version in the car we tested uses only 10 psi of boost, has very mild valve timing, and is restricted by an undersized throttle body. The big guns at Chrysler's Highland Park headquarters are so impressed that they have already signed up Lotus to transform the design into a production-ready part.

Meanwhile, the Shelby center is continu-

induction system, vibrating away as the car is driven. Appropriately enough, the blower's phasing gears produce an angry growl that sounds as if it might be coming from a swarm of foot-long bees.

Like all mechanically supercharged engines, this one responds instantly to the throttle. In the interest of durability, though, this installation doesn't generate a large amount of boost. At 3000 rpm, only 2 psi of positive pressure is available, rising gradually to 5 psi at 6000 rpm. This boost curve gives the engine a very linear power delivery, but it's less exciting than a turbo's with its sudden rush of power. The smooth

Carbureted twin-cam, sixteen-valve 2.0-liter is an unusual sight under a lowly Omni's hood.





Four-wheel-drive system has a Weismann center differential grafted to a Chrysler transaxle.

torque rise makes the Charger easier to drive on a winding road, though, and the overall performance is comparable to the turbocharged Charger's. The entire kit with all its installation hardware is expected to sell in the \$1500 range, when it comes to market later this year.

Just when we thought we had sampled nearly every possible high-performance variation on Chrysler products, the Shelby staff rolled out yet another project car: a Dodge Omni GLH fitted with a normally aspirated version of the sixteen-valve engine. This motor was destroked 10mm, so it displaced 2.0 instead of 2.2 liters, and it was fitted with a pair of Weber 45 DCOE carburetors because they were far easier to calibrate than Chrysler's electronic fuelinjection system.

Mallicoat says that this engine developed 180 bhp on the dynamometer with all the accessories and the exhaust system in place, so we were not surprised when it motivated the light GLH through the quartermile in much less than sixteen seconds. Moreover, the engine had a wonderfully free-revving nature, pulling willingly and





## Chrysler creates the new Laser XT.

The competition is hot. So we turned on the heat and made Laser hotter. We gave it a turbocharged heart, Euro handling suspension, 5-speed, 15" alloy wheels and Eagle GT radials– all standard. In 1800 runs during U.S. Auto Club tests, Laser XT dominates the competition. slalom course. Has the shortest distance in braking. And turbopower Laser leaps from 0 to 50 in 5.5 seconds, faster than Camaro Z28, Trans Am, 300 ZX, Toyota Supra.



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last. So your entire drivetrain – even your turbo—has 5/50 protection. Not even Porsche gives you that.



"THE COMPETITION IS GOOD WE HAD TO BE BETTER."

10



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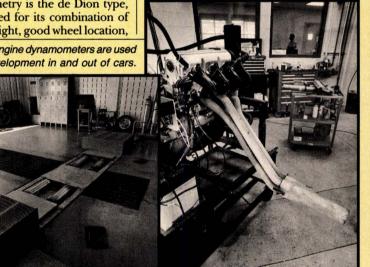
## SKUNKWORKS



Four-wheel-drive Daytonas exist with both rigid axles and Corvette independent rear suspensions.

and ability to keep the wheels upright and pointing straight ahead. The entire fourwheel-drive system adds 180 pounds to the Daytona's weight.

Even without much development, the four-wheel-drive Daytona demonstrates several advantages over the 225-horsepower front-drive model. The most obvious difference is in the steering. The frontdriver's directional stability is greatly affected by the throttle; as power increases, self-centering diminishes and straight-line stability suffers, particularly on rough roads. The four-wheel-drive car's steering, however, is virtually unaffected by power,



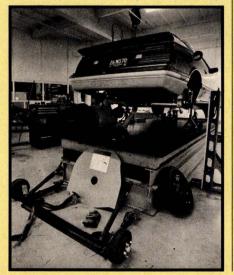
lts		0-60 mph, sec	0-100 mph, sec	top gear, 30-50 mph, sec	top gear, 50-70 mph, sec	¼ ∙mile, sec @ mph
Results	DAYTONA TURBO, NITROUS OFF	8.3	24.2	15.8	13.1	16.2 @ 86
Re	DAYTONA TURBO, NITROUS ON	6.4	16.5			14.7 @ 97
Test	LIGHTWEIGHT DAYTONA TURBO	6.6	18.2	17.2	12.4	15.0 @ 94
E	SUPERCHARGED CHARGER	8.0	26.3	10.9	10.9	16.0 @ 87
9	16-VALVE, 2.2-LITER DAYTONA TURBO	6.4	17.3	14.9	13.9	14.7 @ 94
C	16-VALVE, 2.0-LITER OMNI GLH	7.0	19.9	17.2	16.2	15.3 @ 92

smoothly to 7500 rpm. It was a little soft at low rpm because of the large Webers, but other versions are being built with fuel injection and a 2.5-liter piston displacement. Such an engine would be an excellent alternative to an eight-valve turbo engine.

Obviously, Harvey and his boys have taken extraordinary steps to avoid sluggish cars at the Shelby center. Indeed, the power of many of these engines is really too much for front-drive Chryslers to put to the ground. Even with 225-section gatorbacks on most of the high-powered Daytonas, wheelspin is a serious problem in low gear or around tight corners.

The clear solution is four-wheel drive, and the Shelby center has put together a pair of four-wheel-drive Daytonas to experiment with this technology. The key piece of hardware in these installations is a special Weismann gearbox that bolts to the standard Chrysler transaxle. Power flows from a normal five-speed transmission to a differential in the Weismann unit that splits the torque equally between the normal Chrysler front differential and the reardrive mechanism. In principle, this system operates exactly like the Audi Quattros' three-differential system, but the arrange-

A surface plate facilitates precise assembly.



ment of the components is totally different because of the Chrysler's transverse powertrain layout.

Power to the rear wheels is transmitted via a driveshaft to a conventional differential. The driveshaft is crowded into the Daytona's small central tunnel, where it shares limited space with the exhaust system. The rear suspension retains the standard rigid axle and its links to locate the wheels, but several new components have been added to deliver the power to the rear, including wheel hubs, half-shafts, and a body-mounted differential. The resulting suspension geometry is the de Dion type, which is renowned for its combination of low unsprung weight, good wheel location,

Both chassis and engine dynamometers are used for powertrain development in and out of cars

## SHELBY SKUNKWORKS

and it delivers a far more linear response. Hard cornering reveals other differences. Despite its sticky rubber, the frontdriver always lights up its inside front tire (and sometimes both front tires) when the boost comes on, producing strong understeer. The four-wheel-drive car, even on standard tires, has no problem putting its 225 bhp to the ground. Power understeer is still present, but it's much more benign. The four-wheel-drive car also corners more neutrally, probably because of its more even front-rear weight distribution (61 and 39 percent front and rear versus 63 and 37 percent).

This comparison satisfied us about the advantages of four-wheel drive over frontwheel drive, at least at high power levels. Furthermore, future experiments with viscous limited-slip differentials and independent rear suspensions are not likely to diminish these advantages. Surely, when Chrysler Corporation puts some of these high-energy powerplants into production





Four-wheel-drive van uses the same Weismann-Chrysler gearbox but has a simpler live rear-axle assembly.

## Meanwhile, at Maserati...

Old cronies Iacocca and de Tomaso get together to produce the 1987 Chrysler-Maserati sports car.

• Here is good advice: never walk into a dark alley with cash in your pocket and Alejandro de Tomaso on your shoulder. Not that Alejandro will pick your pocket bare. But he will help you select a major investment option in a big hurry.

Enter a second-time pigeon, Lido Anthony Iacocca. If you read between Iacocca's best-selling lines, he will have you understand that he is a great businessman. Maybe, but twice now Lee has found himself tripping down the alleyway with Alejandro, and twice now he's been mugged blind ... er, investment-opted.

His second opportunity arrived last year. Lido's investment option for Chrysler was a five-percent share of Alejandro's Maserati operation and—big news for lovers of sports cars—a pact for Maserati to build a whiz-bang two-seater for Chrysler to sell through its own dealers.

"Right now the code name is the Qcoupe," says Donald P. Morrissey, director of Special Vehicle Management for Chrysler's Product Development Office. Morrissey is in Modena, Italy, handling the details of an early press intro. Like a oneman Muppeteer, he oversees Chrysler's tentacles in everything from Carroll Shelby's California skunkworks to Alejandro de Tomaso's Italian operations.

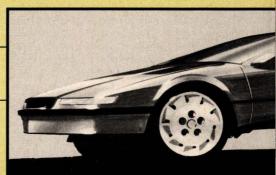
"The car will compete with the Mercedes 380SL," Morrissey claims, "and with the Cadillac Allante [coming from Pininfarina]. The car will have both a removable hardtop and a soft top. It will be a front-engine, front-wheel-drive vehicle. It will have a form of the 2.2-liter engine. It will be available in the spring of 1987. The price range will be \$25,000 to \$30,000. We're looking at 4000 to 5000 units per year for the U.S. and Canadian markets.

"We will be shipping some components, such as drivetrains, to Italy," says Morrissey. "The cars are being engineered here in Italy but styled in Detroit with help from de Tomaso. The cars will be stamped and built by Maserati at the Innocenti plant [another de Tomaso operation] in Milan, where Innocenti assembles the Biturbo under contract to Maserati. Our cars will be marketed in Chrysler-Plymouth showrooms. They will be Chrysler-branded with badges saying 'Built by Maserati."

The first time de Tomaso investmentopted Iacocca, Lido still held sway at Ford. He wanted to market an Italian exotic with Ford horsepower snorting under its deck lid. De Tomaso dipped directly into Iacocca's Dearborn-sized wallet to create the Pantera. That rumbling, raw-boned, low-flying mid-engined street racer, imported by Lincoln-Mercury from 1971 to 1974, has proved tough enough to survive to this day (C/D, August 1984) under de Tomaso's own banner.

De Tomaso is what you might call a classic money rearranger: if you haven't got enough here, pick some up there, bleed off a little for something else on the way, and then put the rest where you want it . . . for a short time. For good measure, add more and move it elsewhere. In that sense, de Tomaso is much like Iacocca. Both are able to produce funding from what seems thin air, Iacocca juggling enormous sums and paying his bills on time, de Tomaso prestidigitating smaller but more colorfully intricate deals.

Despite his business ties and life in Italy and America, de Tomaso is Argentine. He was born in July 1928 in Buenos Aires. His



father was a minister of the republic, his mother a "descendant of an established Argentine family." The good life was pretty well established for Alejandro when he was sidetracked by automobiles. The faster they were, the better he liked them. In his mid-twenties, he kicked off to Italy to write about racing and, better yet, to race Maseratis and then Oscas.

By 1959, de Tomaso had gained a measure of recognition as a driver, but his urge to call the shots got the upper hand. De Tomaso had two talents that overshadowed his original desire to drive: he was pretty good at dreaming up the hardware with which to achieve his ends, hardware that somehow spoke directly from the heart to investors and onlookers alike; and he was an absolute ace at the financial wizardry (some would eventually say "chicanery") necessary for making it happen.

Settling permanently in Italy, he created De Tomaso Automobili SpA and set to work on his own race cars. The first was a Formula 2 device, a Maserati with Osca power. The De Tomaso works eventually even turned out an outclassed F1 car, but by then the boss's interests had spread to exotic production cars. De Tomaso could see where the greater financial rewards lay, and he was having a wonderful time delving into ever-widening possibilities.

Isabelle Haskell, a lively, striking American woman from a well-heeled New Jersey family, became de Tomaso's second wife. cars, four-wheel drive will be close behind.

Another four-wheel-drive conversion, and one we may see sooner than the Daytona, is the Chrysler minivan. It would be intended more for the utility market than for the performance market, but the Shelby center has built the prototype nonetheless. It uses the same Weismann gearbox as the Daytona, but the rear drive is handled by a conventional live axle suspended on leaf springs, much like the van's standard beam axle. The van is an easier conversion than the Daytona because the driveshaft fits easily under the existing floorpan, but rearsuspension travel must be restricted to prevent the axle's center section from striking sheetmetal at full jounce.

The van we drove was fitted with a production turbo engine and an automatic transmission to help overcome its increased weight. Unfortunately, this powertrain comes up short on low-end torque, and the van was sluggish off the mark. The four-wheel-drive aspect, however, seemed to work very well, and the van felt little different from an ordinary Chrysler van. Such a product would certainly present an attractive and roomy alternative to Blazers and Broncos in bad-road utility applications.

Other ongoing projects include a highoutput version of the upcoming 3.9-liter V-6, which is derived from the venerable 5.9-liter V-8. And at least one of those V-8s is receiving twin turbos prior to its installation in a De Tomaso Pantera for future research. Goodyear's air springs are also slated for careful evaluation, especially in adjustable form. An AMG-like body-panel package is being developed for the LeBaron GTS to enhance its image as a Eurosedan. Meanwhile, the Shelby group is constantly working with the aftermarket to increase the number of Chrysler hop-up parts in the Direct Connection catalog.

It's an impressive list of projects, and the Shelby group certainly can't be accused of wearing any technological blinders. Even if only a fraction of these developments get into production, the Shelby center and the concept of a' remote high-performance skunkworks will have proved worthwhile. But making the correct decisions is up to Highland Park. Carroll Shelby and Scott Harvey will at least see that Mr. Iacocca and his executive committee have plenty from which to choose.



Delighted with his interests, she helped him acquire, among other things, Italy's famed Ghia and Vignale design studios. With Ghia came Giorgetto Giugiaro, who has since created Ital Design and is heralded by many as the world's greatest automotive designer. Even before he worked temporarily for de Tomaso, Giugiaro fired up his pen and produced the finest aesthetic design de Tomaso has built to date (some say automotive history's finest design), the incredible Mangusta. Sad to say, its driving characteristics proved as incredible as its looks, in altogether the wrong way: the poorly suspended mid-engined beast forever slued the meaning of the term "tail-happy."

Through such minor hiccups in execution, however, de Tomaso never missed a beat. When he wasn't busy knocking together the Pantera for the dudes from Dearborn, he was busy unloading the Ghia operation on them. With such profits, de Tomaso assumed a new role in the early 1970s as the motorcycle-riding savior of Moto Guzzi and Benelli, buzzing onto the scene just in time to buy them up and save their hides from the hordes of Hondas, Suzukis, and Kawasakis that were lacerating Italy's motorbike business.

However the sly wizardry was weaving in his graying head, de Tomaso was putting Italians to work when times were tough. He comes off now as a wily businessman who brought better tidings and somehow became something of a godfather to workers whose skills had been dying on the vine. But all the hopscotching financial advances were mere warmups for really big acquisitions.

Just as Lee Iacocca would later showcase a great talent for sucking loan guarantees out of the American government in order to save Chrysler, Alejandro de Tomaso tapped GEPI (Gestioni e Partecipazioni Industriali SpA), a branch of the Italian government set up specifically to bail out ailing industries. Once-mighty Maserati had been hit hard by the energy crisis and Italy's general economic slide, so Alejandro sweet-talked GEPI into funding the company's rescue. With himself as managing director. Never satisfied, it was onward and upward for Alejandro. Next he gathered in the even larger Innocenti operation and, with it, yet another managing directorship. Then he rubbed the two companies together and started spitting out cars right and left.

For both outfits, it was a dandy turnaround. Innocenti kept making its econoboxettes and, in 1981, expanded its Milan plant to produce Maserati's new line of Biturbos. They were designed by Giugiaro, and they represent the leading edge of the Italian automotive renaissance. Powered by delightfully refined twin-turbo V-6s, they are Italy's angular, luxurious answers to BMW's more rounded, more Spartan 3series autobahn bulldogs. And they are being snapped up faster than old Alejandro can get them buttoned up and fanny-patted on their way. Meanwhile, Maserati continues production on the vast but fast Quattroporte sedans, and De Tomaso Industries grinds away on its Longchamp two-doors, the Deauville four-doors, and the redoubtable Pantera GTS.

Despite the ups and downs of both the Italian automobile business and the related rises and falls of Alejandro de Tomaso's businesses, Lee Iacocca has turned once again to a pretty fair old pirate to handle his high-buck business across the high seas.

Lido went to de Tomaso partly because the Italians have proved exceptionally quick at building automobile prototypes. Using this edge, the Chrysler-Maserati sports car should be whistling off the assembly line in less than two years.

Although de Tomaso himself says the components are to be "from a future Chrysler," our sources inside Chrysler engineering say that Maserati will be adapting yet another variation on the oft cloned Kcar floorpan. In the States, suspension mules have been built from Dodge Daytonas. No word has filtered down to the American engineers on the shape of the sheetmetal or the length of the wheelbase. However, the front and rear track widths will likely remain the same. The steering may be tweaked for better feel, and Chrysler is after much better braking.

