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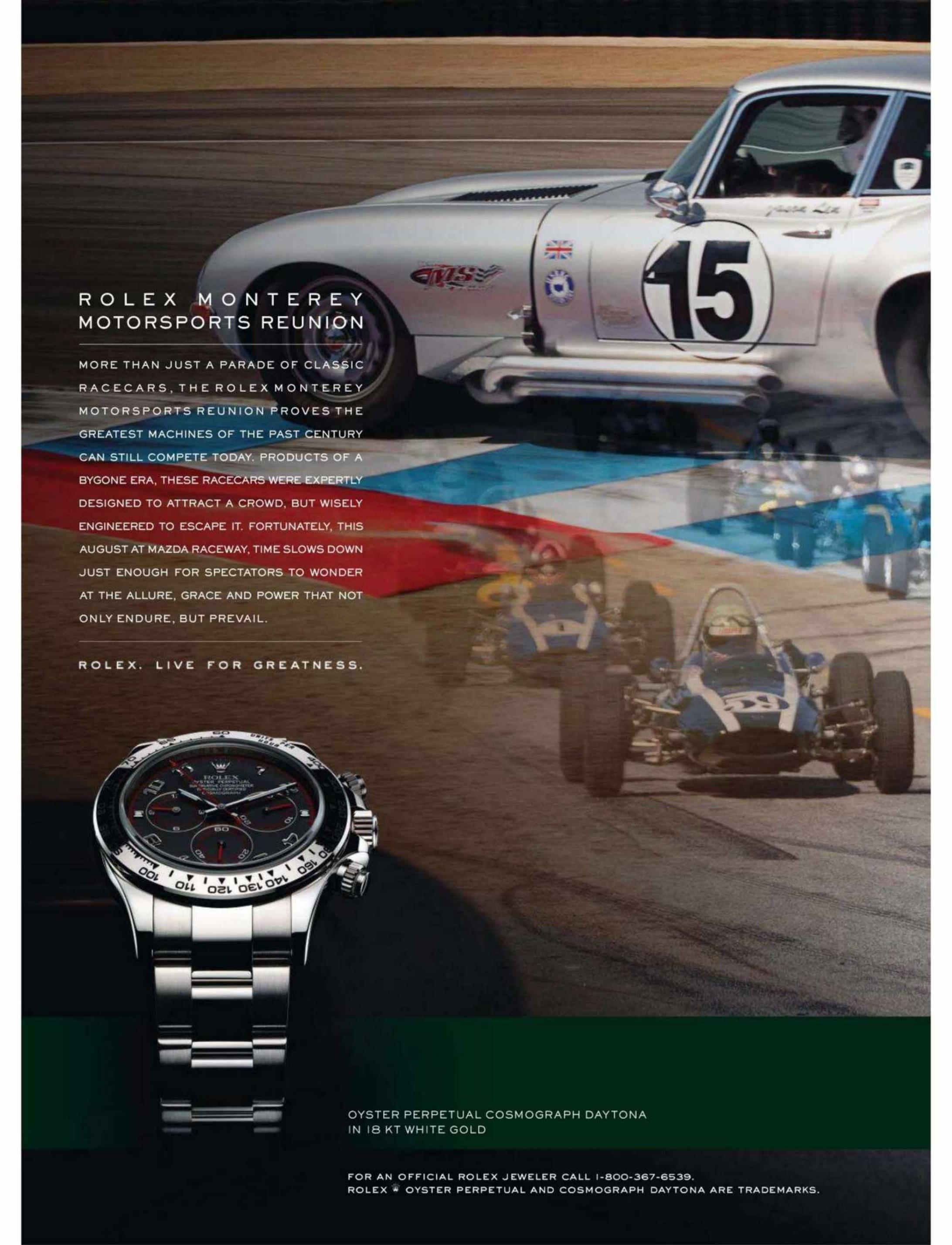
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Today, America needs fresh leadership to lead us as a nation out of this economic crisis. Leadership must come not only from our political leaders but also from the average citizen. The exporting of American jobs is a trend that must be stopped and reversed. When I walk into my local hardware store, I typically find 85% of the goods for sale are manufactured 7,000 miles away. Recognizable American brands have been forced by shortsighted management and buyers at large national chains to build factories overseas just to save a lousy \$.50 on a tape measure. To these ruthless buyers, it is all about the money. Rarely are product quality, the political system, human rights, animal rights and environmental costs to the planet considered, not to mention the cost to our society of exporting not only jobs, but an entire factory!

At MacNeil Automotive, we are doing our part for the American economy and for our 300 million fellow citizens and neighbors. My philosophy is that if my neighbor doesn't have a job, sooner or later I won't have a job either. For example, we used to have our All-Weather Floor Mats manufactured in England by a company that used antiquated, inefficient equipment. They made a decent floor mat for us, but we thought we could build a better floor mat for our customers using modern American technology, American raw materials and skilled American workers. So in 2007 we transferred all of our floor mat manufacturing back to the United States. Today, we build the best fitting, highest quality automotive floor mats in the world, right here in America.