If little is being said about chassis details, poop from the drivetrain department is even harder to scoop. Both an automatic transmission and a German Getrag fivespeed are promised, but Iacocca has hedged his bets on engines. Odds are that at least one version of Chrysler's mighty four will feature four valves per cylinder, and Lido has put Lotus and Maserati into competition with his own engineers; may the most potent, smoothest, and most durable powerplant win. Whatever engine powers the Italian-American hybrid, it should be plenty fast, even though the aim is more toward high-flying hedonists than hard-core roadies.

At the Modena press conference, de Tomaso holds court. His English is tinged with both Argentine and Italian inflections. His voice is coarsened by decades of cigars. "We have to be very clear," he says. "Maserati have a tradition. We don't want to confuse our customers. The new cars will be Chrysler cars made by Maserati. We will try to put in these cars the kind of feeling you get when you drive one of our Maseratis." —Larry Griffin



Riding on Firestone performance radials, Max Jones and Morris Clement, in their Nissan 300 ZX Turbo, take a first in class and first overall by a slim 5.2 seconds in the second race of the Firestone Firehawk Endurance Championship.

1. Max Jones Morris Clement

2. Steven Pope

Kim Baker

3. Jon Milledge Walt Maas

4. Skip Gunnel Scott Flanders

5. Jim Goughary

6. Glen Cross Don Wallace

8. Eric Morrow

9. Tom Nehl

Nick Moore

**Bill Warner** 

10. Don Erickson Bill Martin

1. Bob Henderson Paul Hacker

Craig Horning

2. Bobby Jacks Lee Raymond Jack Roberts

3. Jerry Lustig Rich Lee

**Touring Class** 

Tom Bagley

Tim Chitwood

7. Steve DeBrecht J. D. Cunningham

A grand total of 86 cars rolled into St. Louis International Raceway for the second race in the IMSA-sanctioned Firestone Firehawk Endurance Championship, with the entry list reading like a performance car who's who-Nissan 300 ZX, Chevrolet Camaro, Pontiac Firebird and Fiero, Ford Mustang GT, Porsche 944, BMW 325e, Dodge Shelby Charger, Alfa Romeo GTV6, Saab 900 Turbo, Toyota MR-2, Mazda RX-7, Honda CRX, VW GTI and more. All street legal. All on street

> legal Firestone tiresnew Firehawk GT radials on the domestic cars, S-660 and H-330 radials on the imports.

And for them all. it was a real test of performance and endurance. Thanks to a brand new, twisting, 13-turn, 2.2 mile course baked by the sun. Trackside temperatures that soared above 100 degrees during the six-hour feature race. And drivers who

wanted to prove they were the best of the nation's new breed of street stock racers.

IGH

For the record, it was Max Jones and Morris Clement first in Sports Class; Bob Henderson, Craig Horning, and Paul Hacker, sharing a Toyota MR-2, first in Touring; and Paul Hacker again, driving a VW Golf on Firestone H-330 radials, first in the one-hour Compact support event.

But the biggest winner to come out of St. Louis still had to be anyone who thinks about his car or the tires he drives it on. Because Firehawk/St. Louis proved once again that the tires we build for the street are built to perform. Just one more way we're racing for you. For real proof of performance you can take to the streets.

### Firehawk/St. Louis Top Ten Finishers Sports Class

Nissan 300 Z

SS	4. Frank Jellinek	Toyota
an 300 ZX	Alan Lewis	Corolla
Turbo	Tom Mitchell	GTS
Chevrolet	5. Ed Healey	VW GTI
Camaro	Al Salerno	
Porsche	6. Alvaro Mejia	Toyota
944	Alberto Saffon	MR-2
Chevrolet	Ricardo Cano	
Camaro	7. Maria Benton	Toyota
Porsche	Jim Roberts	MR-2
944	Harry Gentry	
Chevrolet	8. Ed Clayton	Toyota
Camaro	lan Sutherland	<b>MR-2</b>
Carnalo	9. Jon Kempf	Honda
Cash 000	Don Stephens	CRX
Saab 900 Turbo	10. John Torok	VW GTI
Chevrolet	Don Baker	
Camaro	Ed Conner	
Chevrolet		
Camaro	Compact Clas	SS
	1. Paul Hacker	VW Golf
Chevrolet	2. Karl Hacker	VW Golf
Camaro	3. Chuck Hemmingson	VW Golf
s	4. Ron Christensen	VW Golf
	5. Randy Pobst	VW Golf
Toyota MR-2	6. Keith Martin	VW Golf
MH-2	7. Al Salerno	VW Golf
Tauata		ult Encore
Toyota MR-2		
MH-2	9. Tom Kline	VW Golf
Hond-	10. Ed Healey	VW Golf
Honda		
CHX		



Six of the top ten St. Louis Sports Class finishersall Chevrolet Camaros-rode on Firestone's new Firehawk GT domestic performance radial





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## ROAD TEST



## Nissan Stanza Wagon

• One sunny morning, millennia hence, an eye will catch a glint from something embedded in a dry riverbank. Working carefully with spade and brush, an automotive paleontologist will uncover a fossilized Nissan Stanza Wagon. Colleagues will gather round. "Aha," they will exclaim professorially. "This marks the recession of the great import-restriction glaciation of the late twentieth century. It was a significant node of evolutionary change."

Whenever planetary conditions grow more benign for life, increased numbers of different species appear. Represented graphically, the fossil record bulges out at such points in a shape like a vase. Japanese automakers doing business in the U.S. have recently weathered an ice age called VRA, the Voluntary Restraint Agreement. This curb held down not only the numbers but also the types of cars they brought into the country. Now that the chill is moderating, they are sending more and more new kinds of vehicles to walk abroad on the land. Some may prove to point a new way into the future.

The Stanza station wagon is rather an odd-looking little ornithischian. It's meant to be. Nissan could have easily designed just one more station wagon, a sedan with a squared-off tail, as it did with the Sentra and Maxima lines. But right from the gene-

## The dinosaur redefined?

sis of the project in the 1970s, the idea was to offer something more with the Stanza. Something less ordinary, a more experimental vehicular life-form that would, if conditions were favorable, sniff out new environmental niches.

"The public is pretty fickle," notes one of Nissan's American product planners, who would probably appreciate remaining nameless in this context. "I guess it's because conditions and circumstances change so much, but you ask anybody what kind of car they'll want five years down the road, and you just can't bank on what they tell you. But we need to make decisions that far ahead. So you study all the demographics you can lay your hands on, and then in the end you go with your own hunches."

Demographics tell Nissan that the American car buyer is aging and enjoying more affluence. The mission of the new wagon (new to us, though it's been on sale in several other places, in the world for some time) is to capture "maturing" families that feel a need for a multipurpose runabout, something with "the roominess of a traditional station wagon but the economy and size of a compact car." Such a vehicle might be their second or third, and it could even work as their only one.

"This is the largest market segment in

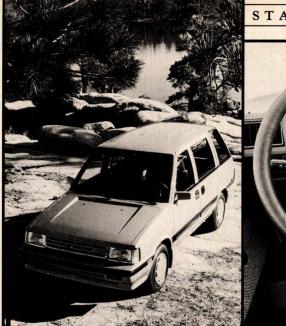
the U.S. industry," says Curt Bartsch, Nissan's director of product planning. "That includes the high-roof vehicles, like the Colt Vista, the Honda Civic wagon, and the Toyota Tercel wagon. Then there are the domestic compact vans, the Caravan, Astro, and Aerostar. We understand Pontiac is now studying a new wagon type, too.

"We've been looking at the demographic trends, like everybody else, and other Nissan entries will follow this one. It is our intention that Nissan lead this market."

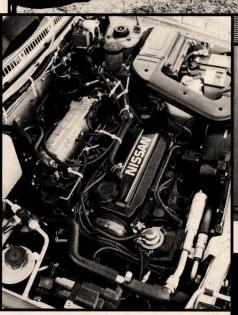
In fact, Nissan might have already grabbed a leadership position in this U.S. market segment had the VRA, originally imposed in 1981 for two years, not been extended. An earlier version of the wagon, variously called Ambivan and Prairie, was actually slated for introduction in the U.S. soon after it went on sale in Japan in 1982. A small fleet is said to have been aboard a ship when the decision was made to hold off in favor of more familiar models.

The shipment was not turned around; instead, the vehicles were used in an extensive field-testing and market-evaluation program here. The delay has enabled Nissan to produce a sort of Mark II version, better suited to American tastes and conditions. Alterations include the detail styling, the trim, the seats, the equipment content, the wheel size (fourteen inches rather than









thirteen), improvements in handling, and fuel injection. What is to be called, with deliberate lack of imagination, the Stanza Wagon debuts now as a 1986 model.

Most pieces of a conventional station wagon are virtually identical to its sedan sister's, but this one owes little to the Stanza beyond its basic engine-and-transaxle package. Not even the driveshafts are interchangeable. Also different are the suspension both front and rear, the floorpan structure, and the entire body.

The most distinctive element of the Stanza wagon's body is the pair of rear side doors, which slide open on tracks, giving easier access in tight parking situations. They also allow elimination of the B-pillars. When you open both the rear and the conventionally hinged front door on one side of the car, you get a single side opening, 56 inches wide, obstructed only by the seats and the bulge of the dashboard.

The strength of the missing B-pillars has been put back into the rest of the body shell by means of stronger underfloor members and a stiffer rail over the door opening.

and a stiffer rail over the door opening. When the doors are closed, their latches are also supposed to tie the doors into the structure to add integrity.

Inside, the tall roofline gives a floor-toceiling height of 43 inches at the minimum. The width of the rear cargo area is 52 inches, not including the rather intrusive wheel arches, and the interior length from rear door to rear seatback is 30 inches; the rear bench seat folds forward to increase this length to 55 inches. Were the bench removed completely-unfortunately not an easy task-and the front seats moved fully forward, there would be 72 inches of length available; this would make the Stanza a mini-camper for average people. The total EPA interior volume is 134 cubic feet. Certainly a capacious little station wagon. Almost a little van.

Not installed on our test vehicle was the

pair of available jump seats, which fold down from the sides of the aftmost bay like those in the Nissan King Cab pickup and bring the seating capacity to seven. These, unlike the rear bench, are easily removed, leaving only little prongs on the floor.

If the basic box in back suits one's needs, there is nothing up front to discourage ownership. The seating, while a bit starker than that in the higher-trimmed editions of the Stanza sedan, is plenty comfortable and supportive. The control positioning and the instrumentation are generally fine, and the visibility is outstanding in every quadrant. There is a nice, airy feeling and plenty of room. Speaking of room: Japanese automakers seem enamored of little cubbyholes, and while the glove box in the Stanza wagon is rather small, there are no fewer than nine other bins and compartments in the front-seat area. Rear passengers have four more.

In motion the wagon is simply nice. The power steering is nicely weighted, the clutch and the shifter work nicely (a fourspeed auto is also available), and the ride is surprisingly nice over bumps. A trip of several hours' duration is a reasonably pleas-



ant experience, and short hauling around town is never a chore. The steering response is vivid, and, partly because of the driver's high vantage, the overall feeling is nimble. Quite nice.

Those who buy the Stanza wagon will not confuse it with a sports car, of course (if Nissan's demographics are on, they might already own a 300ZX anyway), and any thoughts of fiery driving are immediately doused by the chassis's damp cornering character. It has almost nothing in common in terms of feel with the much lower Stanza sedan. Brisk steering inputs cause the kind of lurchy tippiness you might associate with French cars. To carry any kind of speed into a corner is to experience understeer in its textbook form. Our skidpad testing showed us g-fractions most of the sedan world has moved well beyond. It's not unsafe, but it is slow.

No, this is no performance car, but the fuel-injected 1974cc engine does have plenty of pep, delivering 97 bhp at 5200

rpm and 114 pounds-feet at 2800. Although the wagon is about 550 pounds heavier than the sedan, the overall gearing has been slightly lowered to compensate, so the engine is adequate for quite spritely acceleration. Grades are handled with ease, and on level roads the boxy vehicle (Cd: 0.40) will cruise smoothly, steadily, and quietly in the eighties with a moderate 3500-rpm showing. Legal speeds give mileage in the high twenties, which goes nicely with the generous 15.9-gallon tank.

So far, so good, and this is a decent piece of work that may suit many people. Thus, the few nits that do exist stand out sharply.

The foremost annoyance is the position of the radio. It is as low as it can be, which is a long way below the driver's eye. Tuning it calls for too much personal paleontology to be at all safe in traffic. Nissan plans to address this problem with a more conveniently placed remote-control unit; but the real solution would be to redesign the dash and grant the radio the prominence it deserves.

The radio in our test sample did work very well, though, and there seem to be speakers everywhere!

A critical eye will also note that the reardoor windows open only a few inches, and the glass panels in the rear quarters don't open at all. Some passengers might miss the fresh air.

Also, while the sliding doors would seem to allow parking in an unusually narrow space, the "captain's chair" armrests on the front seats prevent walking to and from the back to take advantage of them.

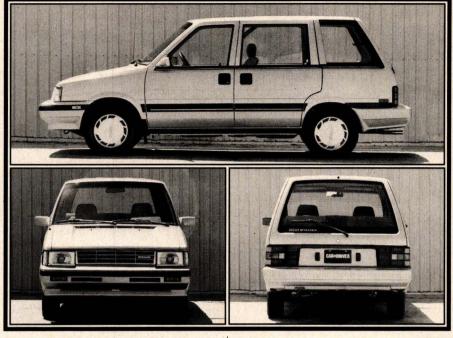
A more significant point to some drivers might be the lack of any support for the right foot other than the gas pedal, which is set a trifle high. After an hour or so, the foot grows tired of the whole idea. The cruise-control option would seem a must (that, or a bit of DIY metalsmithing).

None of this quibbling spoils the overall worth of the package or the Stanza wagon's basic concept. There is currently a restlessness in the automaking industry, with many trying to invent viable new configurations. Nissan's product planners will be as interested as anyone's to see whether their new life-form will actually discover an unfilled evolutionary niche—or, in the words of the nameless product planner, "merely identify one that doesn't exist!" —Pete Lyons

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195/70HR14 75 205/70HR14 81 185/60HR13 59	175/50VR13 \$ 89 195/55VR13 116	205/60HR14 114 225/60HR14 128
185/60VR13 68 205/60HR13 79	205/55VR14 139 205/55VR15 164 255/60VR15 215	195/60HR15 108 205/60VR15 128 215/60VR15 139
205/60VR13 86 185/60HR14 69	275/55VR15 215 205/55VR16 187	195/50VR15 150 225/50VR15 195
195/60HR14 77 205/60HR15 95	195/50VR15 110 205/50VR15 **	205/55VR16 203 225/50VR16 214
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### STANZA WAGON



Vehicle type: front-engine, front-wheel-drive, 5-passenger, 5-door wagon

Price as tested: \$10,500 (estimated)

Options on test car: air conditioning

Standard accessories: power steering, rear defroster and wiper

Sound system: AM/FM-stereo radio, 6 speakers

### ENGINE

Type	line, iron block and aluminum head
Bore x stroke	3.33 x 3.46 in, 84.5 x 88.0mm
Displacement	120 cu in, 1974cc
Compression ratio	
	Nissan electronic fuel injection
Emissions controls	3-way catalytic converter, feedback
	fuel-air-ratio control, EGR
Valve gear	belt-driven single overhead cam
Power (SAE net)	
Torque (SAE net)	114 lb-ft @ 2800 rpm
Redline	
DRIVETRAIN	
· · · · · · · · · · · · · · · · · · ·	

Transr	nission		
Final-d	rive ratio		4.17:1
Gear	Ratio	Mph/1000 rpm	Max. test speed
1	3.29	5.1	31 mph (6000 rpm)
11	1.85	9.0	54 mph (6000 rpm)
111	1.27	13.1	75 mph (5750 rpm)
IV	0.95	17.5	99 mph (5650 rpm)
۷	0.74	22.5	97 mph (4300 rpm)

## DIMENSIONS AND CAPACITIES

Length 1	170.3 in
Width	. 65.6 in
Height	. 64.2 in
Curb weight	2900 lb
Weight distribution, F/R	/40.7%
Fuel capacity	15.9 gal
CHASSIS/BODY	
Type unit cons	struction
Body materialwelded steel st	ampings

y material		
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## INTERIOR

SAE volume	, front seat .		 						. 49	cu ft
	rear seat		 						. 42	cu ft
	trunk space	a	 						. 43	cu ft
Front seats			 						b	ucket
Seat adjustr	nents		 foi	re a	and	d af	t, se	eath	back	angle
General con	nfort		 	.p	001	r fai	r g	ood	exce	ellent
Fore-and-aft	support		 	.p	001	r fai	r g	ood	exce	ellent
Lateral supp	oort		 	. p	000	r fa	ir g	3000	d exc	ellent

## SUSPENSION

F:ind, stru	
R: ind, trailing arm	coil springs, anti-roll bar , torsion bars, anti-roll bar
STEERING	
Type rack	and-pinion, power-assisted
Turns lock-to-lock	3.0
Turning circle curb-to-curb	

BRAKES	
F:	
R:	

## WHEELS AND TIRES

 Wheel size
 5.0 x 14 in

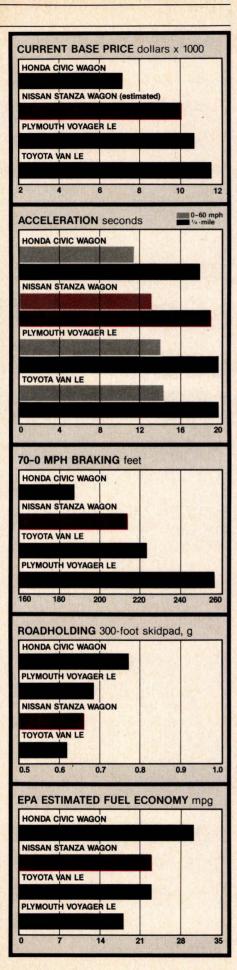
 Tires
 Sidgestone SF-402 Steel M+S, 185/70SR-14

## CAR AND DRIVER TEST RESULTS

ACCELERATION	Seconds
Zero to 30 mph	3.9
40 mph	
50 mph	
60 mph	
70 mph	18.1
80 mph	30.0
Top-gear passing time, 30-50 mph	17.7
50-70 mph	
Standing ¼-mile	272 mph
Top speed	
HANDLING	
Roadholding, 300-ft-dia skidpad	0.66 g
Understeer minimal moderate	excessive
BRAKING	
	and the second se

70-0 mph @ impending lockup	213 ft
Modulation poor fair good	d excellent

	none moderate heavy
rront-rear balance	poor fair good
COAST-DOWN ME	ASUREMENTS
Road horsepower (	@ 30 mph 6 hp
in the second se	50 mph 17 hp
	70 mph
EPA highway drivin	
INTERIOR SOUND	LEVEL
Idle	
Full-throttle acceler	ration 79 dBA
	71 dBA







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Group B 129.95 set/4 BMW 2002, Datsun 200SX (80-83) Mazda RX-7, Mercury Capri (71-77), Porsche 911, 912, 930 (69-83), Toyota Celica, Corolla, Supra, VW Super Beetle, Group C 149.95 set/4 BMW 320i, Datsun 240Z, 260Z, 280Z, 280ZX, Maxima (81-82), Porsche 914, VW Rabbit-Scirocco-Jetta (75-84).



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Group B 59.95 pair Mazda RX-3, Capri (71-77), Toyota Corolla (75-79).

Group C 74.95 pair Camaro (70-81), Mustang (65-69)



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Datsun Z and ZX 4 Mazda RX-7 4 Rabbit/Scirocco 4

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(give exact year when ordering)

BMW 320i (77-83)

ear when ordering)

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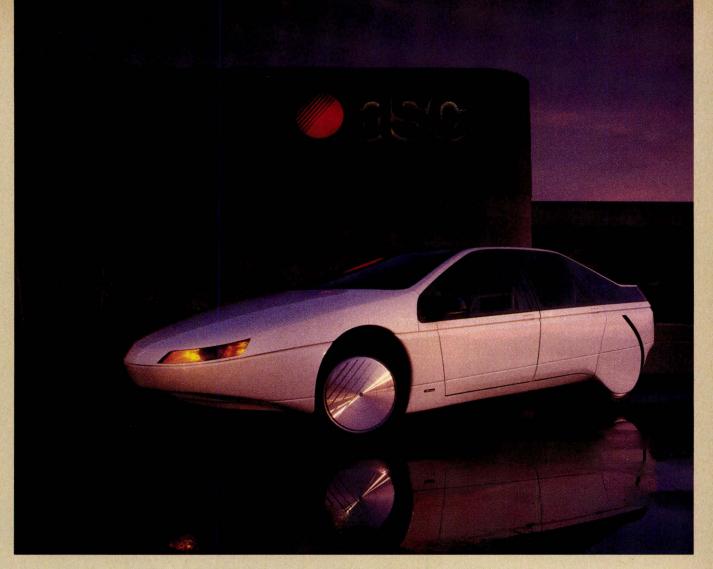


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passenger-plus load versatility. Shift on the fly. S-10 Blazer 4x4 with revolutionary Insta-Trac lets you shift from freewheeling 2wheel drive to 4-wheel-drive High and back while driving at any speed. **Tow up to 5,000 lbs.** Properly equipped, S-10 Blazer 2WD can tow up to 5,000 lbs. S-10 4x4 up to 4,000 lbs., including trailer and cargo. Versatile S-10 Blazer. America's bestselling sport utility vehicle.

BURZER





## **ASC** Vision

From George Barris to America's premier independent automotive-design studio, Heinz Prechter and ASC have come a long way.

• For the past twenty years, ASC, Incorporated (née American Sunroof Corporation), has been firing up its cutting torches for Detroit's carmakers. Sunroofs, moonroofs, T-tops, vinyl tops, convertibles, and fake convertibles—ASC has done about everything to a car roof that can be done to a car roof. In the process, ASC's founder, Heinz Prechter, has propelled his customizing business from a back-alley chop shop to a legitimate original-equipment supplier to the automobile industry, a feat which landed him on C/D's list of Ten Best Unsung Heroes in 1984.

Prechter is a short man of impeccable dress. If there is a Napoleon lurking within his diminutive frame, it has manifested itself in his motivation and will to succeed, not in his personality. He is self-assured, but also soft-spoken and immensely charming; capable, he says with a twinkle,

## BY JEAN LINDAMOOD

of "being anything I have to be." One thing Prechter is *not* is a grandstander. He takes just as much pride in ASC's low profile and confidentiality as he does in its quality and craftsmanship.

But on the occasion of ASC's twentieth anniversary, a little boasting was in order. Hence the Vision, ASC's first in-house concept car, conceived as a three-dimensional advertisement of ASC's design, engineering, and production skills. In keeping with its low-key role as support group to the big guys, ASC eschewed sequined auto-show models, revolving chrome-plated platforms, and laser light shows for the Vision's debut. Instead, the fetching fourdoor was quietly unveiled before a group of techno-Egberts attending the SAE exposition in Detroit last February.

PHOTOGRAPHY BY KEN OSBURN

The Vision is an eye-catcher, all right, with its upswept tail, flush-glass upper, and modern-art rear flanks. As concept cars go, however, it is hardly earth-shattering news. Underneath its appealing shell (in steel, not plastic), the Vision is simply a mule car cobbled together from the bits of a halfdozen parts bins. The platform is a Dodge Charger that's intact from the fire wall forward and heavily modified in the passenger cell. Chrysler also built the Vision's turbocharged 2.2-liter four, automatic transaxle, and front suspension, though alterations were necessary to achieve the low hoodline. AMC is the source of the keyless entry system, and the climate-control apparatus came from an Olds Toronado.

The Vision's seats are Lear Siegler Corvette specials (the two in back have the thigh supports removed). The controls include push buttons and rocker switches

### ASC VISION







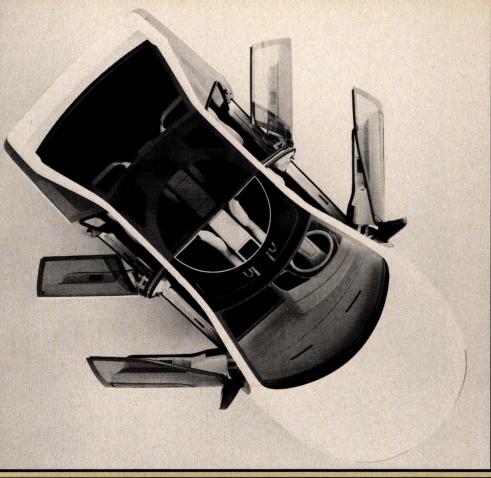
The Vision's rear-deck spoiler can be raised or lowered by a console-mounted rocker switch.

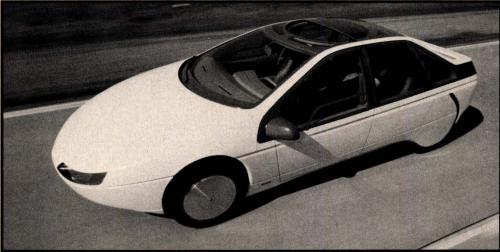
from Torrix, a Renault and Saab supplier, and a turn-signal switch from the Isuzu Impulse. Chrysler's electronic instrument panel was chosen because it's already in sync with the engine's computer.

ASC's design engineers worked a couple of their own tricks into the package. One console-mounted rocker switch can vary the deck-mounted spoiler's position by about three inches. (Whether its position affects anything is anyone's guess, since the Vision has yet to be wind-tunnel- or roadtested.) Another rocker switch electrically slides the license plate to the left, revealing the fuel-filler cap.

Gizmos and salvaged gadgets aside, the Vision's main attraction is a huge circular sunroof that operates much like the top of a Parmesan-cheese dispenser. The front half of the glass circle drops down and rotates clockwise at the touch of a switch, stowing itself neatly under the rigid rear semicircle.

If you think the glassy Vision sounds like the perfect medium for growing cacti, you're not far off. "We had Corning photochromic glass in mind when we did the initial renderings," says ASC chief designer Mark Trostle, a thirteen-year veteran with the company. "They had a problem manufacturing glass that size, but they had a potential program using that glass in an office building. Had the program come about, they would have been producing it in large enough sheets." The deal never materialized, however, and the sunroof's panels were eventually made by the Ford Glass





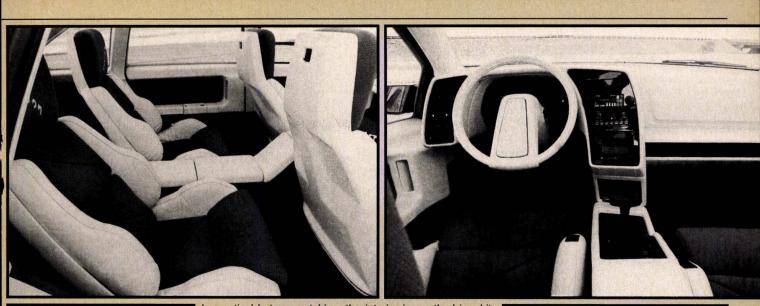
Division and coated with an ultravioletscreening laminate.

One advantage of the Vision's use of offthe-shelf components is that this 3-D advertisement can actually be driven, and we had the rare treat of taking a priceless show car out for a real-world spin. Not being

Vehicle type: front-engine, 4-door sedar	front-wheel-drive, 4-passenger,
	4-in-line, iron block and alumi- rysler electronic fuel injection
Displacement	135 cu in, 2213cc
	146 bhp @ 5200 rpm
	3-speed automatic
	100.0 in
Length	170.0 in
Width	
Height	
Curb weight	

completely heartless, we kept our joy-ride speeds below 50 mph. The aero skirting over the wheels seemed to work fine at these low velocities, and the sunroof worked beautifully in both the "shake" and "pour" modes—no buffeting, no hair-raising downdrafts.

You'd think that driving a car with an allglass roof would be like riding in Amtrak's observation car, but the Vision's low roofline, high instrument cowl, and bulky A-pillars and door framing (necessary to support the heavy glass structure) combine to crowd the driver's peripheral vision. The best place to appreciate the view is from the back seat. Unfortunately, the back seat isn't big enough for anyone bigger than Heinz



Impractical but eye-catching, the interior is swathed in white leather, accented by a blue-violet fabric. Below: Half of the circular sunroof rotates like a giant Parmesan-cheese dispenser.

Above left: Rear wheel skirts are slotted halfway down to vent underbody pressure. Skirts remove easily for tire changing. Above right: Electrically operated license plate hides gas cap.

Prechter, and he's the first to admit it. "That's for minis like myself," he jokes, as we sit with head bent at a 45-degree angle.

Says Trostle in the Vision's defense: "We really didn't intend for the Vision to be a trendsetter in that it's going to blow away the auto industry or anything like that. We are showcasing a design philosophy, the use of glass, the rotating sunroof."

Adds Prechter: "It made good sense to promote the Vision as a statement of the company to demonstrate our full-line capability from idea to reality."

Although Prechter's showpiece is far from ready for market, it represents a considerable advance from the days when he was a newly arrived German immigrant installing sunroofs in a two-car garage on the West Coast. Back then, he was also building one-off Hollywood kitschmobiles with George Barris. It was at Barris's shop where Chrysler's current design vice-president, Don DeLaRossa (working for Ford at the time), discovered Prechter.

"He saw me cut a hole in a Porsche 356, and I metal-finished it meticulously with no Bondo. He just couldn't believe that this could still be done. We became friendly, and he was my introduction to Detroit."

Prechter's first heavy-metal Motown job was the installation of 300 electrically operated steel sunroofs in 1968-model Cougar XR-7s. He made friends quickly, and within two years American Sunroof was cutting holes in GM and Chrysler roofs as well.



Prechter's stock rose another notch in early 1972, when he installed the industry's first all-glass moonroof in a Lincoln Mark III. "When it came out," remembers Prechter, "we could have sold the moonroof on the black market for twice its value. People would come with cash because they wanted a glass roof, and we only had so many to go around."

Vinyl roofs and T-tops were a natural progression, and Prechter's little company spawned several custom-roof treatments. Many of them were so wildly successful that the manufacturers eventually added them to their regular production lines.

In 1978, American Sunroof processed 110,000 cars through its various manufacturing facilities and sold about 70,000 sunroofs. Heinz Prechter was a 36-year-old golden boy.

A year later, American Sunroof Corporation dropped to its knees.

"I don't think I had a failure really until 1979," he says. "In 1979 I went through hell and came back. We never went bankrupt. We were *close* to going bankrupt. I, in my mind, was very close to going bankrupt.

"The failure was simple. I thought I had it made and I should look for other avenues. I started chasing girls," he says with a laugh, "and I didn't pay attention to my business. I gave up a lot of the control of the company, and we nearly derailed. By the time I came to the realization that it wasn't working, the economy went down, and we lost a lot of money."

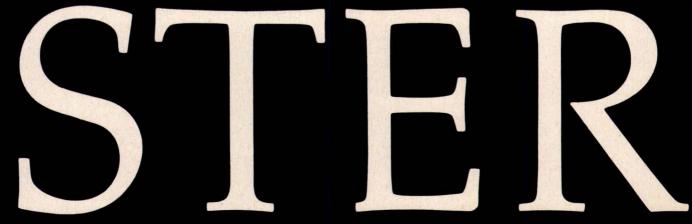
Prechter pulled back, regrouped, and got married. In the spring of 1981, he changed the corporate name to ASC, Incorporated, with three separate operating



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## ASC VISION





An epoxy-resin-and-cloth mold is cast of the clay model; a wooden framework prevents mold from warping. A fiberglass shell is then made and cut into individual panels that become the templates for the final sheetmetal parts.

companies (all with the ASC initials) underneath its umbrella. The American Sunroof-Company now sticks to the job of making and marketing sunroofs, the Automobile Specialty Company handles vehicle modifications on a grander scale, and the Aeromotive Systems Company, still in the planning stages, will eventually be the long-range planning and R&D arm of ASC, Inc., looking at transportation projects that are not necessarily automotive-related.

Today, more than a thousand ASC employees work in 21 facilities scattered around the country. The compact sunroofmanufacturing plant in semirural Southgate, Michigan, where Prechter first started, is now a cluster of four modernized buildings on 34 acres, housing ASC, Inc.'s, design, engineering, technical, and computer centers. The design center, staffed by four young stylists and six clay modelers under Trostle, boasts three workshops, a surface plate (a large, perfectly flat platform used for measuring body surfaces), and a viewing area. In the technical center, top-secret works in progress from various American, Japanese, and European car companies can be quickly isolated from one another by sliding garage doors when company representatives come to call. Within six months, computer-aided design and an environmental-testing chamber will be installed in the engineering facility. Finally, Prechter recently bought a piece of McLaren Engine's engineering expertise and reputation.

"In the past four years, we've tried to head ASC in more of a total-design-house direction," says Trostle. "In the past, everyone has gone to the Italian design





houses for that type of capability." Is Prechter trying to be the Pininfarina of North America?