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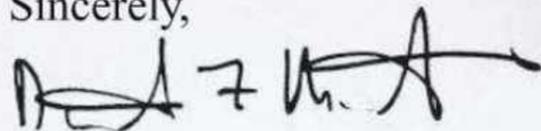
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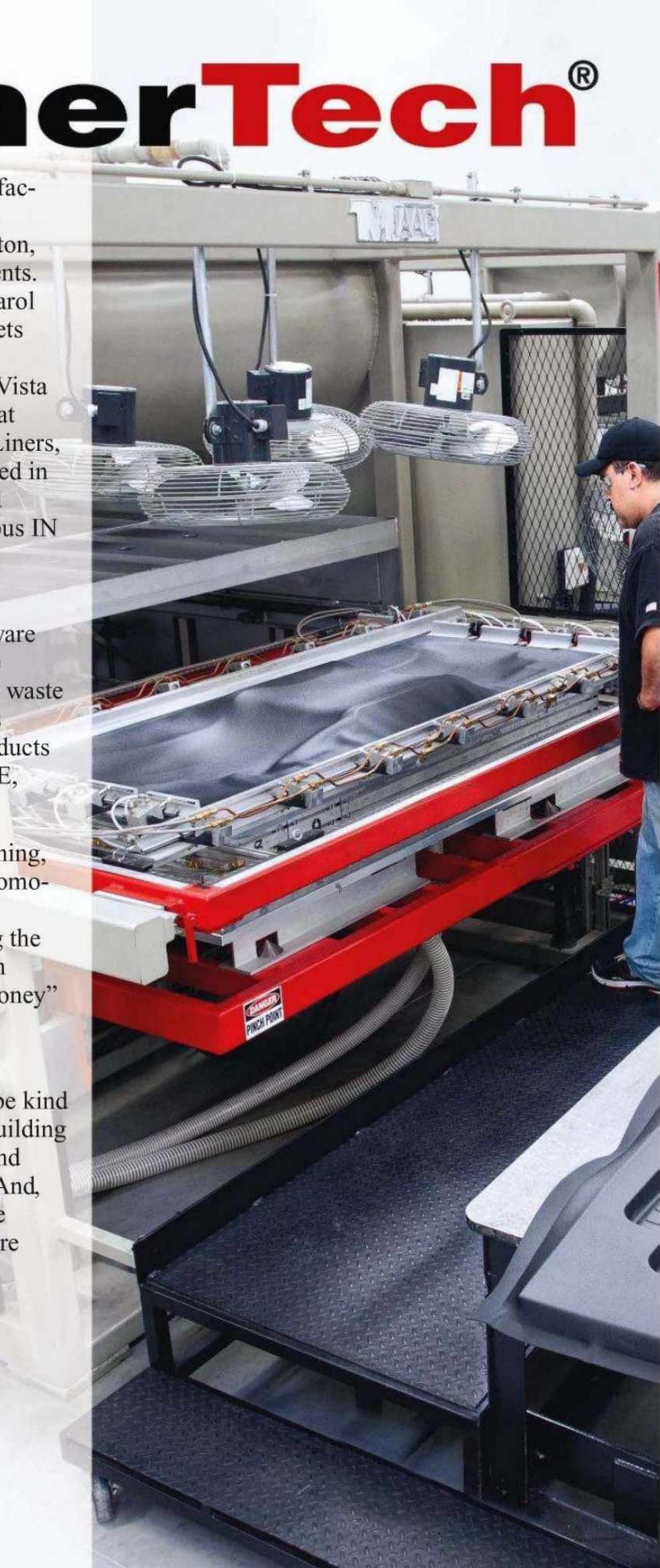
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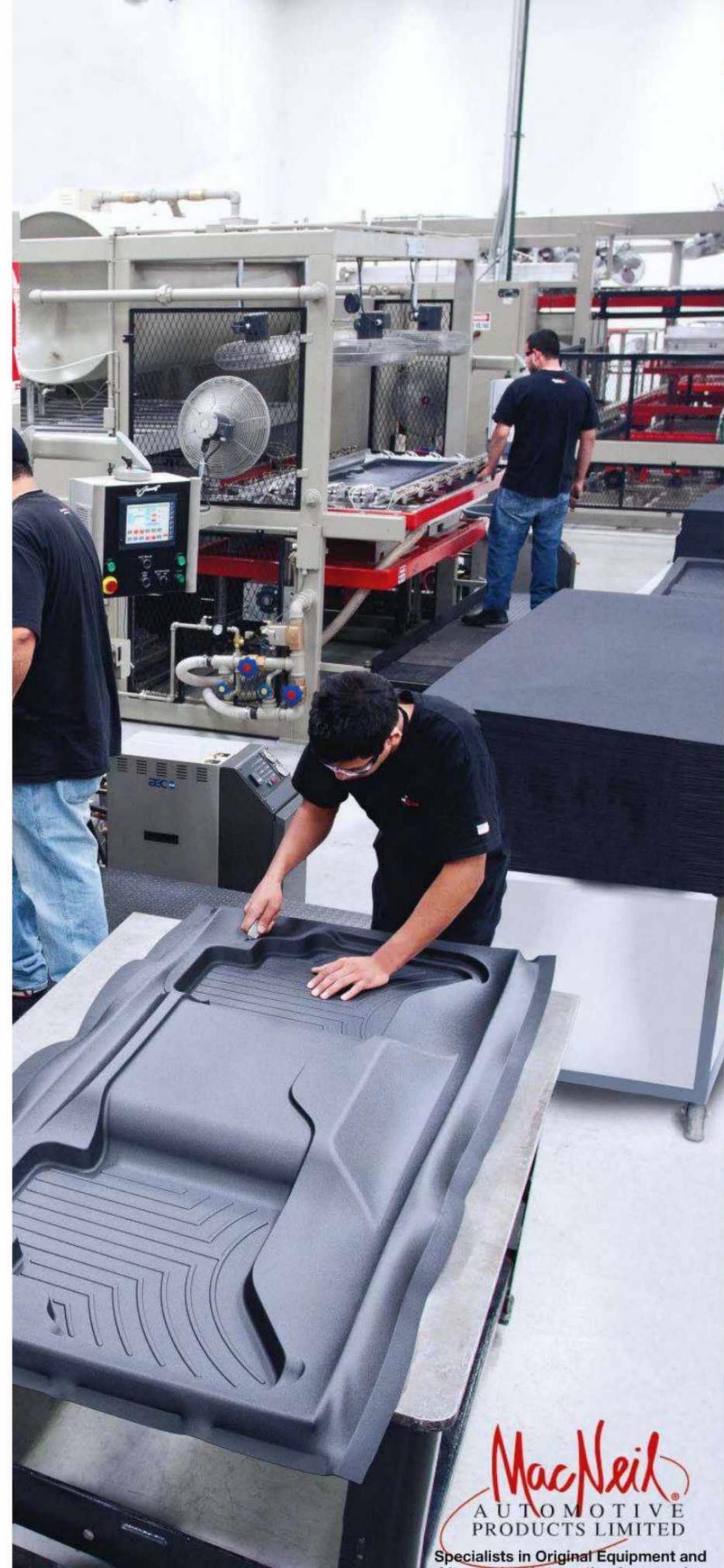
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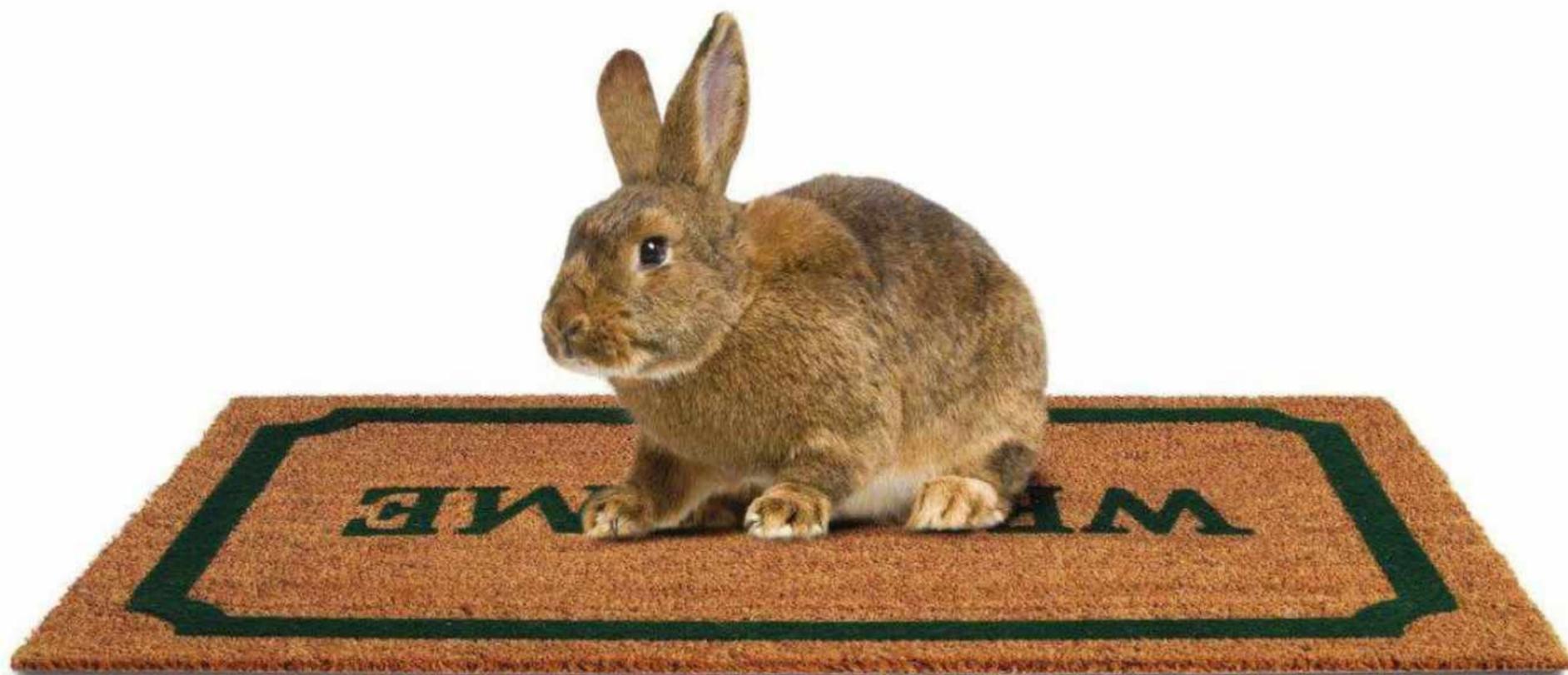
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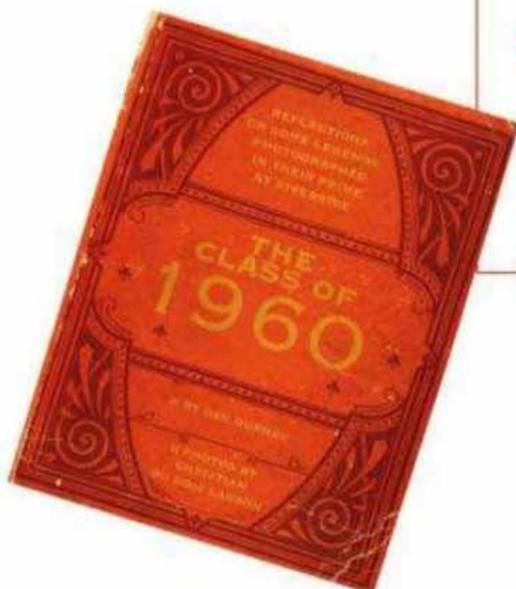
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FOCAL POINT

ROOKIE OF THE YEAR

J.R. Hildebrand was one corner away from winning the Indy 500. *One corner!* But when the 23-year-old Panther driver went outside a slower car on the last turn of the last lap, his Dallara slid wide and smacked the wall, handing the win to Dan Wheldon. Hildebrand, however, still managed to finish 2nd.