"No, not at all," Prechter insists. "Not at all. We don't have the ego of a Giugiaro or a Pininfarina. We don't want to scoop our friends in the industry. We want to be a more pragmatic design and development organization than they are. I think we know

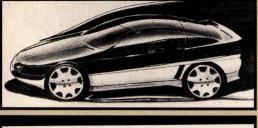


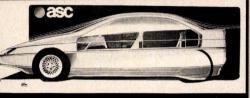
Daily rounds of Heinz Prechter (left) include a conference with chief designer Mark Trostle (upper photo), a visit to ASC's technical center (middle), and a stop at the design studio.

our role very well: as a facilitator. We do things for our customers on a volume basis which is below a level that is efficient for them to produce. That's my role, it has always been my role, and we want to be in that supportive role on an ongoing basis."

Given a second chance, Prechter is not about to let success slip through his fingers. He comes in at 6:15 a.m., studies reports from ASC's various plants, then tours the development stalls, conferring with technicians, engineers, and designers. He ends the day in his office at 7:30 p.m.

"I find it very easy to delegate responsi-





Slot in front of rear wheel would have caused too much turbulence and was moved back.

bility," he says. "All in all, I think I'm a rather hands-off manager till things don't happen. I only get involved when I sense from my little excursions that things don't happen. Then I can be rather demanding."

Prechter spends most weekday nights at dinner meetings and other business functions and puts in another half-day on Saturday. "Sunday is my family day," he says, reserved for his wife, Waltraud (Wally), and their five-year-old twins.

The more streamlined and professional the ASC operation has become over the past four years, the easier it's been for carmakers to hand their overflow and problem cases to Prechter. In addition to domestic programs, ASC has been working with Saab, Volvo, BMW, Lotus, and Toyota. Prechter's new plant in Long Beach, where Celica two-door sedans are turned into convertibles, is a major step forward for ASC, considering Toyota's renowned quality standards. With one foot in the door of the Japanese car industry, a budding clientele in Europe, and the domestic automakers sewed up tight, ASC is well on its way to carrozzeria status.

"My greatest satisfaction," says Prechter, "is that I'm still around and coming to work every morning. I'm proud that I could be the one stubborn enough to survive long enough to make the conversion business a legitimate part of the industry."

Prechter rests one hand lightly on the Vision. In less than an hour, all of ASC's salaried employees will assemble in this design studio for his quarterly state-of-the-company address.

"In the beginning, it was very much a question of 'What do we need these guys for? We can do it better ourselves.' But with perseverance, we overcame that stigma. Today, at all levels, the industry believes we are a most useful nuisance."

Heinz Prechter smiles in contemplation of this thought, surveying the massive renovation work being carried on around him.

"Don't you think I have an interesting business?" he asks with a grin.

## **Roof Renderings**

## An ASC portfolio.

• Call it kitsch or call it cash, ASC's roof renderings over the past two decades have firmly established Heinz Prechter's design firm in the automotive mainstream. More than a million cars have passed through ASC's capable hands, representing so many projects that even Prechter can't remember them all.

Proud though he is of ASC's success, Prechter is loath to blow his own horn. "I



Heinz Prechter came to Detroit in 1967 to install 300 steel sunroofs in 1968 Cougars.



Prechter parked his idea of a 1979 Lincoln Versailles (front) in Ford design veep Gene Bordinat's driveway with parking lights on. When Bordinat saw the car, he bought ASC's proposal and sales tripled the first year.



Ford designed the 1978 King Cobra package, and ASC provided the removable roof panels.



ASC builds about 2200 31-inch-stretched Chrysler limos yearly in its St. Louis factory.

have a lot of great ideas," he says, "but I don't want to take credit for them. Why should I? I'm not going to get anything for it. If I do a project in context with one of my good customers and he gets half the credit, I'm much better off."

As ASC embarks on a path destined to establish itself worldwide as a full-line design facility, *C/D* looks back on some of the more notable ASC projects . . . —*JL* 



The unusual reverse half-vinyl roof treatment of the Chrysler New Yorker St. Regis was an ASC program from 1974 through 1976.



One of Prechter's most successful projects, the Cadillac Eldorado Custom Biarritz, was built by ASC from mid-1976 through 1978 and was eventually moved in-house by Cadillac.



The Lincoln Continental Mark V sported America's first simulated convertible top in 1978 (1979 model shown), courtesy of ASC.



Collector's item: Only about 5000 of these 1978–79 Olds Toronado XS models were built with ASC's interesting wraparound backlight.

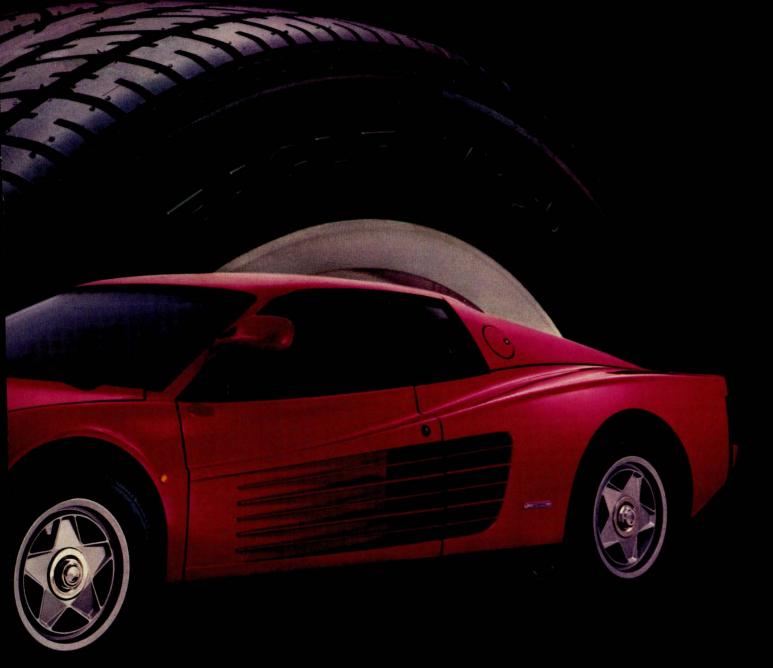


Toyota turned to ASC for the design and production of its 1985 Celica GT-S cabriolet.

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## Details, Details, Details.

One of the big things people notice about the Volvo 760 GLE is all the little things it has.

Dozens of thoughtful little touches that don't become apparent until you've owned the car awhile.

None of these details by itself is reason enough to buy a car.

But would you really want to buy a car from a company that decided to leave them out?

**1.** Volvo's front driver's seat automatically heats up when the temperature falls below 50°F. The passenger seat also warms up at the touch of a switch.

2. The overhead dome light in a Volvo has a delayed shut-off, so you still have light while you're buckling seat belts and putting the key in the ignition. And speaking or lights, we

have a lot: rear

reading lights, map lights, a light in the trunk, and a light under the hood. There's even a little light that tells you when a headlight or taillight is out.

**3.** Controlled outside rearview mirrors are heated to prevent the build up of ice and snow.

4. The rear window defogger is equipped with a timer. It turns itself off in case you forget to.

5. Tubular steel bars are built inside front

and rear doors to help protect you in a collision. The inside edges of the doors have red warning lights so other drivers can see open doors at night.

6. A Volvo has six brakes. One powerassisted disc brake on each wheel. And a separate set of parking brakes. Our dual

triangular split braking system gives you 80% of your stopping power even if one brake circuit should fail. 7 In areas where the

• paint is most likely to get scratched, the zinc plating underneath "bleeds" to fill in the scratch and prevent rusting.

8. seats have adjustable lumbar supports to ease back strain.

9. The leather for the seats is supplied by the same renowned firm that supplies the leather for another luxury car. The Rolls Royce.

10. Fifteen separate vents inside the car

assure the even distribution of air. The air is changed four times a minute even when the car is standing still.

11. Automatic Climate Control system. You dial the temperature, the system keeps it constant. 12. There are nine storage areas inside a Volvo 760 GLE, including one in the folding armrest in the center of the backseat.

**13.** Cross members inside the front seats prevent "submarining" (sliding under seat belts) in the event of a crash.

14. The interior is ergonomicallydesigned so that 95% of America's adult population can reach all the controls without bending.

15. The hood swings up at a 90° angle to make servicing easier.

16. located in front of the rear axle for added safety in a rear end collision.

17. The audio system has four speakers, two in front, two in back. There's an amplifier for each set of speakers. 25 watts-per-channel in the front. 40 watts-per-channel in the back. A graphic equalizer lets you balance the tone to your own taste.

18. Last, but not least, detail of all. The little nameplate on the front that tells you the 760 GLE is built by a company that's been paying attention to details for over half a century.

C 1984 VOLVO OF AMERICA CORPORATIO

VOLVO

The 700 Series by Volvo



## Alfa Romeo 75/Milano

## Something new in sports sedans: Japanese value blended with European prestige.

• They say that Benjamin Braddock, the miscreant played by Dustin Hoffman in the 1967 movie *The Graduate*, went on to a brilliant career in plastics. Mrs. Robinson eventually recovered from her neuroses and became a doting grandmother. That feisty red Alfa Duetto that carried the flick's leading man so romantically up and down the California coast unfortunately had to be sold soon after the second baby came—but not before it had accomplished two noble missions: the interruption of one marriage that was never meant to be and the establishment of Alfa Romeo as a prime purveyor of four-wheeled escape.

Of course, times changed along with the Braddock and Robinson clans. These days, a guy can marry his girlfriend *without* wrecking a couple of families. Regrettably, this seems to have put a serious dent in the demand for drive-all-night, wind-in-the-face roadsters. When Alfa's U.S: volumes dropped to 2150 units per year in 1982, it was clear that Duetto descendants were fading faster than madras sports jackets. If Alfa was to make it as a leading U.S. boutique for Italian automobiles, it was high time to restock its stores.

America called Italy for a future, and Italy just happened to have something with

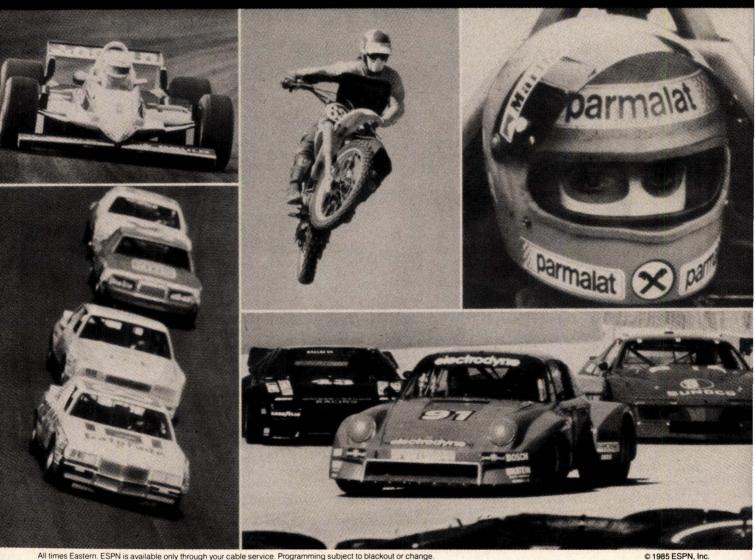
PHOTOGRAPHY BY MARTYN GODDARD

the potential to give the Alfa Romeo brand a lasting stay here: a sporty sedan due to hit the European market in time for Alfa's 75th anniversary celebration in June of this year. The new model is dubbed, appropriately enough, the Alfa 75, though the name will be changed to Alfa Milano when the car hits our streets in about eight months. Anticipating that spring-of-1986 introduction, Alfa invited a select group of motoring journalists to experience the European model on its home turf. *C/D* was there.

One glance will tell you that collegegraduate-grade sex appeal is not the Alfa 75/Milano's lot in life. Rather, this is a car

AUGUST 1985

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- 8/18 CART: Dominio Pizza 500
- \*8/19 Formula I: Austrian Grand Prix
- 8/23 NASCAR: Late Model
  - Sportsman
- 8/24 NASCAR: Busch 500
- \*8/26 Formula I: Dutch Grand Prix 8/31 NASCAR: Late Model
  - Sportsman

\*B.F. Goodrich sponsors Formula I, IMSA and World Endurance Racing in addition to ESPN's Speed Week every Thursday at 7:30PM.





aimed at a more mature and conservative buyer: 30-to-40-year-old professionals who bring home at least \$30,000 annually to a small-to-medium-sized family. In other words, this car should appeal to the Ben Braddocks of the world who cleaned up their acts, tied their ties, and assumed responsible roles in society.

This is not to say the 75/Milano is a boring family sedan. Alfa made sure that wouldn't be the case by sorting through the parts bins for the best set of available components. There will be one and only one engine for America, even though Europeans have four four-cylinder engines (three twin-cam gas burners and a turbo-diesel) and one V-6 to choose from. The V-6 intended for us is essentially the same 150horsepower, single-overhead-cam, fuel-injected engine now sold in the GTV6 2.5. The chassis is standard Alfa fare, which is to say quite at odds with today's almost universal trend toward transverse powertrains, front-wheel drive, and strut-type suspension components. The new 75/Milano (like the GTV6) uses a front engine and a rear transaxle to drive the rear

wheels. The front suspension is an unequal-length-control-arm design, and the rigid rear axle is the de Dion type. The front springs are torsion bars, the rears are coils, and an anti-roll bar is used at each end. Michelin MX V tires (in a 195/60VR-14 size) were fitted to the early-built test cars we drove in Europe, and it's reasonable to expect that they'll make the trip to America next spring.

ALFA

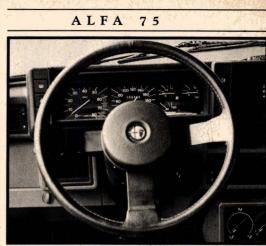
75

This fairly unconventional hardware is bundled in a rather unusual wrapper. Although the size is mainstream-similar in most dimensions to a Honda Accord fourdoor-the style is unmistakably Italian. The charcoal-colored hem- and waistlines. the full-width reflector band in back, and the sharp upward kink to the rear fenders are characteristic of a maker that prefers to lead rather than follow styling trends. The exterior shape is purposely positioned halfway between two popular extremes: the granite-block look typified by the Volvo 760 and the all-aero styling of the Audi 5000S. According to Alfa, clinics in the U.S. have voted favorably on the Milano's looks. A stunning beauty it is not, but the cut of its fenders and the trim of its character lines are undeniably eye-catching. Alfa will need a special tool to hammer out a niche in the crowded sports-sedan category, and the Milano's distinctive tailoring may be the right instrument for the job.

In contrast to the avant-garde exterior, the interior is low-key in the classic European tradition. There are a few delights that catch the eye-overhead power-window switches, an "elbow patch" leather insert for each front-seat bolster, a drawer-type glove box, and a U-handle parking brake-but any legitimate car connoisseur should feel comfortable with the selection of hard and soft trim. Alfa has swallowed its pride to build an ample range of tilt-andtelescope steering-wheel adjustability, so you can dial up the long-arm, short-leg position when you feel like Mario Andretti and a more conventional seat-wheel-pedals relationship when you don't. The instrument panel is a satisfying array of needles and dials, though Alfa designers have paid heed to the electronics age by supplying a useful trip computer and an extensive bank of warning indicators; these in no way distracted our attention from the basics, however. A five-foot-ten-inch driver is comfortable in the bucket seats, no critical operating information is hidden from view,



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the pedals are properly set for heel-and-toe work, and the steering wheel has wellformed and well-placed spokes. In other words, serious drivers should feel right at home in this sedan.

They should be equally happy with the Milano's dynamic personality. The V-6 burbles with vitality-from its eager lowend torque all the way to the potent push available at the 6300-rpm redline. The shifter occasionally groans and growls if you apply pressure past the gear-engagement point, but normal shifting is sweetness and light. The steering is slightly vague on center, but directional stability is tight all the way up to the terminal velocity we enjoyed on the Milan-Turin autostrada (read, redline in fifth, or in the 130-mph range). Sizing up the handling will have to wait until a full test can be conducted in America, largely because dry roads were in short supply on our preview trip. We are, however, prepared to say that the Milano's wet adhesion was most impressive.

The Alfa 75 V-6 preview cars cried out for a limited-slip differential during our rainy Italian excursions, and this is one of several items the factory has promised to attend to when it turns the domestic 75 into an American Milano. Experiments with a Gleason Torsen differential are under way, and the engineers are hopeful that such a device will make the boat. They're also working hard on high-capacity air conditioning, a new console that can accommodate stereo radio equipment, and the usual safety, emissions, and bumper paraphernalia necessary for our market. At the moment, factory engineers claim that a mere two horsepower will be lost when catalysts are added and that outside appearance changes will be minimal. (Flush headlamps are definitely a part of the U.S. specifications.) No fewer than four trim levels will be sent our way (three initially, plus an elevated-performance package for the 1987 model year), and the list of developments for future release is indeed tantalizing: a 3.0-liter engine producing 170 (or so) horsepower, a four-speed automatic transmission, and an anti-lock braking system.

All in all, the Milano spells the brightest future Alfa has ever contemplated for the American market. The stateside manage-



ment team is realistic about the brand's strengths and weaknesses, and they insist there is no interest in the quick-kill approach to image building. As evidence of this fact, the firm's 1986 sales goal for the U.S. is a modest 10,000 sedans (plus 5000 sports cars). Also contrary to the hit-and-

Vehicle type: front-engine rear-wheel-drive 5-passenger 4-

door sedan
Price: \$15,000 (estimated)
Engine type: V-6, aluminum block and heads, Bosch elec-
tronic fuel injection
Displacement 152 cu in, 2492cc
Power (SAE net) 150 bhp @ 5600 rpm
Transmission
Wheelbase
Length 170.5 in
Width
Height
Curb weight 2550 lb
Manufacturer's performance ratings:
Zero to 62 mph8.2 sec
Top speed
Fuel economy, European city cycle 18 mpg
steady 56 mph 35 mpg
steady 75 mph 26 mpg
and the second

run method favored by some manufacturers with a hot new car is Alfa's aim to strengthen its existing retail network; it has no plans for a major increase in the number of dealers. (Today there are 131 Alfa dealers nationwide, and 150 should be on stream to sell the Milano.)

The half-hidden clincher that makes the whole plan so sure-fire is the Italian-American currency situation. The lira is dirt cheap with respect to the U.S. dollar, so Alfa can afford to sell a well-equipped V-6 sedan at four-cylinder prices. If the current exchange rate holds, Alfa Milanos will board ship in eight or so months wearing \$15,000 price tags! Think of it: a prestigious nameplate, a near-Japanese value, and a little bit of Italy in one tidy package. The Alfa Milano might be enough to convince Ben Braddock to dump plastics in the hope of winning one of the nineteen available Alfa Romeo franchises .- Don Sherman

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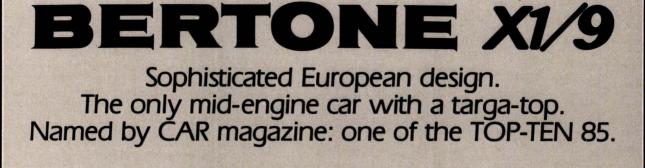
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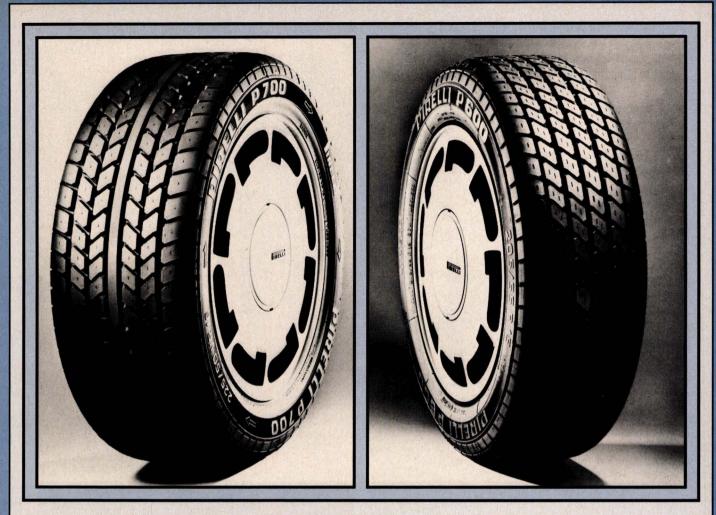
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**BERTONE** X1/9 SCCA Showroom Stock Class C Winner 1984



# Pirelli's Progress

The latest rubber from the low-profile pioneers.

• Ultra-low-profile tires no longer cause much of a stir. Four-door sedans are commonly shod with 60-series rubber these days, and 50-series gumballs, which once graced only the most exotic supercars, are now showing up on the hotter econoboxes. Pirelli deserves much of the credit for the wide-tire proliferation, for it was the first tire maker to win an original-equipment application for a 50-series tire. Beginning with that initial use of P7s on the Porsche 930 Turbo in 1976, Pirelli's 50-series tire has increased in popularity to the point where it is now available on 84 different models. Pirelli's 60-series P6 has won similarly wide acceptance.

As Pirelli's success has attracted more and more competitors, performance tires have steadily increased their share of the overall tire business. The manufacturers are interested in fat rubber for two reasons: it sells at premium prices that bring healthy

### BY CSABA CSERE

profit margins, and it offers a great imagebuilding opportunity that has helped several makers to sell the lesser-grade rubber in their lineups. Pirelli's decade-old dynamic duo has lost some of its luster as a result of all the competition in the wide-tire business, so the company is responding with two new high-performance tires.

The new tires, the P700 and the P600, should be on the market in a few months. The P700 will be available in 45-, 50-, and 55-aspect ratios, the 600 in 55, 60, and 65. Like their predecessors, both tires were designed to be well-rounded performers rather than autocross gumballs. This philosophy stems from Pirelli's primary orientation toward European original-equipment sales rather than the aftermarketreplacement business. Consequently, outstanding dry-road handling, which is the prime concern of many aftermarket performance-tire makers, is not the only requirement of Pirelli's wide tires. They must also have sufficient wet traction for triple-digit speeds on rain-slicked autobahns, enough high-temperature durability to withstand hours of flat-out cruising, and comfortable ride and noise characteristics.

These criteria molded the evolution of the P700 from the P7. The carcass was modified to incorporate a cushioning layer between its two radial rayon plies, allowing greater lateral stiffness for a given vertical stiffness. The new sidewall has a smoother transition of rigidity from the bead to the carcass area, as well as a protruding ridge near the bead that presses against the wheel rim to help lock the tire in place. These carcass changes provide a more even pressure across the tread, improving grip and tread life.

Surrounding the carcass are four cir-

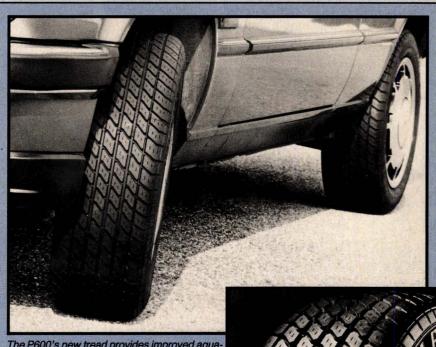
PIRELLI

cumferential belts, two steel and two nylon, just as the P7 used. The nylon belts, however, are made from a new compound whose strength and stiffness degrades less at high temperature. This improvement limits the P700's dimensional growth during sustained high-speed running.

The internal changes are complemented by a new directional tread pattern, which must be mounted with a particular orientation for optimum performance. Pirelli engineers have adopted a design in which the outer blocks are oriented to resist the deforming forces produced in tail-out power drifts (in powerful rear-drive cars). The advantages of this design are reinforced by a tread compound that has superior hightemperature strength. The result is more control during power-slide maneuvers, as well as less tread wear and more consistent performance during beyond-the-limit conditions. In addition, the new tread pattern offers improved water drainage.

According to Pirelli tests, the P700 has five percent more dry-skidpad grip than the P7, eight percent more wet-skidpad grip, fifteen to twenty percent higher aquaplaning speed, and ten to fifty percent longer tread life in normal-to-extreme driving. Meanwhile, ride comfort has been maintained, and the noise level is slightly reduced. As production of the new tire gears up and original-equipment approvals are obtained, the P700 will replace the P7 as Pirelli's premier tire.

In contrast, the new P600 will not replace the current P6 but is intended as a



The P600's new tread provides improved aquaplaning performance at high autobahn speeds.

sportier evolution of it. With more emphasis on performance and less on comfort, the P600 will occupy a slot between the P6 and the P700 in Pirelli's lineup.

The P600 carcass has only one radial ply in most sizes instead of the two in most P6s, a change made to provide better handling at a given level of ride comfort. The circumferential plies are similar to the P700's, with two steel belts and two nylon belts instead of the P6's total of two or three belts. The four belts improve lateral stiffness for better handling. The nylon cords are made from the same high-temperature-resistant compound as the P700s.

The P600 also gets a new tread pattern, but Pirelli avoided the increased cost and complication of a directional tread on this less expensive tire. The new pattern was designed for improved aquaplaning performance. The tread compound is a less costly version of the P700's. According to



Pirelli, these changes yield significant improvements over the P6 in every performance area, with comparable ride comfort and noise level.

Pirelli was kind enough to offer us a chance to test-drive its new designs on a variety of automobiles. (Unfortunately, though, we had no opportunity to compare their performance with other car-and-tire combinations.) We evaluated the rubber on the Jarama circuit in Spain, which formerly hosted Grand Prix competition, and on a variety of roads in the area. Comparing the P7 and the P700 on the same BMW 635CSi at the track, we found that the big Bimmer was definitely easier to drift on the new tires, though the other improvements claimed by Pirelli were harder to assess. A Volkswagen GTI was available for comparing the P600 with the P6, and we found that the GTI put its power to the ground somewhat better in the wet with the new tire.

These may seem like modest improvements, but the new rubber isn't intended to be anything more than a refinement of the original trendsetting designs. Pirelli feels no need to create any major new splashes in the market it created; its stated goal was simply to produce the finest all-around high-performance tire available. We'll tell you how well it succeeded in our next tire test.

The P700's outer tread blocks are oriented to resist the forces induced by simultaneous braking and cornering.



Bill Elliott's Copper Plus sparked Thunderbird shattering records at the Winston 500.

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THE PLUS IS PREMIUM PERFORMANCE.



# BMW 524td

# On turbo-diesel timing.

• There are two kinds of timing in the car business. The first is the timing that's set when the tuneup guy strobes your engine to make sure the ignition is firing at the proper instant. The second is determined strictly by whether a revolutionary new model is fired into the showrooms at the proper moment. For BMW, the 524td is revolutionary simply because it is dieselpowered, albeit boosted with a turbocharger. The Bavarian Motor Works hopes the turbo will keep the 524td from clipping the wings of its reputation for performance.

However, just as regular timing lights are useless for tuning diesels, enthusiasts may wonder if the corporate timing light that BMW uses to calibrate its marketing strategy is on the fritz. With the glut of fuels, the cost of diesel, and the blitz of hot cars, diesel power has fallen from favor.

Diesels were once taboo with BMW, but a few years ago, when fuel was tight, the Bavarians put Austria's Steyr-Daimler-Puch to work on designing an oil burner. In the early Eighties, Ford was also anxious to have a turbo-diesel option, so it arranged to buy such engines from BMW. Lincoln, however, has now canceled the Mark VII's BMW-diesel option.

As oil burners go, BMW's is a winner. Based on the M20 six-cylinder gas engine developed for the 528e and the 325e, it has been reengineered and designated M21 D24. Its camshaft remains overhead, its head remains aluminum, its block remains cast iron, and BMW still favors a crossflow intake-exhaust tract for a good mix of performance, economy, and drivability. But durability needs dictated the full waterjacketing of all cylinders, which in turn required a 4mm decrease in bore, to 80mm. Other changes to the resulting 2443cc powerplant include a higher percentage of chrome in the block for reduced wear; three reinforcing ribs cast laterally in the block; pistons lubricated by oil spray; more wear-resistant main bearings; reinforced main-bearing supports; stronger connecting rods and rod bearings; a forged-steel rather than cast-iron crankshaft; and, in the oil system, a doubling of pump capacity. The high (22.0:1) compression ratio requires a vertical valve arrangement rather than the inclined layout of BMW's gas engines, and Nimonic alloy is used on extralarge valve seats. The camshaft lobes are nitrided, and the shaft itself turns in seven bearings instead of four.

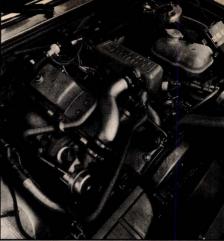
Add-on sound-deadening measures include a 10mm panel of Escan fiberglass formed to leave a small, acoustically desirable air gap on the underside of the hood; polyurethane foam across the outer fire wall; added insulation on the passenger side of the fire wall; better sealing of passages to the interior; and redesigned mounts and dampers for the entire drivetrain.

BMW says these changes and others add 140 pounds in comparison with the 528e. If the diesel program has deposited potatoes on the front wheels, BMW has offset them with meat in the engine. Early 524tds and 49-state Lincolns alike used a variety of mechanical devices to instruct engine functions now controlled by BMW's latest round of computerization (also applied to California-spec Lincolns). Fuel-injection timing is electronically controlled and determined by flywheel position. Although

Vehicle type: front-engine, rear-wheel-drive, 5-passenger, 4door sedan Price as tested: \$24,955 (base price: \$24,115)

Engine type: turbocharged diesel 6-in-line, iron block and aluminum head, Bosch VE mechanical fuel in-

jection with electronic cont	
Displacement	149 cu in, 2443cc
Power (SAE net) 11	4 bhp @ 4800 rpm
Transmission	. 4-speed automatic
Wheelbase	103.3 in
Length	189.0 in
Curb weight	
Zero to 60 mph	11.7 sec
Zero to 100 mph	45.6 sec
Standing ¼-mile	18.2 sec @ 75 mph
Top speed	
Braking, 70-0 mph	
Roadholding, 300-ft-dia skidpad	0.72 g
Road horsepower @ 50 mph	
EPA fuel economy, city driving	
C/D observed fuel economy	





conventional diesel injection takes its cues from the accelerator pedal, a BMW feedback loop also bases decisions on engine rpm, intake-manifold pressure, and coolant, fuel, and intake-air temperatures. An AiResearch T3 turbo pumps a maximum of 11.6 psi; then a flap valve relieves excess boost. Tuned exhaust pulses also help keep the 130,000-rpm turbo spinning.

The rated output is 114 horsepower at 4800 rpm, and it's useful output, whipping up an 11.7-second 0-to-60-mph time and a top speed of 107 mph. The four-speed ZF automatic is well tailored to the power curve. The EPA rates the 524td at 24 mpg, and we couldn't drag its C/D average below 22 mpg.

In tuning the 524td's chassis, BMW has perhaps skimped on the basics. Its tires, though 195/70HR-14s, are of Michelin's slim, long-life variety. General driving feel and coordination are quite good, and the car is a sweetheart on the highway, but skidpad laps and brake testing from 70 to 0 mph reveal a modest 0.72-g cornering limit and 219-foot stops, figures in the range BMWs turned in ten years ago.

Except for that, the 524td is easily a 90thpercentile car, full of power-assisted luxuries, deluxe comforts, and good manners. The work lavished on the turbo-diesel engine qualifies it as a worthy power source for a sports sedan. That said, there are at least two things to consider. First, are you ready to search out diesel fuel in unfamiliar territory in the middle of the night? Second, do you want to be ready the next time fuel becomes difficult to find in your own neighborhood even in the daytime? If the crunch comes again, the 524td could become the hot rod of a new age, in which case BMW had better figure on importing a lot more than the 2500 turbo-diesels it's scheduled this year. -Larry Griffin



# It's Unanimous

## (Even the competition says ESCORT's the one to beat)

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Now, when experts refer to the high-water mark in radar protection, they automatically turn to ESCORT. In March of this year, *Car and Driver* published its latest detector test, this one comparing remote-mounted models. ESCORT is designed for dashtop or visor mounting. But the magazine included ESCORT in the test anyway, as the reference against which the performance of the others would be measured. ESCORT scored 412 points in the final rating, compared to 274 for the highest-finishing remote. You might say the comparison showed that there is no comparison.

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Seven years is a long time in the radar warning business, but there is no shortcut to a good reputation. *Car and Driver* said, **"The ESCORT radar detector is clearly the leader** in the field in value, customer service, and performance..."



advertisements for other radar detectors.

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#### **Check our references**

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#### SHORT TAKE



# Colt Premier Turbo

One of Mitsubishi's best, but a Chrysler exclusive.

• For all of the inroads Japanese makers have made into the American market, there are still certain segments they have left largely untouched. Some of the omissions, such as bargelike six-passenger V-8 sedans, megadollar status symbols, and hand-built exotic sports cars, are perfectly understandable. But there's no explaining exactly why the Orient has sent us only a handful of compact sports sedans, cars that could go head to head against such pocket rockets as the Volkswagen GTI and the Dodge Omni GLH.

Mitsubishi is one of the few Japanese makers that have joined the fray. The Colt Turbo, which Mitsubishi builds for Chrysler Corporation, and its sister, Mitsubishi's own Mirage Turbo, have the strong performance and the capable handling needed in the sports-sedan market. Like much of their competition, however, they have been available only in hatchback body styles, limiting their appeal to many buyers.