PHOTO BY MIKE LEVITT/LAT

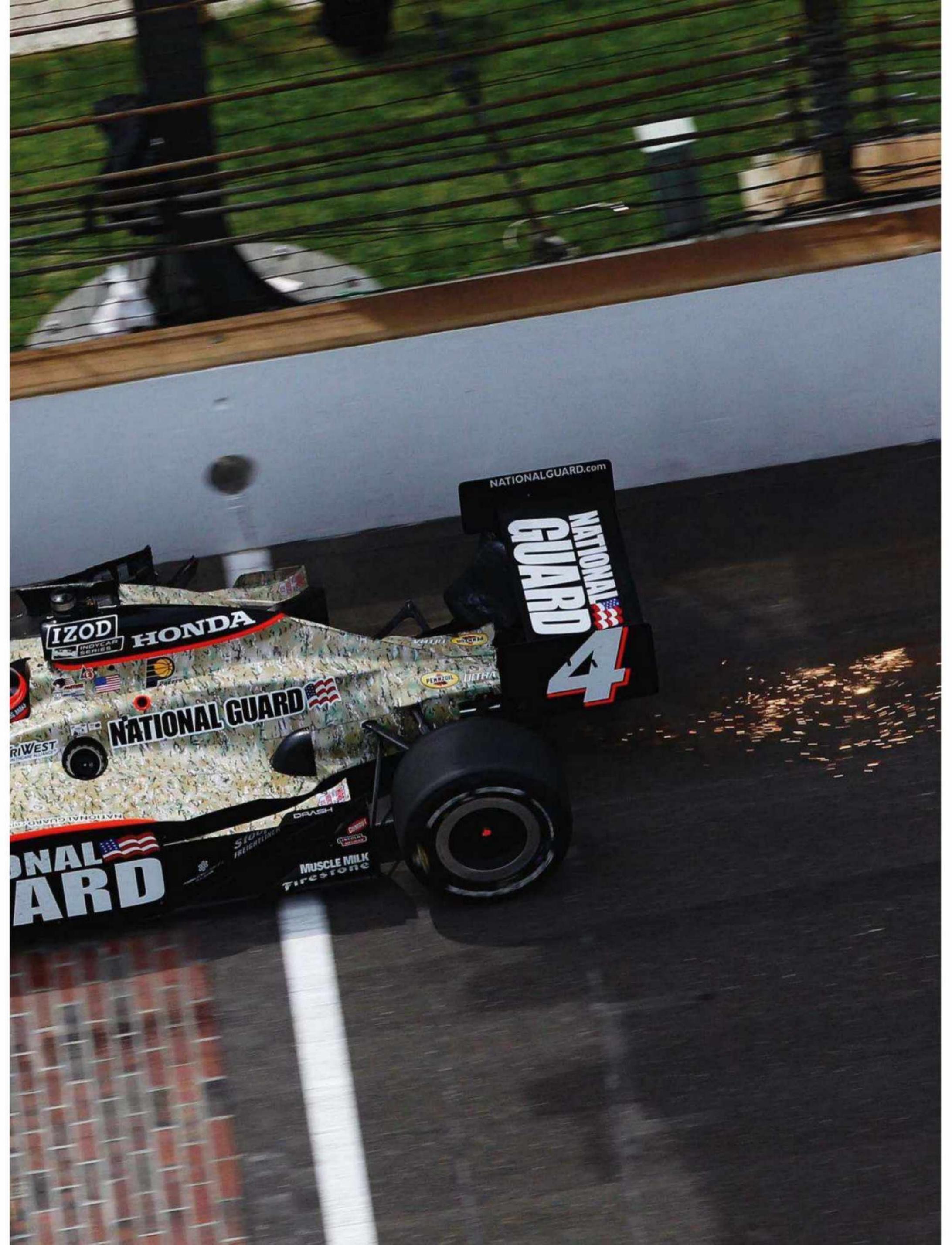
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Following last year's successful debut of Aston Martin's flagship Rapide sedan at the Nürburgring 24 Hours, follow us as we replicate the feat with a 24-hour run at Spring Mountain Motorsports Ranch with a stock Rapide beginning at 10 a.m. EDT on June 25.

We'll compare our distance and speed with that of the racing model from one year earlier—while running our laps at the same time the

current Aston team competes in the Nürburgring 24 Hours in Germany.

Log onto RoadandTrack.com/Aston24 to get video updates of our progress, as well as reports of how the factory team is faring at the Ring. Plus, talk to us on Facebook and Twitter throughout the 24-hour event.

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FT-86 POLL

Scion or Subaru?

Multiple versions of the concept known universally as the FT-86 have been on display by Subaru and Toyota. As both sports cars get closer to production, we want to know:

Which version of the FT-86 do you think will have the better performance?

Subaru FT-86 Coupe

Scion FR-S



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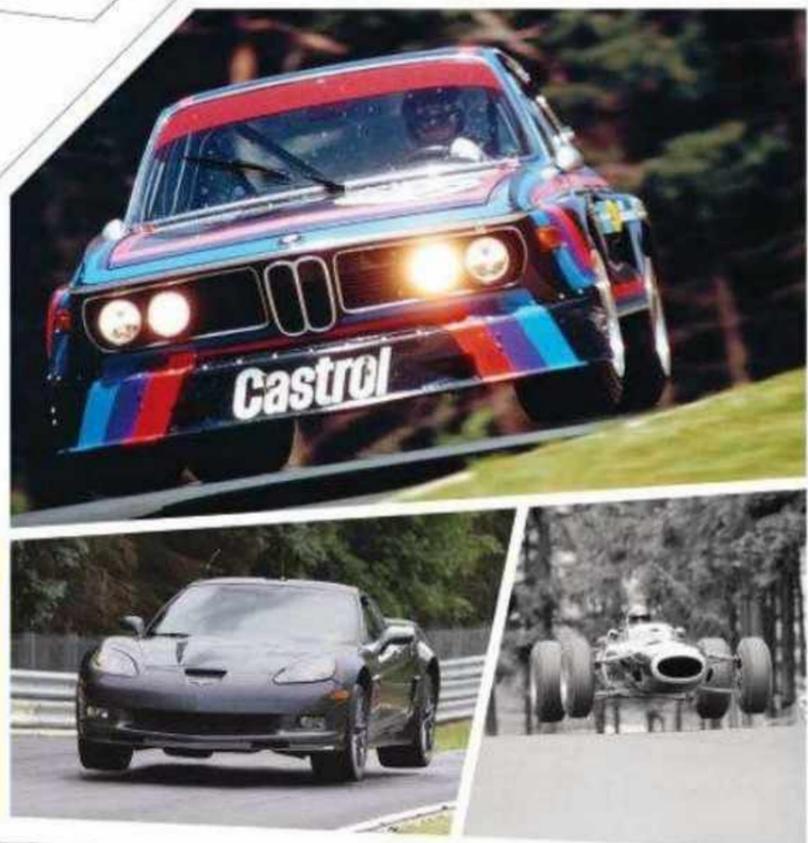


Got Air?

The Flugplatz ("Airport") section of the world-famous Nürburgring racetrack has been launching cars airborne to the delight of car fanatics for decades. From Jackie Stewart's 1966 BRM 261 F1 car to Hans Stuck Jr.'s 1974 BMW CSL, these images with all four wheels high off the ground are still incredible to see. Today's automotive testers are keeping the tradition alive with continued high-performance aerial acrobatics, and our spy photographers have captured this season's most dramatic images.

Find them online at: RoadandTrack.com/Air

Plus, find vintage Nürburgring high-flyer photos, including the BRM 261 and BMW CSL mentioned above in our photo store at: Gallery.Pictopia.com/RoadandTrack



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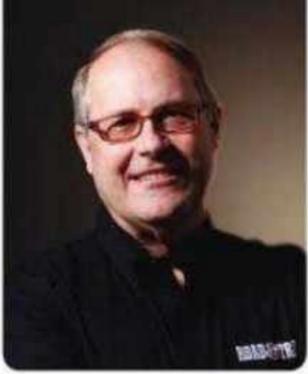
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ROAD AHEAD

BY MATT DeLORENZO
EDITOR-IN-CHIEF

“There seems to be no shortage of venues or outlets for gentlemen drivers to test their mettle on a track behind the wheel of a purebred racing machine.”

BONUS CONTENT:

See what a hot lap around Infineon Raceway looks like from the cockpit of a Ferrari Enzo FXX. Scan with your smartphone, or text “FXXvideo” to 44636.

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Of Gentleman and Boy Racers

THE CONCEPT OF A “GENTLEMAN RACER” SEEMS quaint in a day where at the highest levels of the sport, it’s all about talent, not money. Either you have it or you don’t. Cash can get you in some doors, but an F1, Indy or Le Mans overall win? Forget about it.

Still, gentlemen racers have been an important part of motorsports since the earliest times. Emil Jellinek raced his purpose-built Daimler named after his daughter Mercedes in Monte Carlo, became a dealer and the rest was history. Briggs Cunningham, as comfortable skippering a 12-meter yacht as he was behind the wheel, was instrumental in bringing Cadillacs and Corvettes to Le Mans. And while gentlemen racers have contributed to the sport, others are remembered more for lives lost—Wolfgang von Trips in 1961 when Phil Hill won the World Drivers Championship and Piers Courage, heir to the British brewing fortune, in 1970.

This doesn’t mean the idea of serious racing by those who have day jobs (or trust funds) is dead. In fact, there seems to be no shortage of venues or outlets for gentlemen drivers to test their mettle on a track behind the wheel of a purebred racing machine. The enabler these days are the makers of high-performance cars, the Ferraris, Porsches, Lamborghinis and Maseratis of the world.

I recently had the opportunity to take in the first of this year’s series of Ferrari Challenge Events at Infineon Raceway in Sonoma, California. The quality of the machinery and the driving is impressive. While one-marque series aren’t going to pack the grandstands, there was enough serious door-to-door racing of 458s and F430s and the opportunity to see the Enzo-based FXX and the 599 XX (three of the former, nine of the latter) as well as recent F1 machinery being exercised to make the weekend enjoyable.

Perhaps the biggest change in the gentleman driver scene is the fact that most appear to be owners of successful enterprises that appear as “sponsors” on their cars

and the level of dealer involvement providing the trackside support that makes participation in the series a turn-key deal. Ron Vogel, V.P. and director of motorsport for Ferrari-Maserati of Fort Lauderdale Ferrari, was kind enough to take several of us on a tour of the dealership’s transporters, a setup that would not look out of place in an American Le Mans Series paddock.

While there seems to be no shortage of opportunities for the well-heeled to satisfy their need for speed, the other economic end of the performance spectrum—hot, affordable sporty cars for the boy racer in all of us—is about to get a shot in the arm with the introduction of the Scion FR-S, aka Toyota FT-86. This much talked about rear-drive coupe developed in concert with Subaru (supplier of the flat-4 powertrain and chassis) promises to add two new entries for both Scion and Subaru in a segment that has been dominated by front-drive pocket-rockets. For rear-drive purists, only Mazda with the MX-5 and Hyundai with its Genesis coupe have carried the torch, that is, unless you want to move up the ladder into V-6 versions of the larger Mustang and Camaro. The difference here is a lighter, affordable platform that showcases 4-cylinder power at a time when gasoline prices are spiking.

Implicit in the Scion and Subaru offerings is the promise that there will be low cost and easy do-it-yourself upgrades that will allow racers on a budget to boost performance for some serious track work, which portends good times ahead for boy and gentleman racers alike.



PHOTOS BY MIKE DORAN

■ ■ During the Ferrari Challenge weekend at Infineon, folks could see gentlemen racers battling remarkably hard in their 458s. One of three Enzo FXXs takes to the track (left), driven by Ron Vogel.



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ZAGATO ALFA ROMEO

TZ3 STRADALE

America-bound Alfa Romeo with the Viper's soul



PHOTOS BY IAN G.C. WHITE



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102.6 | 4.6.3.810.4

THERE IS YET ANOTHER ALFA BY ZAGATO, ONE OFFICIALLY SANCTIONED by the manufacturer and very different from any other. It doesn't employ any Italian mechanicals; rather, it leverages the Fiat-Chrysler marriage to use the last Dodge Viper, specifically the ACR-X with an 8.4-liter V-10 pumping out 640 bhp and 585 lb.-ft. of torque. The front mid-engine/rear-drive layout and 98.9-in. wheelbase remain unchanged.

Certainly, a new exterior on the basis of an existing car represents a compromise, because many parameters and proportions are already predetermined. Still working within the 167.7-in. length, 78.0-in. width and 47.0-in. height, the TZ3 Stradale manages to convey that it is an Alfa Romeo through and through. The Stradale retains its Viper cues in the form of side exhaust tips, but the bodywork is unique including the rear Kammback shape, "double bubble" roof and round taillamps, all prominent Zagato styling cues.

Although not dainty in appearance, this 2-seater is just 3.3 in. shorter than the previous TZ3 Corsa that Zagato introduced at Villa d'Este last year, which was built on a tube-frame Gillet chassis and powered by a 420-bhp 4.2-liter Maserati V-8.

Zagato boasts that the TZ3 Stradale is "the first American Alfa in automotive history." Insiders have long noted that there are parallels between Viper and Stradale. Both carry a snake on their badges and both have the distinctive double bubble roof. It may not be the last, as Fiat-Chrysler CEO Sergio Marchionne has said that future Alfas may be based on platforms from the company's U.S. unit.

But how does the Stradale drive? Just like a Viper. Straight-line acceleration is the domain of this quarter-mile hero, as it pushes you back in the seat when floored. The immense torque allows the car to take off even in 4th gear. While the steering could be more precise, additional directional input is available from the throttle. Still, the right pedal should be treated with caution—especially on wet roads: You wouldn't want to crumple the precious Zagato body.

Hate it or love it, after a drive in this cannonball, we feel the fusion of unbridled American power and Italian grace has its own special appeal. The first of nine to be built will go to a collector during the Pebble Beach Concours d'Elegance in August.

—Matthias Pfannmueller



❖ The "TZ" in TZ3 is short for Tubolare Zagato, that first word meaning "tubular" in Italian. Its progenitor is the original Alfa Romeo TZ1, a purpose-built GT machine that boasted a lightweight tubular-steel space frame. Equipped with a dohc 1.6-liter inline-4, the TZ1 swept the top four places in the prototype category of its first race, the 1963 FISA Monza Cup.



WHEN NEWS BROKE OF MITSUBISHI killing the all-wheel-drive turbocharged goodness that is the Lancer Evolution, the tuner crowd was in an uproar. Not since the death of the Supra, NSX or Tupac Shakur did the exhaust-burble and flush-rim-loving crowd see such an outpouring of sorrow. But just as the proverbial liquor was being poured, a glimmer of hope appeared.

BestCar, our Japanese print friends with sources deep within Mitsubishi, informs us that Osamu Masuko, president of Mitsubishi Motors Corporation, is so against participating in motorsports that no one dares mention the word around him. However, despite news regarding the discontinuation of the Evo (a statement that originated from a different Mitsubishi official), Masuko was heard stating that Mitsubishi is fully intent on producing a high-performance car in the future, al-

NEW HYBRID MITSUBISHI EVO

Meaner and greener. Here's hoping for the former.

beit green. Based on that fact and other internal rumblings, *BestCar* asserts that in all likelihood Mitsubishi will produce a new Evo.

While we initially reported the next-generation Evo might be either a diesel or hybrid, the latest information has Mitsubishi leaning toward the latter, borrowing technology from the PX-MiEV concept shown at the 2009 Tokyo Motor Show. The PX-MiEV touts a plug-in hybrid system that relies on electric motors at low to middle speeds. Operating as a series hybrid, when the lithium-ion batteries run low, the 1.6-liter gasoline engine turns on and powers a generator that in turn provides charge to the electric motors. For higher vehicle speeds, the PX-MiEV's hybrid system switches to a parallel hybrid system with the 1.6-liter engine providing additional combustion power to the wheels.

For the drivetrain, the PX-MiEV utilizes Mitsubishi's S-AWC all-wheel-drive system and active yaw control, technologies both employed on the current Evo. Short of a turbocharger, the PX-MiEV's powertrain is a striking vision of what a hybrid Evo could be. One can always hope. Otherwise, let the proverbial liquor flow.—*Carter Jung*

2014 MERCEDES-BENZ SLC: Benz builds Porsche 911 fighter

Our sources have confirmed that Mercedes-Benz is working on a front-engine, rear-wheel-drive sports coupe to rival the likes of the Porsche 911. Based on the next-generation SL-Class architecture, the SLC will be smaller and lighter than the luxurious 2-seat roadster. Mercedes fans might be familiar with the model name—the last SLC was the C107 model produced from 1971 to 1981.

Slotted beneath the SLS AMG Coupe, the SLC will likely be powered by an AMG-tuned 5.5-liter V-8 engine. That should give the SLC more than enough power to challenge the 911 Carrera,

but less than its more expensive sibling, the 571-hp SLS AMG. Don't look for gullwing-style doors, à la SLS. However, expect copious amounts of aluminum and possibly carbon fiber to be used in the chassis and body of the new SLC.

Based on the SLS' starting price of \$185,000—and \$80,000 for a base Porsche 911—we expect the price of the SLC to fall somewhere around \$120,000 when it arrives in 2014.—*Nick Kurczewski*





PHOTO BY IAN G.C. WHITE

QUESTIONS WITH **Andrea Zagato**

CEO OF ZAGATO



The grandson of Ugo Zagato, Andrea Zagato is the current CEO of the prestigious Italian design house his grandfather started in 1919. Based in Milan, Zagato recently applied its signature touches to not one, but two Alfa Romeos.

1

How did these two TZ3 models come about?

To mark the 100th anniversary of Alfa Romeo last year, we made the TZ3 Corsa—a birthday gift with historical references to its predecessors, the TZ and TZ2. At the same time, we wanted to respond to the announcement that the Fiat group united with Chrysler.

2

So the TZ3 Stradale is a hint of that future?

Exactly! Both TZ3 models are significant for two reasons: as a tribute to the motorsport history of Alfa Romeo and the street sports cars of the brand. Many American Alfisti have dreamed about the return of the make to the U.S. for many years and now Fiat and Chrysler have a means to do it with an established U.S. dealer network.

3

But two different cars—Corsa and Stradale—why?

The Corsa should not be a tuned road car but a thoroughbred racing machine and therefore have a proven carbon GT2 chassis. The Stradale is an entirely different concept; it's roadworthy—even in the U.S., which was very important. However, both cars belong together—they are a project in two versions.

4

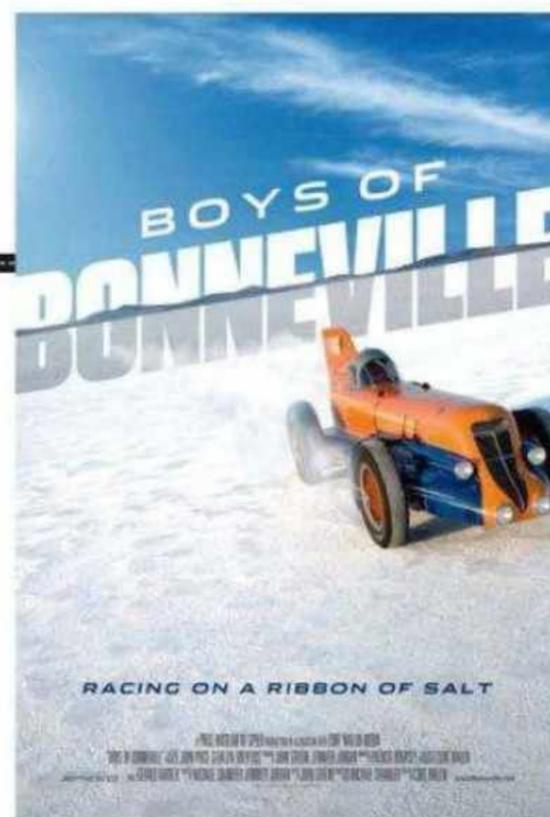
Who will buy the TZ3 Stradale?

Not speculators. Our customers are hand-picked collectors we know and trust. Ideally, there will be only one per country or region. With the Stradale, it is very unlikely that two cars will ever meet. The first goes to Eric King, an Alfa fan in Saratoga Springs, New York, who owns a lot of Italian cars and a museum. I am confident that he will keep his Stradale.

5

Do both coupes vary in cost?