The good news this year is that the Colt—though not the Mirage—is now available with four doors and a trunk as well. The Colt sedan is equipped with the same chassis components as its hatchback siblings: a transverse powertrain, a strut-type front suspension, a pure trailing-arm rear suspension, and rack-and-pinion steering. Two versions are offered: the DL and the more upscale Premier, which features plush cloth upholstery, sport seats with adjustable lumbar support, dual electric mirrors, halogen headlights, a rear defroster, and other amenities.

The Premier is much more than an upscale econocar, however. Thanks to its high-performance suspension (front and rear anti-roll bars, stiff springs and shocks), ventilated front disc brakes, fast-ratio steering, 185/60HR-14 Yokohama A-008 tires,



and optional 102-bhp turbocharged engine, it's essentially a four-door version of the Mirage Turbo that so impressed us last November. Our Premier Turbo test car was also equipped with several luxury options suitable to its more formal shape, including air conditioning, power steering, and an extremely elaborate, three-module sound system.

The Premier's traditional shape belies its sporting character, for the elegant, wedgy silhouette of the notchback body connotes conservative luxury. What's more, the trim is subdued and tasteful, and the skirts and the spoilers that give Colt hatchbacks their sporting flavor are nowhere to be found. Our test car's optional silver-and-maroon

Vehicle type: front-engine, front-wheel-drive, 5-passenger, 4-door sedan

Price as tested: \$10,156 (base price: \$7409)
Engine type: turbocharged 4-in-line, iron block and alumi-
num head, 1x2-bbl throttle-body fuel injection
Displacement
Power (SAE net) 102 bhp @ 5500 rpm
Transmission 5-speed
Wheelbase
Length 167.3 in
Curb weight
Zero to 60 mph
Standing ¼-mile
Top speed
Braking, 70-0 mph 187 ft
Roadholding, 300-ft-dia skidpad 0.77 g
EPA fuel economy, city driving 24 mpg
C/D observed fuel economy 23 mpg

paint scheme further separated it from the sporting world.

From the driver's seat, though, there's no doubt that the Premier Turbo is a performance car. The slick-shifting five-speed transmission and the turbocharged 1.6liter engine provide plenty of thrust for the 2300-pound car. And like other turbocharged engines from Mitsubishi, the Premier's is calibrated for broad-band output rather than just top-end surge. As a result, the Premier Turbo accelerates from 0 to 60 mph in 9.9 seconds, runs the quarter-mile in 17.1 seconds at 79 mph, and doesn't stop until it reaches 108. The turbo motor pulls well from low rpm and always operates with admirable smoothness and refinement.

The Premier's suspension performs with similar grace. The Yokohama tires grip the pavement tenaciously and let go very progressively, just as they do on the Mirage Turbo. In addition, the Premier's slightly more even weight distribution makes it more neutral at the limit than the Mirage, so throttle steering is much more effective.

Should you wish to steer with the wheel, the Premier's power steering also works well, requiring less effort than the standard manual steering while maintaining admirable feedback. Unfortunately, the power steering shares the manual's nonlinear feel when the wheel is first moved from center, so turn-in precision is less than ideal. Still, this imperfection is more irritating than inhibiting, and the Premier can indeed fly along winding roads.

The Premier Turbo is one hard charger that is also pleasant and practical in everyday use. Its front seats are supportive and comfortable, road and wind noise are subdued, and the ride is better than that of the hatchback with the same suspension. The rear seats are also comfortable, if a bit tighter than some of the competition's, and the trunk has a usefully shaped volume that can be enhanced by the fold-down rear seatbacks. The instruments and the controls have the same intelligent layout found in the hatchbacks, except for the annoyingly complex sound system, which is buried in the console near the floor.

All of this is yours for a sticker price of \$10,156 at your Dodge or Plymouth dealer. Or delete the two-tone paint and the radio, and the bottom line drops to four figures. That's about \$1500 less than a comparably equipped Jetta GLI, which is already a rather good buy, and about the same as an Omni GLH, which is faster but lacks the Premier's refinement and trunk. The Premier even stacks up well against its comparably priced but slightly larger sibling, the Tredia Turbo, offering far better handling and only a bit less speed. Given its attractive price, we expect the Colt Premier Turbo to be a sellout success, one that should encourage other Japanese automakers to send us some pocket-rocket sedans of their own. -Csaba Csere

#### SHORT TAKE



# **Renault Encore GS**

Wanted: Expert drivers for kinky relationship with ebony coquette.

• The Encore GS is a spicy little car in danger of being eaten alive. The Encore's GS trim positions it against the sport versions of at least a dozen hatchback adversaries, from the Colt to the Civic to the Omni

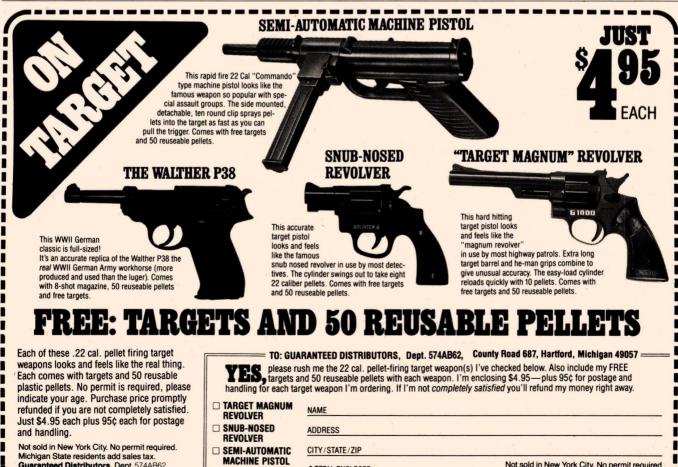
to the GTI. Many of them are terrific. Unfortunately, the GS finds itself in the same precarious position as American Motors Corporation, which builds the Encore under the Renault banner. AMC has re-



cently announced a \$29 million guarterly loss, and, barring major concessions by the UAW, it has threatened to shut down its production lines forever. Renault, as 46percent owner of AMC, has been losing its shirt, not only in the States, but worldwide. The red ink totaled about \$1 billion last year. Despite such blows, AMC says, "the Kenosha, Wisconsin, plant will operate a minimum of another year, but even if it were shut down, Encores and Alliances alike are built all over the world, so they'll be with us for many years to come.'

However, even a 1985 upgrading of the GS package has failed to reverse falling Encore sales, other builders having infused newer hatchbacks with more spirit.

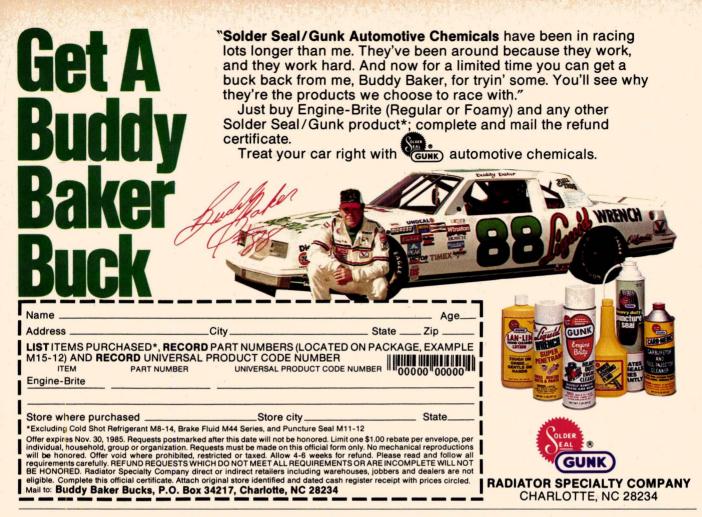
Our ebony coquette wore red pinstriping, fog lamps, and an air dam. Renault has attempted to move toward the market's fascination with performance add-ons, but the mass of the French giant may have kept



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it from regrouping soon enough to breathe suitable life into the Encore. Renault's optional 1.7-liter is built in France and, since late 1984, at a new plant in Mexico. Like AMC's American production line, however, the Mexican plant may soon be guillotined by the French.

Whatever its origins, the 1.7-liter four offers added oomph. (The standard 1.4-liter is an economy specialist that passes little but gas pumps.) Rated at 78 horsepower, the 1.7 feeds the front wheels through a five-speed gearbox—which, on our test car, regularly popped out of second on deceleration. The 1.7 buzzes through testing with a ho-hum 0-to-60 time of 12.9 seconds and a top speed of only 97 mph, despite a "sport tuned" exhaust system. The EPA reports 29 mpg on its city cycle for this 1.7-liter GS. We at *C/D* report 23 mpg on our more savage cycle.

Sad to say, these results come with a variety of vibrations as the motor passes through several tingling modes.

Stopping quickly killed the vibrations (and the engine) outright, both in generating the GS's so-so 208-foot stops from 70 mph and in normal, brisk driving, clearly overcoming the throttle-body fuel injection's deceleration fuel shut-off and idlespeed control. These engine functions are computer-controlled, as are nine others, so adjustments to the settings are not the same screwdriver-based operations that once sufficed.

AMC's own screwdriver-based detailing of trim is better applied than in past Encores. Most of the pieces seem beefier and less likely to come adrift. But the doors and the body structure lack ultimate bedrock solidity. Renault has done a better job with the packaging, which is first-rate except for a leg-folding, arm-stretching driving position. A surprising amount of passenger and trunk space is enclosed atop the 97.8-inch wheelbase. Details include rather artless houndstooth upholstery and a red, black, and chrome dash. The skins of the comfortable, clamshell-shaped front buckets are recessed for added kneeroom in back. They slide not only fore and aft, but also in a cupped arc to alter support beneath your thighs. Each seat perches on a narrow pedestal that provides wide rear footroom. In chilly weather, heat is ducted through the console to the rear. Retainers keep the rear

Vehicle type: front-engine, front-wheel-drive, 5-passenger, 3-door sedan Price as tested: \$8680 (base price: \$6772)

Engine type: 4-in-line, iron block and aluminum head, 1x1-

bbl throttle-body fuel injection	
Displacement 105 cu in, 1	721cc
Power (SAE net)	0 rpm
Transmission	-speed
Wheelbase	7.8 in
Length 16	50.6 in
Curb weight 2	254 lb
Zero to 60 mph 12	2.9 sec
Standing ¼-mile	
Top speed	
Braking, 70–0 mph	
Roadholding, 300-ft-dia skidpad	
EPA fuel economy, city driving 2	
C/D observed fuel economy 2	
And the second s	1

seatbelts in place when the split seatback is repositioned after being folded flat for added cargo space. Our options included power steering, windows, and locks; cruise control; a leather-wrapped steering wheel; a rear wiper/washer; a pop-up sunroof; fourteen-inch alloy wheels; and Goodyear Eagle GTs.

Hopping onto the Eagle GT bandwagon makes the Encore GS go around corners faster. Renault's "handling suspension" includes gas-filled struts and shocks and brings a strangely mixed ride that varies between pillowy and pogo. Our GS gave 0.81 g on the skidpad and none of the old Renault feel that it was about to keel over. The power steering is agreeably light, has good feel, and noses the car effortlessly into corners. Once there, however, the rear tires work hard enough that an insensitive driver can easily (and unwisely) break the tail loose by abruptly closing the throttle or stabbing the brakes. Tightening the steering at the same instant thoroughly unsticks the tail, so it's hard not to swap ends.

In pure desirability, the Encore GS falls in the low-middle range of the hot-hatchback pack, between flattered also-rans and insulted standard-setters. Unfortunately, the handling puts more kink into the coquette than the engine can straighten out. In a tight-assed class known for adroit performance, that's an even bigger sin than lack of power.



# ROAD TEST REVIEW

Quarter-mile acceleration: Elapsed time from zero through a quarter-mile distance. Car is loaded with driver, full tank of fuel, and 30 pounds of test instrumentation. With manual-transmission cars, some wheelspin is used at the starting line, but all shifts are lift-throttle. Automatic upshifts are done manually.

Top speed: Maximum average speed in two-way runs. Braking, 70-0: Minimum obtainable stopping distance from 70 mph without sliding any tire. Since distance measurement begins with actuation of a brake-pedalmounted contact switch, the car's brake-system-response characteristics are included in the stopping-distance results. EPA estimated fuel economy: Each test car is driven on a chassis dynamometer, which matches both the inertia loadings (the car's weight) and the absorption loadings (aerodynamic and rolling resistance) that the engine would see on the highway. The test car follows a precise speed-versus-time trace after a cold start. The cycle runs for 7.5 miles at an average speed of 20 mph. Fuel consumption is calculated from a chemical analysis of the exhaust emissions.

Interior sound level at 70 mph: Noise level measured with a sound-level meter. The microphone is located at the driver's right ear, and results are averaged from two-way tests to cancel wind effects.

	PRICE AS TESTED,	0-60/ ³/₄-MILE,	TOP SPEED,	BRAKING, 70–0 MPH,	EPA ESTIMATED FUEL ECONOMY,	INTERIOR SOUND LEVEL @ 70 mph,
MODEL/MONTH TESTED	\$	sec	mph	feet	mpg	dBA
Alfa Romeo GTV6 2.5 (5/85)	18,400	8.2/16.1	130	198	19	75
AMC Eagle (7/85)	16,391	15.1/19.7	86	222	16	72
Audi Coupe GT (5/85)	16,125	9.0/16.6	115	209	19	70
Audi Quattro Turbo (7/85)	35,335	7.2/15.5	124	185	16	72
Audi 4000S (5/85)	15,335 18,660	10.3/17.4 9.2/16.8	109 115	172 191	24 18	72 72
Audi 4000S Quattro (7/85) BMW 325e (6/85)	22,290	9.2/16.6	114	203	21	68
BMW 635CSi (2/85)	41,705	8.2/16.0	132	189	16	72
Buick Electra T Type (5/84)	16,879	11.4/18.0	108	208	21	68
Buick Regal Grand National (7/85)	16,289	7.5/15.7	121	198	17	68
Cadillac Cimarron V-6 (3/85)	15,119	9.8/17.2	110	201	20	71
Cadillac Fleetwood (9/84)	22,948	11.7/18.2	105 98	232 213	19 17	68 71
Chevrolet Astro CL (2/85) Chevrolet Camaro Berlinetta (5/85)	12,375 13,741	11.9/18.6 10.0/17.0	116	213	18	68
Chevrolet Cavalier Z24 (3/85)	10,591*	9.5/16.9	114	189	19	71
Chevrolet Corvette (12/84)	27,023	5.7/14.1	150	185	16	76
Chevrolet IROC Camaro Z28 (10/84)	13,208	7.0/15.2	140	204	16	75
Chevrolet Monte Carlo SS (7/85)	14,430	7.8/15.9	117	204	17	68
Chevrolet Nova CL (7/85)	8900* 8537	12.4/18.7 14.0/19.4	93 89	202 194	30 33	72 74
Chevrolet Spectrum (2/85) Chevrolet Sprint (6/84)	6266	13.0/18.9	85	213	53	74
Chrysler Laser XE (5/85)	14,399	8.1/16.0	117	206	19	70
Chrysler LeBaron GTS Turbo (6/85)	13,733	8.3/16.2	115	202	19	68
Citroën 2CV6 Charleston (6/85)	6088	29.5/23.4	75	207	35	80
Colt Vista 4WD (7/85)	11,761	16.8/20.1	84	207	23	72
Conquest (4/85)	14,611	8.1/16.1	123	185	19	73 74
Dodge Omni GLH Turbo (5/85) Dodge Shelby Charger (12/84)	9706 10,455	7.5/15.8 7.8/15.9	119 124	201 202	19 19	74
Ford Aerostar XLT (2/85)	14,600*	14.6/19.8	0.12	253	20	73
Ford Mustang GT (1/85)	11,391	6.4/14.9	135	206	16	74
Ford Mustang SVO (5/85)	15,000*	6.8/15.1	129	197	19	71
Honda Civic 4WD (7/85)	9768	13.4/19.0	90	201	26	73
Honda CRX 1.5Si (4/85) Isuzu Impulse Turbo (5/85)	8799 13.000*	9.1/16.4 8.3/16.1	112 127	209 189	32 20	75 69
Merkur XR4Ti (5/85)	17,105	7.9/16.1	123	208	19	70
Mitsubishi Galant (10/84)	12,899	12.1/18.4	101	206	21	71
Mitsubishi Mirage Turbo (11/84)	9131	9.2/16.8	105	191	24	72
Mitsubishi Starion ESI (5/85)	15,279	8.0/16.1	126	184	19	73
Nissan Maxima SE (3/85) Nissan 300ZX 2+2 (5/85)	13,619 20,799	8.4/16.5 9.2/16.8	117 124	173 188	19 19	69 70
Oldsmobile Calais Supreme (11/84)	12,221	10.6/17.7	109	234	20	72
Oldsmobile 442 (7/85)	14,366	9.1/16.6	113	204	17	68
Peugeot 505 Turbo (9/84)	18,825	9.8/17.1	115	195	20	73
Pontiac Fiero GT (11/84)	13,481	8.2/16.0	125	199	22	72
Pontiac Firebird Trans Am (4/85) Pontiac 6000STE (1/85)	17,398 15,129	7.6/15.6 10.6/17.7	135 112	207 227	15 19	72 68
Porsche 928S (5/85)	50,000	5.7/14.0	154	175	16	74
Saab 900 Turbo (12/84)	21,395	8.5/16.5	128	217	19	71
Sùbaru RX 4WD Turbo (7/85)	12,269	9.5/17.0	103	197	25	72
Subaru XT 4WD Turbo (6/85)	14,523	10.3/17.4	110	208	25	69
Toyota Corolla GT-S (9/84)	9538 17,520	9.5/16.9	113 118	185 197	29 20	74 70
Toyota Cressida (7/85) Toyota MR2 (2/85)	12,529	9.0/16.8 8.3/16.3	116	187	26	78
Toyota Supra (5/85)	17,843	8.4/16.1	125	209	20	73
Toyota Tercel 4WD (7/85)	10,750	15.0/19.8	88	199	27	73
TVR 280i (12/84)	29,862	9.7/17.5	120	206	17	80
Volkswagen Golf (12/84)	8755	10.6/17.7	101 114	209 182	27 26	73 74
Volkswagen GTI (3/85) Volkswagen Jetta (12/84)	10,410 10,255	10.1/17.1 11.8/18.2	114	210	26	74
Volkswagen Jetta GLI (6/85)	12,695	10.9/17.5	108	183	26	73
Volvo 740 Turbo (4/85)	19,845	7.9/15.9	120	190	19	70
Volvo 740 Turbo Wagon (5/85)	21,635	8.0/15.9	124	194	20	72
*estimated						