Yes and no. The Corsa is unique and therefore more expensive. With the Stradale, development costs are shared by nine specimens that we want to do. That is the magic number for us—and all will keep their value because they will be differently equipped collector's items.—MP



BOYS OF BONNEVILLE: RACING ON A RIBBON OF SALT

If your idea of a great racing movie is *Le Mans*, then *Boys of Bonneville: Racing on a Ribbon of Salt* should be on your list of must-see DVDs. Steve McQueen's classic, while fictional, captured the essence of the French endurance race because of its documentary style. *Boys of Bonneville* is pure documentary and is no less entertaining, telling the story of David Abbott "Ab" Jenkins, who was the first man to set speed and distance records on the Bonneville Salt Flats and paved the way for this desolate plain to become one of the speed capitals of the world.

Directed by Curt Wallin and with actor Patrick Dempsey providing the voice for Jenkins, this captivating film tells Jenkins' story, how he set speed records with a Pierce-Arrow driving on a large circular course for 24 hours straight and played an instrumental role in getting British land speed legend Sir Malcolm Campbell to abandon Daytona Beach and bring his Bluebird to the Salt Flats to break 300 mph. Jenkins would later set more speed records with Mormon Meteors. The film is underwritten by the Price Museum of Speed in Salt Lake City, which restored the Mormon Meteor III.

—Matt DeLorenzo

\$20

www.boysofbonneville.com

Here's a quick rundown of the events in and around the Monterey Peninsula in the days leading up to the Pebble Beach Concours d'Elegance.

SHOWS **TUESDAY AUGUST 16** **WEDNESDAY AUGUST 17** **THURSDAY AUGUST 18** **FRIDAY AUGUST 19** **SATURDAY AUGUST 20** **SUNDAY AUGUST 21**

Carmel-by-the-Sea Concours on the Avenue

11 a.m. to 5 p.m.
LOCATION: Ocean Avenue, Carmel
ADMISSION: Free
carmelconcours.com



Gordon McCall's Motorworks Revival

5-10 p.m.
LOCATION: Monterey Jet Center
ADMISSION: \$295
mccallevents.com



Pebble Beach Tour d'Elegance

8 a.m.-3 p.m.,
Car display in Carmel 12-2 p.m.
LOCATION: Departs from Collins Field in Pebble Beach
ADMISSION: Free
pebblebeachconcours.net



Pebble Beach Retro Auto

10 a.m.-5 p.m.
LOCATION: The Lodge at Pebble Beach
ADMISSION: Free
pebblebeachconcours.net

Concorso Italiano

9 a.m.-5 p.m.
LOCATION: Laguna Seca Golf Ranch
ADMISSION: \$100
concorso.com

The Quail— a Motorsports Gathering

10 a.m.-4 p.m.
LOCATION: Quail Lodge Resort
ADMISSION: \$400
quailodgeevents.com



Rolex Monterey Motorsports Reunion

8:30 a.m.-4:40 p.m.
LOCATION: Mazda Raceway Laguna Seca
ADMISSION: \$50 advance, \$70 at gate, \$130 for advance 3-day pass, \$150 at gate
mazdaraceway.com



Rolex Monterey Motorsports Reunion

8:30 a.m.-4:40 p.m.
LOCATION: Mazda Raceway Laguna Seca
ADMISSION: \$70 advance, \$90 at gate, \$100 for advance 2-day pass, \$120 at gate
mazdaraceway.com



Pebble Beach Retro Auto

10 a.m.-5 p.m.
LOCATION: The Lodge at Pebble Beach
ADMISSION: Free
pebblebeachconcours.net



Pebble Beach Concours d'Elegance

10:30 a.m.-5:30 p.m.
LOCATION: The Lodge at Pebble Beach
ADMISSION: \$175 advance, \$200 at gate, \$550 for Club d'Elegance VIP ticket
pebblebeachconcours.net

Pebble Beach Retro Auto

8 a.m.-6 p.m.
LOCATION: The Lodge at Pebble Beach
ADMISSION: Free with Concours d'Elegance admission
pebblebeachconcours.net

Rolex Monterey Motorsports Reunion

8:30 a.m.-5 p.m.
LOCATION: Mazda Raceway Laguna Seca
ADMISSION: \$60 advance, \$80 at gate
mazdaraceway.com



Mecum at Monterey

Aug. 15-18 • Location: Hyatt-Regency Monterey • mecum.com

RM Auctions

Aug. 18-20 • Location: Portola Hotel & Spa and Monterey Convention Center • rmauctions.com

Russo & Steele

Aug. 18-20 • Location: Marriott Hotel Downtown Monterey
russoandsteele.com

Bonhams & Butterfield

Aug. 18-19 • The Quail Lodge • bonhams.com

Gooding & Co. Pebble Beach Auctions

Aug. 17-21 • Location: The Lodge at Pebble Beach • goodingco.com

*Location, time and availability for events are subject to change. Check websites for more details.

PHOTO BY PAUL LITWINSKI © 2011 COURTESY GOODING & CO.

PHOTOS BY JOHN LAMM



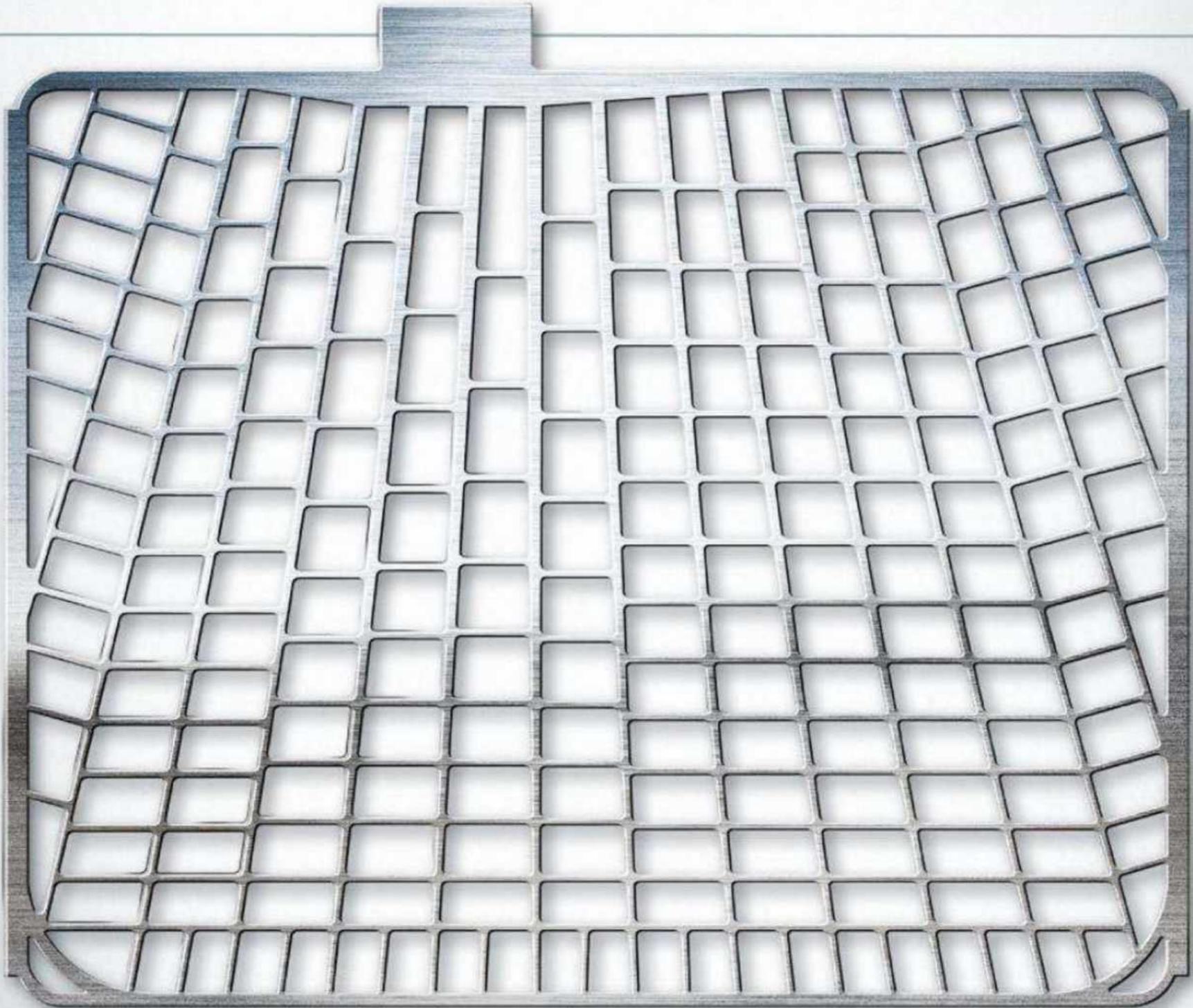
Wear a Honda

Having recently celebrated its 50th year in America, Honda has commissioned a line of clothing that incorporates classic marketing images from the '60s and '70s. The Honda Heritage Clothing Collection will feature iconography dating back to Honda's first U.S. storefront headquarters on Pico Boulevard in Los Angeles as well as the 1971 Z600 coupe and the first Civics, which made their debut in 1973. A limited number of shirts is available as the product line is rolled out throughout 2011. For more info, go to www.lockerloop.com.—MDL



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PHOTO BY BRENDA PRIDDY

SPIED: 2013 PORSCHE 911 TURBO

Despite the lack of a rear spoiler, this is the next-generation Porsche 911 Turbo caught testing. The telltale side vents on the rear haunches aft of the doors and the lower vents on the rear bumper designate so. Other than the missing rear wing and the relocated sideview mirrors (moved from the corner of the windows to the doors), much of iconic 911 silhouette remains. Why mess with perfection? While official powertrain details have yet to be released, we expect the flat-6 engine to continue in its twin-turbo configuration. Rumors have the new Porsche 911 Turbo making somewhere around 550 bhp, 50 more than the current generation, but don't be surprised if it's closer to 600 bhp—several sources have stated that the next-gen 911 lineup will utilize a KERS system. Twin turbos plus additional flywheel energy stored from braking? *Achtung, baby!*—CJ

Retro Racer at Villa d'Este

TO MARK THE 75TH ANNIVERSARY OF THE BMW 328's debut, the Bavarian automaker introduced the BMW 328 Hommage concept at the Villa d'Este Concours in Italy. This tidy 2-place roadster features a cut-down windshield, leather hood straps, cutouts instead of doors, knock-off hubs and black accents on the lights to mimic the X-pattern of headlamp tape.

Beneath the hood is a 3.0-liter inline-6 mated to a sequential gearbox. While there are plenty of retro styling cues, the materials used to create the car are cutting-edge, the body made of carbon-fiber-reinforced plastic. The surface is unpainted to show off the weave

pattern of the lightweight material, which helps keep the overall weight to just 1720 lb.

The minimalist approach is also evident in the layout of the cockpit. A large tachometer dominates, and the only other visible instruments are for oil pressure, oil temp and water temp. In true racing tradition, the sport seats are fitted with 4-point harnesses. The 328 Hommage is a design exercise only, with no plans for a production version. Pity.—MDL



roadandtrack.com/BMW328



PHOTO BY BRENDA PRIDDY

SEEN AROUND THE RING

Around the famed Nürburgring there is always an endless array of hideously disguised prototypes for us to gawk at... this is what's most recently caught our fancy.

2013 BENTLEY CONTINENTAL GTC

The new 2012 Coupe we drove at our test track last month is clearly to be followed shortly by its convertible sibling, likely as a 2013 model. Don't be fooled by the fake hood vents or vinyl stickers under the headlamps that give the impression of this being a Supersports model—it's not.

FORD FIESTA ST

Stuffing the 246-hp 2.0-liter turbocharged EcoBoost engine from the forthcoming Focus ST into the Fiesta ST is unlikely. More likely is a turbo 1.6-liter making nearly 180 bhp. This prototype sports a front-mount intercooler, dual exhaust tips, rear winglet and bigger wheels. Interestingly, the car maintains its rear drum brakes that are unlikely for the production version.

MERCEDES-BENZ C63 AMG BLACK SERIES

It looks like the special edition Black Series models of M-B will soon include a C63 AMG, in both sedan and coupe styles. Besides gaining massive fender flares, wide tires and race-car ride quality, the cars will have a naturally aspirated 6.2-liter V-8 with more than 500 bhp. Power will go through the innovative 7-speed MCT automatic transmission that rivals the competition's dual-clutch gearboxes for speed and smoothness. M3 owners, beware.—Shaun Bailey



PHOTO BY GLENN PAULINA/KGP



PHOTO BY BRENDA PRIDDY

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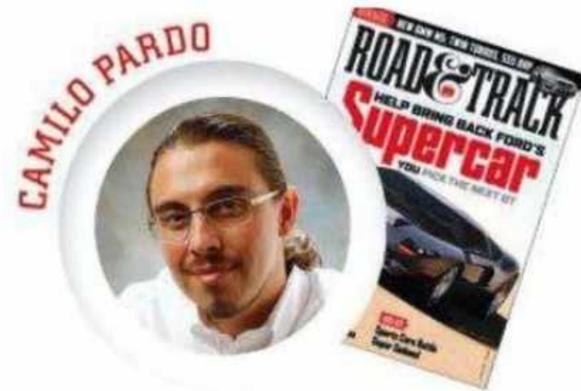


YOUR TURN

Retro Modern

DESIGNER DELIGHTS: On my way to the 2003 Monterey Weekend, the final leg was on a commuter airplane from L.A. to Monterey. I sat next to a young man with a ponytail and FoMoCo paperwork. When he was done with the work, I asked him what he did for Ford. "I am a designer," he said modestly and introducing himself as Camilo Pardo ("Ford's Next Supercar," Cover Story, June 2011). "What have you designed?" He replied the new GT40 and led me on a fascinating discussion of retro design. Only after arriving at Pebble Beach and visiting the Camilo Pardo Pavilion filled with his artwork did I realize what a rare treat I had. His genius is intact in the futuristic next Ford supercar presented in R&T: a pure and clean design free of places to hang things.

*David B. Baughman
Louisville, Kentucky*



THE TAILLIGHTS WERE SAFE AT ANY SPEED:

Here's a Ford GT story you might not have heard: When Kar Kraft was completing the Mk IVs in Detroit prior to Le Mans, they needed to install taillights on the cars. They sent a shop helper out to the local auto parts stores with a small scale and told him to weigh every round replacement taillight and bring back a couple dozen of the lightest ones he could find. That is how the Ford cars that won Le Mans were equipped with 1960 Chevrolet Corvair taillight assemblies. At a recent visit to The Henry Ford at Greenfield Village, I confirmed that their Ford GT40, the 1967 Le Mans winner, is still equipped with the Corvair rear lights; probably the fastest Corvair taillights ever.

*Seth Emerson
San Jose, California*

More than 25,000 people have voted in our future Ford GT design contest, and we will announce the winner in our next issue. We'll also have some commentary from J Mays, Ford's design boss.—Ed.



SHADE TREE JUNIOR MECHANICS:

Peter Egan's column about his first car (Side Glances, June 2011) reminded me of mine. I've enclosed a picture of me around 1948. "The Car" was put

together by my older brother with whatever he could find around my grandparent's house—baby buggy wheels, a basket, etc. I was around 3 or so, and it must have made an impression on me since I have been a motorhead ever since.

*Jim Snyder
Granville, Ohio*

FERRARIS AND WHITEWALL TIRES:

I remember well June 1966 ("Conquering Le Mans, 1966," sidebar to "Ford's Next Supercar," June 2011). The sexy red Italian cars we were so used to see winning were wiped out by the unusual Fords. It must have been a sad, sad, day at Maranello. The photo with this story also shows a French "Pompier" truck in the background: Imagine that, whitewall tires on a fire truck!

*Jean Roux
White Rock, British Columbia, Canada*

NOT SO YOUNG PROTÉGÉ:

I believe Marco finished 2nd in the Indianapolis 500 in 2006, not 1995 as you noted ("100 Years at the Brickyard," June 2011). The Andrettis are good, but not that good. I am originally from Indy and went home for the 100th anniversary race. I've been going with my father since 1973, when I was 7, and have really enjoyed your special Indy sections leading up to this year's 100th anniversary running.

*Darren Wellenreiter
Charlotte, North Carolina*

NOT SUCH AN EASY TRANSITION:

I always enjoy the technical knowledge that Dennis Simanaitis brings to his articles; however, in "Keeping Kewl" (Tech Update, June 2011), he omits an important element in describing a/c operation. There's also an orifice tube or thermal expansion valve, a component without which the system would not work effectively, if at all. Also, he calls 1234yf a win-win. I disagree on two points, first the cost: This new refrigerant will be more expensive than R134a; the specifically designed systems will add cost as well, as will new service tools. Second, proper training: Let us hope this is easier than the R12 to R134a transition. These hurdles can be overcome, but the consumer will ultimately pay for increased environmental friendliness.

*Shawn M. Bauman
Shelocta, Pennsylvania*

CORRECTIONS: The Jaguar XF models ("Door-to-Door Performance," June 2011) have a steel unibody. The flame-engulfed Miller driver ("100 Years at the Brickyard," June 2011) is Norman Batten.—Ed.

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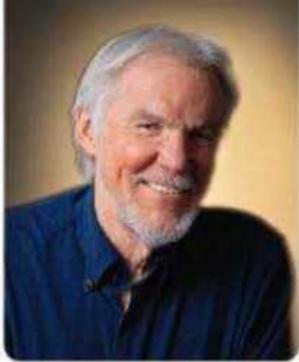


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SIDE GLANCES

BY PETER EGAN
EDITOR-AT-LARGE

Flathead Revisited

THERE ARE TIMES WHEN YOU HAVE TO QUIT COMPLAINING about the predictable uniformity of America's fast-food culture along the Interstates and just kick back and enjoy it. Such a time occurred just two weeks ago.

I was in Arlington, Texas, staying at the Comfort Suites just south of the Dallas-Ft. Worth airport. Being without a car, I walked out of the motel into a warm and balmy spring evening and hiked down the street to a Taco Bell, where I had two excellent Taco Supremes and a Diet Coke, with just a small dollop of fruit punch and Cherry Coke added, creating a new and exotic flavor unlike anything ever seen before or since.

After dinner, I cut across the parking lot past a gas station convenience store, stopping to buy a 16-ounce can of Schlitz Malt Liquor and a small bag of Doritos. Returning to the motel, I flopped on the bed and turned on Turner Classic Movies just in time to see *Friendly Persuasion*, starring Gary Cooper. A surprisingly good film, but I wasn't really able to give it my full attention because I kept looking at photos of the car I'd just bought from a gentleman named Todd Batiste who lived only a few miles from the motel.

It was a 1934 Ford Fordor Deluxe. Dearborn

Blue with Straw Yellow wheels and pinstripe—dry, clean and rust-free, with only 34,000 miles on the odometer. An older restoration, but very presentable, with its original 85-horse V-8.