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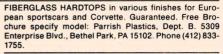
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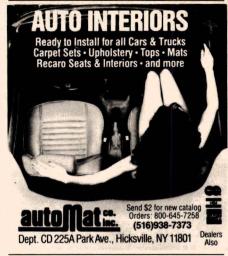


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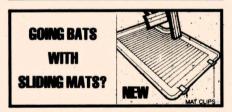
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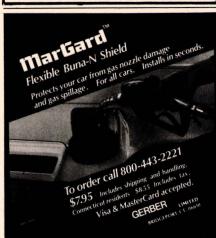
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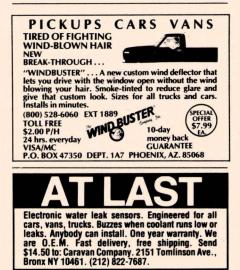
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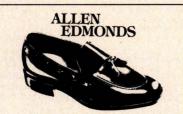
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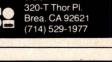






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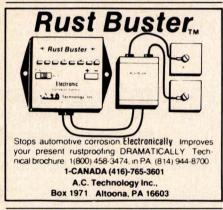


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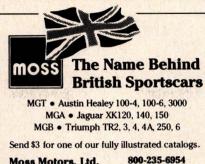


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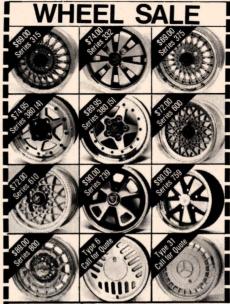
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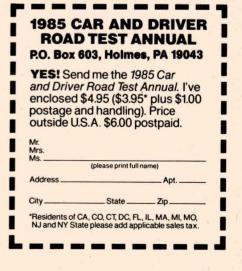
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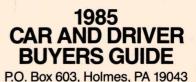
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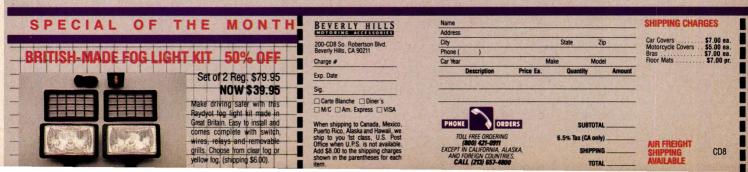


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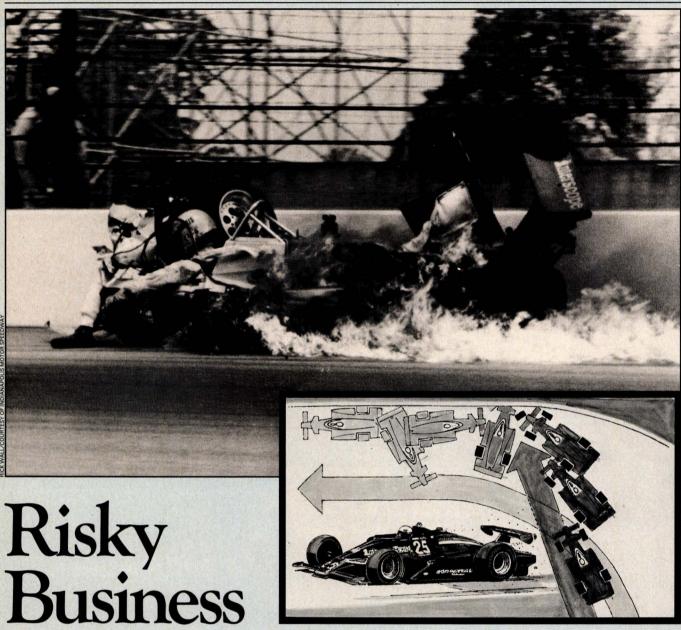
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### Every once in a while, you get a reminder that racing is not like other sports.

### BY MICHAEL JORDAN

• When you're a spectator, a crash has a strange effect on your sense of time. As you watch from the grandstand, a stumble in the high-speed chorus line catches your eye. Then a car is spinning down the track, bounding off barriers and shedding parts as it burns off its awesome load of kinetic energy. The crash seems to take forever. But once the car finally slides to a halt, time suddenly stops. You watch and wait for signs of movement in the cockpit. A shadow sweeps across the track, as if the sun had gone behind a cloud, and in the chill you watch for the driver to emerge from the wreckage. You wait. It is exactly the longest moment in racing.

Now that modern technology has transformed the cockpit of a racing car into a survival cell, drivers manage to live on even in the midst of terrible wreckage. And so for us spectators, a big crash ends with the retreating lights of an ambulance and the assurance that the person pulled from the cockpit will probably survive. For the driver, though, that long and terrible moment can stretch into weeks, months, and even years as he regains his health. Accustomed to pushing the outer limits of his automobile's performance, he finds himself challenged mentally and physically by the performance envelope of the human body.

This is a story about a few of the racers who have experienced serious accidents. Our sample includes drivers of all kinds of different cars. It features drivers both male and female. It covers drivers injured last year and others hurt more than twenty years ago. The experiences are at once utterly different and yet very much the same.

#### **Bob Bondurant**

At the 1967 Watkins Glen USRRC, Bondurant's McLaren Mark 2–Chevrolet broke a steering arm at 150 mph. The Can-Am car hit a dirt embankment at high speed, peeling back the cockpit's aluminum floor and exposing Bondurant's feet. The car somersaulted, then cartwheeled eight times. Bondurant's right heel was

Car broke, Danny Ongais hit Indy wall at 190 mph, ripping chassis, exposing legs to damage.

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shattered, both ankles and several ribs were broken, a vertebra was chipped, and his forehead was gouged.

On his second day in the hospital, unsure when he would walk again, Bondurant took a pen and a yellow legal pad and formulated plans for a driving school, hoping to capitalize on knowledge gained as an instructor at Carroll Shelby's racing school and while training the cast of the movie Grand Prix. The Bob Bondurant School of High Performance Driving opened on February 14, 1968. Bondurant recalls, "I thought, I love racing but I may not be able to do it, and by doing the school I can take my experience and make it available to others. And also I can use the school to get myself rehabilitated and see if I ever want to race again.'

Bondurant raced again in the 1970 and 1971 Can-Am series, but he realized his long-term interests lay with the school. "I still race on and off, number one because I really like it, and number two because it keeps me up to date—but realistically, mostly because it's fun." At 52, he has no regrets. And indeed his teaching has made him the most influential driver of the past decade. After all, Bondurant is one of the few professional drivers who can share with us more than just an autograph.

#### **Gene Felton**

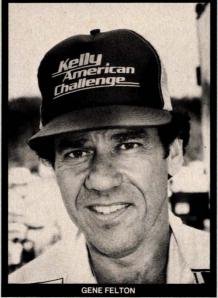
Gene Felton, second only to the late Peter Gregg on IMSA's list of most career victories, had his big one at Riverside last fall. He was exiting Turn Nine in his Camaro at about 140 mph, when the car in front of him suddenly slowed in response to a black flag. To avoid a crash, Felton darted right, but the other car went right, too. The Camaro started to slide sideways, then hit sand-filled barrels at the end of the pit-lane

#### SPORT

barrier. Felton never saw the wall coming; he never even lifted. He broke a cervical vertebra, his shoulder, and six ribs. He ruptured a disc and suffered nerve damage that partly paralyzed his left side.

In April, Felton was back at the wheel again. "Doctors told me it would take two years," the 49-year-old driver says, "but I'm too old to give up two more years." Felton also admits that he had a little extra motivation to get back into the cockpit: "I heard they were going to put Terry Labonte into my car for selected races. I love Terry like a brother, but there's two things I won't share: one's my lady, and the other's my race car."

During his recovery, Felton spent 65 days in a neck-traction device, 65 days in a body cast, and 30 days in a cervical collar. When he got home, he had to crawl up the steps. But then he doggedly began to exercise. "I'm just hardheaded and stubborn enough where if they say I can't do it, I'm going to do it." Felton had to be almost lift-



ed into the car, but six months later he was back. "Fact is, I wasn't so sure myself that I could do it, but I wasn't about to admit it.'

#### Niki Lauda

Reigning world champion Niki Lauda crashed his Ferrari 312T2 at high speed in a remote corner of the Nürburgring during the 1976 German GP. The fuel tanks ruptured and caught fire, and Brett Lunger's Surtees careened into the whirling Ferrari. Lauda sat in the flames for about 40 seconds, his helmet partly torn from his head, until he was rescued by the struggles of Lunger, Guy Edwards, Arturo Merzario, and Harald Ertl, who ran into the holocaust and climbed atop Lauda's car to pull him free. He was hospitalized with severe burns to his head and lungs, and a priest gave him the last rites.

Six weeks later Lauda again sat in the cockpit of a Ferrari, this time on the starting line of the Italian Grand Prix. He lost the championship by a single point that year but won it back again in 1977. His accident had made him more cantankerous and independent than ever. He left Ferrari



for Brabham in 1978, then suddenly retired in the middle of practice for the 1979 Canadian GP. After an unsuccessful venture in the airline-charter business, Lauda returned to Formula 1 in 1982 for McLaren and last year won the world championship again.

In his book A Turbo Age: The New Formula One, Lauda notes, "There is no way that flying can live up to my expectations in the sense of fulfilling a lifetime's ambition." And yet Lauda is far from a one-dimensional man. His bravery comes from an ability to make choices. At the 1976 Japanese GP, a finish in the points would have won the championship for him, but he pulled off the Fuji track on the second lap rather than continue in torrential rain. "For me," he said, "there is something more important than the championship.'

#### **Rick Mears**

Mears admits he made a mistake. During practice for last September's CART race at the Sanair tri-oval in Quebec, he tried to cut around Bobby Rahal in heavy traffic. Mears hit the front of a car following closely behind him, and his March 84C went into the inside guardrail at about 130 mph.



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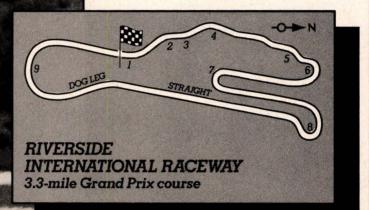


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Car #68, driven by Pete Halsmer and John Morton, crosses start/finish to win the Riverside Camel GT. It was followed .138 seconds later by car #67, driven by Jim Busby and Rick Knoop.



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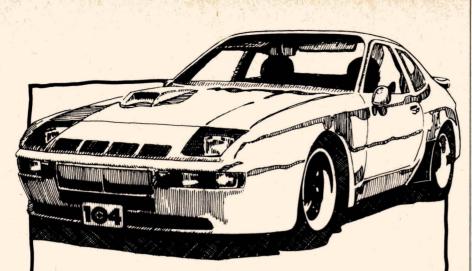
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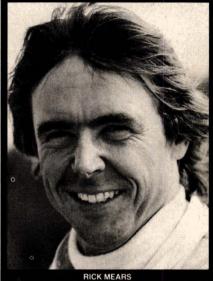
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The impact tore out a retaining post, and the car nosed under the barrier. The guardrail tore through the front of the car, sliced through the front bulkhead, ripped off the pedals, and folded Mears's feet back against his shins.

Mears's recovery illustrates the way in which modern medical technology can return seriously injured drivers to the track in a matter of months. Mears had hit hard



JICK KELLEY

enough to put a deep impression of the brake pedal on the arch of his right foot. Both feet had shattered, and the Achilles' tendons had detached. Dr. Terry Trammell, an Indianapolis surgeon experienced with the leg injuries of Danny Ongais, Gordon Johncock, and others, rebuilt the mess with screws and pins. When the hardware was removed fifteen weeks later, Mears underwent a ten-hour skin graft to patch a hole in the bottom of his right heel.

Mears lost twenty pounds and most of the muscle on his leg. Exercise at the controls of a full-size monocoque shipped to his home by the Penske team helped put him back into the cockpit. Mears reports that nerve damage in his feet still gives him a lot of pain, and indeed he can walk only short distances. Yet as his 213-mph Indy practice lap proved in May, he can still drive. And for 33-year-old Mears, only driving counts.

#### **Stirling Moss**

The crash came at a nonchampionship F1 race at Goodwood, England, in the spring of 1962. At the wheel of a Lotus 24, Moss carried too much speed into a 100mph bend. Some witnesses believe the throttle stuck open. The car hit a dirt bank head-on at more than 60 mph. Like many drivers then, Moss didn't believe in seatbelts.

Moss finally awoke from the coma after a month. His nose had been broken, his left cheekbone crushed, his left eye socket displaced, his left arm broken, and one leg broken at the knee and the ankle. Most serious of all, he had suffered a concussion that paralyzed his left side for six months. Moss recovered, but vision and concentration problems lingered. A year later, after lapping a Lotus 19 sports car at Goodwood in the rain, Moss elected to retire rather than continue at less than the peak of his form.

To meet Stirling Moss is to reach across the years to one of the legendary driving talents of the Fifties. And yet Moss has returned to racing. At age 55, he co-drives a Porsche 944 with Innes Ireland in the SCCA's Playboy endurance series. Moss says of his return: "I love racing. I started racing when I was nineteen because I liked it, and in my last year as a professional, I did 52 races. So I thought, now that my concentration has returned, why the hell shouldn't I go back into a sport that I love, as a hobby?" No one knows the potential consequences of this decision better than Moss himself: "I think it was very wise, because I had built up quite a good reputation, and all I can do by racing is lose it. But









Shirley Muldowney's Top Fueler lost tire at 250 mph, flung her through guardrail and ditch.

I like the sport, and there are people who are pleased to see me in it, so it's not a bad thing, really."

#### **Shirley Muldowney**

In June 1984, Muldowney had just finished a qualifying run at an NHRA event near Montreal when the tube in her leftfront tire went flat, came out of the tire, and wrapped around the front spindle. At 240 mph, the Top Fuel dragster snaked off the track, flew into a ditch, and disintegrated. The roll cage broke at Muldowney's hip, and as she tumbled 600 feet through the mud beside the track, she suffered a crushed right hand and partly severed thumb, two compound fractures of the right leg, a dislocated right ankle, and a terrible dislocation of the left ankle.



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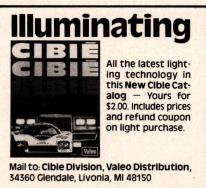
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Aftermath of Ongais crash: Car rests in infield as On-the-gas is flown to Methodist Hospital.

me, and every time I see someone out there who doesn't treat it as such, it bothers me."

#### **Danny Ongais**

Ongais's car broke at the 1981 Indy 500. He was entering Turn Three at about 190 mph. The car hit the wall nose first, spun around, then finally slithered to a stop against the wall farther on. When the car came to rest, its front half was gone and Ongais's right leg was shattered, turned to jelly below the knee.

If Ongais didn't have so much bad luck, he probably wouldn't have any luck at all. Either because of his own intensity or because of the weakness of the machinery, 43-year-old Ongais rarely wins races. In recent years, a still-born engine project by Porsche and a not-ready-for-prime-time Chevy V-6 victimized his Indy efforts, and his friend and sponsor Ted Field left racing for the film business.