I took a swig of my malt liquor, ate some Doritos, watched Gary Cooper portray a troubled Quaker farmer caught up in the Civil War and then glanced down again at the pictures of my new '30s car, a survivor from the heart of the Great Depression. Gazing out the window at a low-flying airliner inbound for the DFW airport, I suddenly realized that not all of our sublime moments of happiness depend on mountain scenery or sunsets over the ocean. Sometimes they're just a glow of appreciation for all the oddball things this country and its long history can throw at you, all at once.

I'd found the car a week earlier, while perusing the classifieds in the Early Ford V8 Club website, and called the owner. He had too many cars, he said, and needed to thin the herd. He'd bought the '34 three years earlier from a widow in Michigan. She said that she and her husband used to drive the Ford to car shows, but after he died she just didn't have the will to go anymore. She didn't know the car's history, but said her husband had gotten it "somewhere in the South."



ILLUSTRATION BY DAVID REINBOLD



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Mr. Batiste sent me photos of the car and it looked very nice, but a few bad eBay experiences have taught me not to rely on photographs alone. So I cashed in some of my frequent flyer miles and got a round-trip ticket from Madison, Wisconsin, to Dallas-Ft. Worth.

Todd Batiste picked me up at the airport in a Honda CR-V and we drove to his family's nice brick home on a cul-de-sac, just 15 minutes from the airport. As soon as he rolled the Ford out of his garage and into the sunlight, I knew I was a goner—if the car ran well. And if the asking price came down a bit. It looked great in person.

The Ford started right up and we drove it on the boulevards near his home. Some smell of gasoline from a seeping fuel pump gasket; nice gearbox and clutch; typically almost-okay '30s steering; good oil pressure from the aftermarket gauge under the dash. The engine sounded fine and the engine compartment was clean and neat—except for an oil leak from the pressure sender.

Decent upholstery with a bit of patina, possibly original but more likely replaced back in the '50s or '60s. This car was 77 years old, after all. The vacuum-operated wipers didn't work and one of the two horns didn't honk. The oil

needed changing—a long time ago. The tires and 6-volt battery were new, and the generator had recently been rebuilt.

Todd Batiste had a sparkplug wrench, but his compression gauge was broken, so he drove me to an auto parts store and I found one for \$24.99. The V-8 indicated an even 85 psi in all cylinders, which sounded about right for a car with a 6.3:1 compression ratio.

I looked under the car carefully, and there was not so much as a rust pit on the frame or underbody. It looked like a car that had never been driven in the rain.

The Ford was pretty much what I'd been looking for. It was neither over-nor under-restored, and it didn't require new paint or upholstery. Nothing needed re-chroming and the fenders did not have to come off, nor did the wheels need bead-blasting and paint. I didn't have to order new tires or figure out who could mount an old wire wheel on a tire machine. The heavy lifting, as we like to say, had been done.

And yet there was plenty to do. Lots of what I call "screwdriver projects." Horn, wipers, oil leak, oil change...the leaf springs squeaked and needed to be lubed. The fuel gauge didn't work and the sparkplugs were serviceable but worn. Old collector cars get like this

after people own them for a while. The initial spurt of ownership energy tapers off, attention gets diverted and things break or fall out of adjustment. The to-do list gets longer (and is, in fact, never actually done on any old car). A new runner is needed in the relay race back into history. The torch needs passing to someone who's not yet tired.

"And now about the price..." I said to Mr. Batiste, and he quickly dropped it to exactly the amount I thought the car was worth. No haggling. Done. "I'll buy it," I said. "But I have to fly home and send you the money, and then find a transport company to bring it to Wisconsin."

Todd drove me to a Comfort Suites with shuttle service near the airport so I could get up early and fly home in the morning. It was then that I had my rhapsodic moment of cultural ecstasy, drinking malt liquor, eating tortilla chips, watching a great movie and looking at pictures of my new car.

When I got home, several of my car friends were astonished that—after writing a recent column about the benefits of buying a Ferrari 308 or 328—I'd called off that search for the time being and ended up with a '34 Ford, of all things.

My only problem with the Ferrari plan, I explained, was that I didn't have



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“When I was 12 years old, I’d actually blown \$5 of my lawn-mowing money on a rusty old seized-up Ford Flathead engine that was stuck in the mud at Anderson’s Wrecking Yard near my hometown. Mr. Anderson and his sons hoisted the engine into the trunk of an old DeSoto with no trunklid and dropped it off with a loud earthen thud that afternoon in our backyard—much to my mother’s surprise, as she was hanging out laundry at the time.”

a specific trip in mind (at the moment) for an Italian exotic. But for many years I’d envisioned a long road trip that virtually required either an early, pre-1935 Ford V8 sedan or an Essex Terraplane for the proper historical context. And, what with Terraplanes being relatively rare, I’d decided to get the Ford.

Also, quite frankly, I’ve always wanted to own a car with a Flathead V-8, and—as a happy coincidence—the ’33 and ’34 Fords are among my favorite car designs of all time.

When I was 12 years old, I’d actually blown \$5 of my lawn-mowing money on

a rusty old seized-up Ford Flathead engine that was stuck in the mud at Anderson’s Wrecking Yard near my hometown. Mr. Anderson and his sons hoisted the engine into the trunk of an old DeSoto with no trunklid and dropped it off with a loud earthen thud that afternoon in our backyard—much to my mother’s surprise, as she was hanging out laundry at the time.

“What’s this?” my mother asked.

“Just an engine,” I replied nonchalantly, as if big greasy engines were delivered to seventh-graders every day.

As a fledgling car buff, I just had to have a real car engine to take apart, and

I loved the hot-rod history of the Flathead, and the look of the engine with those boiler-plate cylinder heads.

And now I’ve got one that runs—sitting in an actual car that goes down the road. The ’34 Ford was dropped off yesterday (sans thud) by a big semi from Autobahn Transport, and it’s sitting in my workshop now.

The Ferrari will have to wait. I’m making up for lost time here, reconnecting in some way with my very first automotive purchase. The Ford Flathead, as people say in movie theaters, is right where I came in. 



Aggression in its most elegant form.

With a 6-speed automatic transmission and available 305-hp engine, it’s aggressive. But with an Advance Package that includes ventilated front seats and a blind spot information system, it’s also refined. The 2012 Acura TL – elegance with an edge.*



COUNTER STEER

BY SAM MITANI
INTERNATIONAL EDITOR

“Muyres predicts that 20 to 40 years from now, autonomous vehicles will dominate the way Americans commute.”

A Peek Into the Future of Commuting

LIKE MANY PEOPLE MY AGE, WATCHING *STAR WARS* in the movie theater immediately made me a fan of science fiction. Not only because I thought space travel and shooting aliens with laser guns were cool, but the way people got around within their communities was fascinating, such as the car-in-a-tube system in *I, Robot* or the levitating vehicles in *Blade Runner*. They seem totally within the realm of possibility in our ever-changing transportation environment.

As gasoline-powered cars are slowly giving way to electric vehicles (EVs) today, what will come next? How long will I need to wait until I can hover to work every day? For an answer, I sought the advice of Dave Muyres, a graduate and former vice president of Educational Initiatives at Art Center College of Design and co-founder of OnGoing Transportation. He is also part of the launch team of the NewNorth Center for Design in Business and speaks around the world on the future of the transportation industry. According to Muyres, there will be profound changes in the way people commute in the near future, but don't expect to see cars disappearing from the world altogether.

“Before the automobile, the horse was the dominant form of transportation. It was a won-

derful way to get from Point A to Point B, but with time, it started to show its limitations, such as speed, comfort and range. Then the automobile came and surpassed the horse, yet horses still exist today and are wonderful forms of recreation and sport. I see this happening with cars. Although cars as we know them may be replaced by more purpose-built vehicles designed just for commuting, they will still be around for people who enjoy a spirited drive on weekends or competition at a racetrack,” Muyres said.

He does admit that conventional automobiles no longer represent the most efficient form of transportation, so they'll be phased out gradually. In places like Japan, the shift has already begun, as car sales have been declining for several years. And the top-selling mode of transportation is the appliance-like Kei-car created solely for commuting. The U.S. will surely follow in these steps, and Muyres predicts that 20 to 40 years from now, autonomous vehicles will dominate the way Americans commute.

“These devices would be a blend of a bus and a personal car. They'll pick you up at your front door and drop you off exactly where you need to be. This eliminates the hassles associated with parking, maintenance and fueling. And I see EVs being the drivetrain of choice because by then, they'll be more practical, efficient and reliable,” he explained.

So I asked him if these cars will travel in tubes like in *I, Robot*. Not likely, he said, because of the costs associated with creating an entirely new infrastructure. So look for government organizations to modify today's roads for new types of transport. One possibility is the Podcar, also known as PRT (Personal Rapid Transit), which is a personal-size vehicle without a driver that rides on rails situated above existing roads. Get onto a Podcar almost anywhere, press a button and you're whisked to your destination. Think of it as an expansive horizontal elevator.

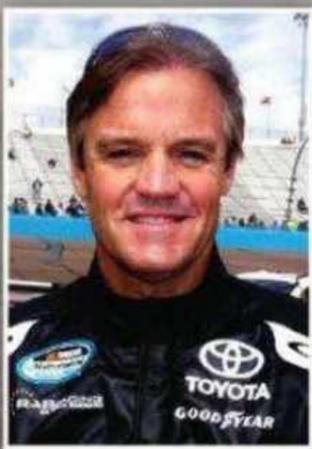
When asked about the possibility of flying cars in downtown Los Angeles, he told me not to expect them any time soon.

“While I feel commuting in three dimensions is a possibility, the vehicles would most definitely need to be automated. Can you imagine the number of accidents with cars flying around in all dimensions? There are enough accidents in our two-dimensional commuting world as it is,” he said.