To his credit, the man in black has never shown signs of discouragement, even during his recovery. Having endured eight months of surgery and therapy after his Indy crash, Ongais took the wheel of an IMSA car and experienced his most successful season ever, with two wins to complement his usual round of pole positions. Racing skills are instinctive, he says: "I think people operate at certain levels, and I don't think you ever lose that."

These days, Ongais has leaned down his physique to make things easier on his legs. He has leaned down his racing program as well, concentrating on the CART series. He has never doubted his ability to continue. When he awoke in the hospital, he thought he'd be back on his feet in three weeks. His time frame for recovery



After more than five months in the hospital over the past year, as well as surgery by Dr. Trammell, Muldowney is attempting to package sponsorship for 1986. She still enjoys driving, she says. This time, though, she will restrict her effort to the fourteen-race NHRA championship. Muldowney wants to concentrate on winning, not match races. She's also thinking about the future: "I would spend the off time to work closely with the sponsor. I would like something I could continue with after I'm done racing."

Muldowney says she isn't apprehensive about driving again. She calls the accident a one-in-a-million deal, something that will never happen again, thanks to the new 320mph-approved front tire and Streaker wheel Goodyear has built. "I'm just going to pick myself up and go on to the next thing," she says. Muldowney also notes, however, that she doesn't intend to forget the accident. "It's like a little reminder; racing has always been serious business for changed, but his decision never did; Ongais never considered quitting.

#### **Kathy Rude**

Kathy Rude wasn't supposed to make it. At the 1983 IMSA event in Brainerd, Minnesota, her Porsche 935 slammed into an almost stationary car at about 130 mph. The Porsche leapfrogged into the air and cartwheeled 300 yards down the track. It took twenty minutes to free her from the wreckage. She had a broken cervical vertebra, a severely broken pelvis, a broken left

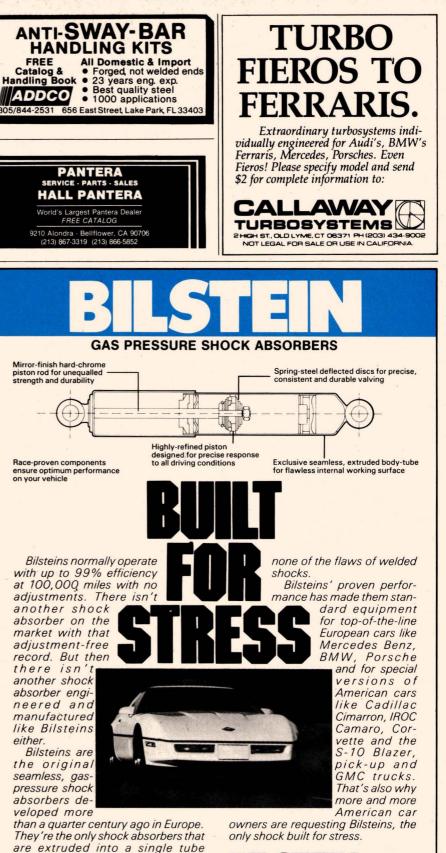
### Racing around the Corner

#### JULY

- 14 SCCA Bendix Brake Trans-Am Championship,
- Mid-Ohio Sports Car Course, Lexington, Ohio IMSA Camel GT/GTO/GTU, Champion Spark Plug Challenge, Kelly American Challenge, and Renault Cup East, Michigan International 14 Speedway, Brooklyn, Mich. British Grand Prix, Silverstone, England 21
- 21 CART/PPG Michigan 500, Michigan Interna-tional Speedway, Brooklyn, Mich.
- SCCA Bendix Brake Trans-Am Championship, Brainerd International \* Raceway, Brainerd, 21 Minn
- 21 NASCAR Like Cola 500, Pocono International Raceway, Long Pond, Pa. IMSA Firestone Firehawk Endurance Cup,
- 21 Sears Point International Raceway, Sonoma, Calif
- NHRA Mile-High Nationals, Denver, Colo. 25 FIA Argentine World Rally, Buenos Aires, 27
- Argentina 27 International Race of Champions, Talladega,
- Ala IMSA Kelly American Challenge, Circuit Auto-28
- mobile de Granby, Granby, Quebec NASCAR Talladega 500, Talladega, Ala. IMSA Camel GT/GTO/GTU, Champion Spark 28
- 28 Plug Challenge, and Renault Cup West, Portland International Raceway, Portland, Oreg.

#### AUGUST

- German Grand Prix, Nürburgring, West Germany CART/PPG Provimi Veal 200, Road America,
- 4 Elkhart Lake, Wis.
- SCCA Bendix Brake Trans-Am Championship, 4 Road America, Elkhart Lake, Wis. IMSA Camel GT/GTO/GTU, Champion Spark
- 4 IMSA Camel G1/G10/G10, Champion Spark Plug Challenge, and Renault Cup West, Sears Point International Raceway, Sonoma, Calif. International Race of Champions, Michigan In-ternational Speedway, Brooklyn, Mich. NASCAR Champion Spark Plug 400, Michi-gan International Speedway, Brooklyn, Mich. SCCA Bendix Brake Trans-Am Championship, Lime Rock Park, Lime Rock, Conn. MSA Eirstone Eirsbawk Endurance Cup Plux.
- 10 11
- 11
- IMSA Firestone Firehawk Endurance Cup, Riv-11
- erside International Raceway, Riverside, Calif. SCCA Michigan National PRO Rally, Battle 16
- Creek, Mich. 16 NHRA Quaker State North Star Nationals, Brainerd, Minn.
- SCORE Off-Road World Championship, River-16
- side International Raceway, Riverside, Calif. Austrian Grand Prix, Österreichring, Austria 18 18
- CART/PPG Domino's Pizza 500, Pocono In-ternational Raceway, Long Pond, Pa. IMSA Renault Cup East and West, Sears Point 18
- International Raceway, Sonoma, Calif. FIA 1000 Lakes Rally, Jyväskylä, Finland Twelfth Annual Monterey Historic Automobile 21
- 23 Races, Laguna Seca Raceway, Monterey, Calif. NASCAR Busch 500, Bristol, Tenn. 24
- 25 Dutch Grand Prix, Zandvoort, Netherlands
- SCCA Bendix Brake Trans-Am Championship, Watkins Glen Circuit, Watkins Glen, New York 25 The
- Pebble Beach Concours d'Elegance, The Lodge at Pebble Beach, Pebble Beach, Calif. 25 IMSA Camel GT, Champion Spark Plug Chal-
- lenge, and Kelly American Challenge, Road America, Elkhart Lake, Wis.
- NHRA U.S. Nationals, Indianapolis, Ind. 30 Auburn-Cord-Duesenberg 28th Annual Festival, Auburn, Ind.
- SCCA Playboy United States Endurance Cup, Lime Rock Park, Lime Rock, Conn. 31



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thigh, a broken left elbow, two broken ankles, a broken right arm, damage to her liver and kidneys, and oil burns. During her first two days in the hospital, doctors operated for seventeen hours. Eventually, one of her legs had to be shortened substantialKathy Rude struck slow-moving car at 130 mph, suffered incredible bone and internal injuries.

ly to match the other.

Eighteen months after the crash, 28year-old Rude returned to the wheel for the Toyota celebrity race at the Long Beach GP. "In practice at Riverside," she says, "the first five laps I had so much adrenaline pumping that I was basically out of control. Finally, I started to relax."

Rude at first thought the accident would crystalize her goals as a driver, but instead she's found herself taking her career a day at a time. "Physically, I'm capable, and mentally I can still do it; I've proved that I'm not apprehensive. But now that I for sure know the consequences, I have to find out whether I can accept the risks in the same way."

One consequence of Rude's injury has been the improvement of insurance benefits for drivers. Another has been her willingness to accept an altogether different

# **Closer** to Home

• Two *Car and Driver* writers have recently suffered serious injuries in racing accidents. Driving a Formula Ford at Laguna Seca in October 1983, Michael Jordan spun at 110 mph in Turn Two. The car slid off the road backward and struck an embankment. The accident broke a cervical vertebra and damaged his spinal cord, leaving him partly paralyzed from the shoulders down.

Although complete recovery from spinal-cord injuries is not possible; Jordan has regained sufficient function to progress from a wheelchair to leg braces to walking for short distances with the aid of a cane. "Sure, I'd like to drive race cars again," he says, "but the question is hypothetical at this point anyway. Besides, I'm already involved in a pretty high-stakes deal. Just getting down to the end of the block and back is as hard as a 200-mph lap at Indy."

Patrick Bedard was driving a March-Buick in the 1984 Indianapolis 500. On the 59th lap the car backed into the inner wall at Turn Three, then tumbled down the short chute, disintegrating as it went. Bedard has no memory of any of this. The accident broke his jaw and caused brain injuries, including a tear in the left hemisphere.

EEG tests show Bedard has recovered entirely from the brain injuries. Minor problems with balance and motion sensing remain, however, and he feels that they would impair his ability on the track. "Racing wouldn't be fun for me if I couldn't do it as well as before," he says. "For now, I'm happy to do my hot laps on a Smith-Corona." —Ed. PHOTOGRAPHERS: JOIN THE 10 BEST

kind of challenge. Although she admits she should know better, she's engaged to marry a race driver, Ludwig Heimrath, Jr. It takes a certain amount of courage to make such a commitment. After all, it is one thing to risk one's own life; it is another to risk being left alone.

Simple exposure to catastrophe is not what makes drivers interesting. After all, rodeo cowboys, football players, and even people who don't wear seatbelts all face a greater likelihood of injury than race drivers. Only race drivers, however, think about the risk of catastrophe. The quirk of personality that allows them to accept the risk is what makes them different. As the comments from these eight drivers indicate, a serious accident simply points out that racers look at their profession differently from people in the grandstand.

To the fans, the big one is a kind of visitation by the irrational, more evidence that one cannot trust an automobile. Drivers, on the other hand, believe they understand the automobile and can control it, so an accident becomes a simple mistake. The driver resolves to arrange the circumstances differently the next time; he says, Well, I won't do *that* again.

Perhaps it's not realistic to expect a racer to experience a public crisis of confidence after a big crash. Although psychological studies suggest that a driver's personality might be founded on some pretty eccentric premises, his ego structure appears to be sturdy and resilient. Economic necessity also motivates professional drivers.

Niki Lauda sheds some light on this complex question in his first book, *The Art and Science of Grand Prix Driving*. Lauda notes: "Once in your lifetime you've got that decision: Do you want to practice this profession? Do you want it and all that it involves? If you ask yourself that question and if you answer in all honesty with yes, then that means you've beaten the problem—then you can't be afraid anymore because if you are, then you must have answered that question with a lie."

And so the comebacks or career changes of these eight drivers attract our admiration at the same time they mystify us. Drivers are merely athletes in many respects, yet they respond to serious injury in ways that contradict our understanding of conventional human nature. In the end, any attempt to understand this behavior is guilty of a kind of anthropomorphism. You might as well look into the eyes of a hawk and wonder why it flies.

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### On the right tract.

• Near as I can tell, cars all have pretty much the same stuff: paint on top, wheels on the bottom, seats on the inside, taillights on the outside, and on like that. These are basics you can count on, whether you're talking LeBarons or Le Cars. If you see a pile of stuff arranged like that, yep, that'd be a car, all right.

Then about two years ago, I noticed that some cars were different. They were missing something. They didn't sound like a Yuban can of lock washers when I drove them down the road. They were quiet, like bananas. And every time I found myself in a car like that and looked down to see what I was driving, there was a blue Ford oval.

This year I've driven two more cars with zero rattles. One was a Thunderbird, the other a Mustang. I hardly need tell you that rattles are as American as apple pandowdy. They are the birthright of every father's son. They're guaranteed by the Constitution. Therefore, when so many Fords are sneaking out of assembly plants without their made-in-U.S.A. rattles, the phenomenon can no longer be put down to coincidence. We're talking conspiracy.

When I knocked on the door at Ford and asked who had the rattles, they said Howard Freers.

I know Howard Freers: big guy, getting gray, used to be at Chrysler back in the time of tail fins, now one of the chief engineers at Ford. Always seemed responsible—you know, involved with meaty stuff like engines and transmissions—not the sort who'd take up with rattles.

They took me to his office. I didn't see any rattles. Just a big guy, calmer than I remembered, radiating a born-again serenity you don't see in harried engineers. It had been seven years since we'd talked.

He said that others were noticing the

# PATRICK BEDARD

lack of rattles, too. The word was getting out. This was the fruit of a project started in 1980, back in the dark days when it looked as though Ford might be left for dead. The company had "pulse surveys," checking the pulse of the consumers. What would it take to improve their image of Ford? They said quality. Getting rid of the squeaks and rattles would be a big thing.

He gestured toward a paper on the desk, emblazoned with the Ford oval. It described the mission of Ford, the company's values and guiding principles. It read like a religious tract: "We are a team. We must treat each other with trust and respect."

He spoke of a new faith at Ford. The leaflets say PM/EI, which stands for "participative management, employee involvement." It's a sort of mutual-respect society set up to harvest the very best from each individual, whether he be laborer or manager. "It's like the Japanese," he said, and I could see that he was serious.

Once the company made up its mind to eliminate squeaks and rattles, the job wasn't that hard. Freers was chief engineer in the body section at the time. They built a special Squeak and Rattle Room. Across the street at the Dearborn proving ground, they could make a car produce all of its noises, but chasing them down on the road was a problem. The engineer in the trunk listening for the tin cricket got scrambled like the eggs down at Denny's.

So they instrumented some cars, drove them over the roads, and recorded the road shocks. Then they went-back to the. Squeak and Rattle Room and played the tapes through an electromechanical vibrator. They found that two vibrators, one on each side, feeding in through just the right spot on the floor, would produce exactly the same shake, rattle, and roll as a proving-ground drive. Only now the car was parked on a platform where the engineers could swarm all over it without taking home a concussion.

Instrument panels were the worst offenders, then doors. The engineers found that the rattles are made by metal parts, the squeaks by plastic. There are two possible cures. You can either put two pieces together so tightly that there is no relative motion between them. Or you can keep the two pieces so far apart that they never touch. That's the way you cure squeaks and rattles. And if you cure them right—forget spraying the can of silicone up under the dash like the mechanics down at the dealership—they stay cured.

To quiet the instrument panel, it had to be stiffened: no shake. Then the panel had to fit into the car's structure as if it were sliding into a socket: no buzz. Then the mounting points where the padding was at-

tached had to be stiffened: no squirm. Then the wiring harness had to be clipped into place. And where it couldn't be clipped tightly enough, it had to be wrapped in cloth tape-which is quiet-instead of the shiny vinyl kind. And the hardshell connectors at the ends of the wires had to be kept from shaking around. And the defroster ducts had to be kept from snaking around. In some places they could use sticky-backed foam as a cushion. Some places required new materials. But if they worked at it long enough, they could kill all the rattles and squeaks. And when the last one had died, the engineers would run the vibrator all day just to make sure none of them were playing possum.

Freers wanted to show me the Squeak and Rattle Room. A white Escort was up on one of the platforms, high enough so that a short guy could walk under. Vibrators were attached to its sills. Off to one side was a gray box big enough to garage a Harley-Davidson. Ducts that would pass basketballs coiled out of one end. This was the Thermotron. By ducting into the car, rattle tests could be run hot, cold, or normal. "Cold is the worst," Freers said.

A few years back, when they had proved to themselves that quiet cars in the rattle room were quiet cars on the road, Ford invited General Motors and Chrysler over to have a look. "We thought, if our industry is to be competitive with the Japanese, we couldn't afford to keep this a secret."

Remembering Detroit's laments about cost, I asked if Ford could afford all this engineering time on rattles. His eyes were unwavering. His voice rang with the convert's zeal. "Quality saves you money," he said. "When our guys went to Japan, they saw no repair areas at the ends of the assembly lines. When you build them right, you don't have to fix them. And that's just the first place you save."

I couldn't believe what I was hearing. Were we still in Detroit?

"Howard," I said, "would we have had this conversation ten years ago?"

"No, we lost sight of what the customer wanted. We had our heads in the sand."

"When the company makes a lot of money, are the rattles coming back?"

"No, the idea of quality is institutionalized now."

Institutionalized. That's just what Ford would have done to him if he had talked like this ten years ago.

Back in his office, I asked if I could have the missionary tract on his desk. To my great surprise, he said no, that was his only copy. We went down the hall to another office. The engineer inside radiated the same convert's fervor I had noticed in Freers. He had a spare copy in his file, which he gave me. "Our people are the source of our strength," it said.

I left the building feeling that something remarkable is happening in Dearborn. And wondering how long before Iacocca will be asking for protection from Ford.

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# OH WHATA FEELING!

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