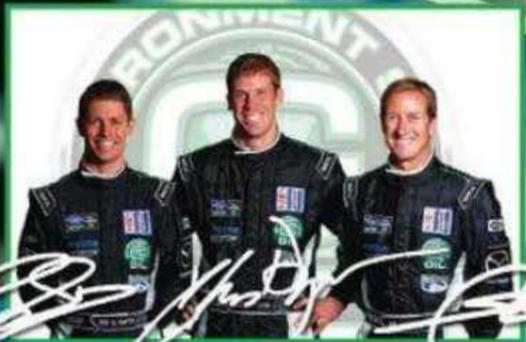
Well, I for one am a bit disappointed that hovering around town won't happen in my lifetime, so I suppose I'll hold onto my gasoline-powered cars for the foreseeable future and look forward to the day when I can zap aliens with the latest laser gun.

ILLUSTRATION BY JOHN PATRICK





Keny Wallace



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Drives

AUGUST 2011

- 2012 MERCEDES-BENZ C63 AMG COUPE
- 2011 ASTON MARTIN V8 VANTAGE S
- 2011 BMW ALPINA B7
- 2011 BMW Z4 sDRIVE35is
- 2011 GEMBALLA MISTRALE
- 2011 HYUNDAI SONATA HYBRID
- 2012 TOYOTA PRIUS V
- 2012 FIAT 500c CABRIO
- CLASSIC: 1958 BMW 503 COUPE

2012 MERCEDES-BENZ C63 AMG COUPE

Muscle-bound BMW M3 antagonist

SEVILLE, SPAIN—THINK MAXIMUM POWER DENSITY, MINIMUM FOOTPRINT and scintillatingly high speed. In the dog world, this would equate to crossbreeding a pit bull and a greyhound; in the sacred halls of Affalterbach, it means AMG engineers stuffing their handbuilt M156 6.2-liter V-8 into the smallest viable platform, much in the manner of the C63 AMG Sedan. But now it's a stylish 3816-lb. 4-seat coupe that, despite providing no real weight savings over the 4-door, offers a small increase in structural rigidity. They've also fitted their AMG Speedshift Plus MCT 7-speed gearbox, a clever amalgam of planetary automatic gearbox and hydraulically actuated wet clutch that replaces the torque converter. This beauty, also seen in the AMG SL63 and E63 models, snaps off shifts in as little as 100 milliseconds depending on which mode is selected—Controlled Efficiency, Sport, Sport +, Manual, or Race Start.

If its long hood/fast windshield/short rear deck styling doesn't grab you (set off by AMG fascias, sills, a rear lip spoiler, underbody diffuser and a heavily ridged aluminum hood), maybe the sounds from the quad-tipped exhaust will. The engine erupts with a sharp, startling bark, and acceleration from the 451-bhp powerplant is forceful, addictive and unrelenting. Opt for the AMG Driver's Package and there's a full 481 bhp on tap, thanks to some SLS parts that remove nearly 7 lb. of mass...a lighter crankshaft, connecting rods and pistons that allow a lofty 7200-rpm redline. Mercedes pegs acceleration to 62 mph at 4.4 seconds (4.3 for the AMG Driver's Package, which also includes composite aluminum/cast-iron brake rotors). Top speed is a governed 155 mph, but rises to 174 mph if the AMG Driver's Package is selected.

Got camber? Yes! More than any production car I can remember, the C63's tires (ContiSport-Contact 3s, 235/40ZR-18 front,





255/30ZR-18 rear) tilt in aggressively at the tops—factory specs are from -1.8 to -2.0 degrees in front, and -2.0 to -2.2 in back. Combined with a C63-exclusive 3-link strut suspension, a strengthened rear multilink setup and a re-do of all the elastomers, there is remora-like adhesion and, despite suspension firmness and roll control that only an enthusiast could love, remarkably good rear compliance over bumps in the high-speed sweepers found throughout our road loop in Spain. The transmission's S+ mode unfailingly seems to find the right gear (and aggressively auto-blips on the double-declutch downshifts). Our track experience at Circuito Monteblanco, an FIA-approved facility just 30 miles out of Seville, showed that 443 lb.-ft. of torque applied through 255-section rear tires means power oversteer on command...mitigated, however, by the Sport setting on the stability control system we were asked to use by AMG personnel. The C63 is huge fun and a pretty wicked track machine wearing a street plate, a car you could lap extensively with no modifications.

Elsewhere in the lineup, the base C250 Coupe comes with a 1796-cc turbocharged direct-injected inline-4 making 201 bhp and 229 lb.-ft. of torque. Although there's a touch of lag, the new engine is a strong, smooth powerplant with just a little low-pitched clackiness; it's also estimated to achieve 30 mpg in EPA's city cycle. The C350 Coupe introduces a new direct-injected 60-degree V-6 (302 bhp and 273 lb.-ft.), a torquey, well-rounded performer that gets a little reedy (yet not thrashy) near its 6750-rpm redline. Each is paired with the 7G-Tronic Plus automatic with wheel-mounted paddle shifters.

Inside, both models are treated to the same freshening that the 2012 sedans received, with bolder instruments housed in a silver-finish triple-tube shroud, with brighter graphics for the displays. Plastics are now far richer, switches have a higher-quality look and feel. All U.S. Coupes will come standard with the Sport package suspension (15 mm lower and stiffer than European base models) and an optional Advanced Agility Package with cockpit-selectable shock damping.

Rear seating is a little tight for 6-footers, helped by scooped-out "Gurney Bubble" depressions in the headliner. The Coupes are strictly 4-seaters, with noticeable bolstering for the individual rear buckets.

Prices for the Coupes (on sale in September) haven't been announced, but should all be slightly higher than their sedan counterparts. So figure on base prices in the neighborhood of \$35,000 for the C250, \$42,000 for the C350, and \$60,000 for the C63 AMG Coupe.

—Douglas Kott



roadandtrack.com/C63AMG

R&T TESTED

0-60 MPH

4.3
SEC

0-1/4 MILE

12.7
SEC

TOP SPEED

189
MPH

SKIDPAD

0.97
G

SLALOM

73.7
MPH



PHOTO BY GUY SPANGENBERG

List price	\$136,700
Price as tested	\$157,670
Curb weight	3645 lb
Engine	4.7-liter V-8
Transmission	7-sp paddle-shift manual
Horsepower	430 bhp @ 7300 rpm
Torque	361 lb-ft @ 5000 rpm
0-60 mph	4.3 sec
0-100 mph	9.8 sec
0-1320 ft (1/4 mile)	12.7 @ 113.7 mph
Braking, 60-0 mph	118 ft
Braking, 80-0 mph	204 ft
Our mileage	est 15.0 mpg
EPA city/hwy	14/21 mpg



roadandtrack.com/VantageS

2011 ASTON MARTIN V8 VANTAGE S

Its only problem is the lack of a traditional manual transmission. Though with a little practice, lifting the throttle gently just before squeezing the upshift paddle, the Aston's flaw is easy to see through. The Vantage S has long been an enthusiast favorite for its well-proportioned body, short overhangs and quirks that makes car enthusiasts swoon. For instance, the monoblock key is incredibly impractical, but gives starting the exotic sports coupe an air of importance, much like wearing a Jaeger LeCoultre timepiece. As the V-8 bumbles to life like an earlier-era muscle car, we

can't help but take a moment to recognize the significance of the action. I recommend immediately enabling sport mode, which opens the exhaust outlets at 3500 rpm rather than 4500, thereby giving a much more satisfying roar at throttle tip-in, improving engine response and partly overcoming the sluggishness of the automated manual Sportshift II transaxle. Once the car is underway, the column-mounted magnesium shift paddles respond precisely, but require some finesse during low-speed maneuvers. It is useful to know that both paddles,

when pulled together, find neutral and allow for smooth, complete stops. When on a tear the Vantage S responds viscerally, sweeping by lesser cars politely and dispensing with any frustration one might have had a moment earlier. With borrowed exterior parts from the V12 Vantage and GT4 race car such as the duck tail, rocker panels and

carbon-fiber front splitter, and combined with improved performance, it's no surprise that the Vantage S betters its predecessors—and nearly matches the vaunted V12 we tested last year. Weighing 150 lb. less than the V12, the Vantage S might actually be the preferred corner-carver. If only it had a proper gear lever to work with.—Shaun Bailey

CLASSIC DRIVE

1959 BMW 503 COUPE

❖ Before the sexy BMW 507 designed by Albrecht Graf von Goertz, there was another coupe and convertible in the Bavarian automaker's stable, the V-8-powered 503, which also featured aluminum bodies penned by the famed designer. Only 273 coupes and 139 convertibles were produced between 1956 and 1960.

Powered by a 3.2-liter V-8 making 140 bhp, the first series convertible with its column shift proved a little bit easier to drive than the second series coupe, which had a floor-mounted 4-speed that felt like it was underneath the dash. In any event, both cars were quite pleasant to drive, the large steering wheel providing enough leverage to make the effort easy and the feedback impressive for cars more than a half-century old.



Likewise, the drum brakes do an admirable job of providing stopping power. Of course, the relatively light weight (the cars tip the scales at 3245 lb.) also helps. While the 507 is better known, the 503 Coupe and Convertible are handsome German alternatives to the Lancia Aurelia B20 of the same era. Final note: A BMW 503 Convertible starred in a 1971 George C. Scott film called *The Last Run*.—Matt DeLorenzo



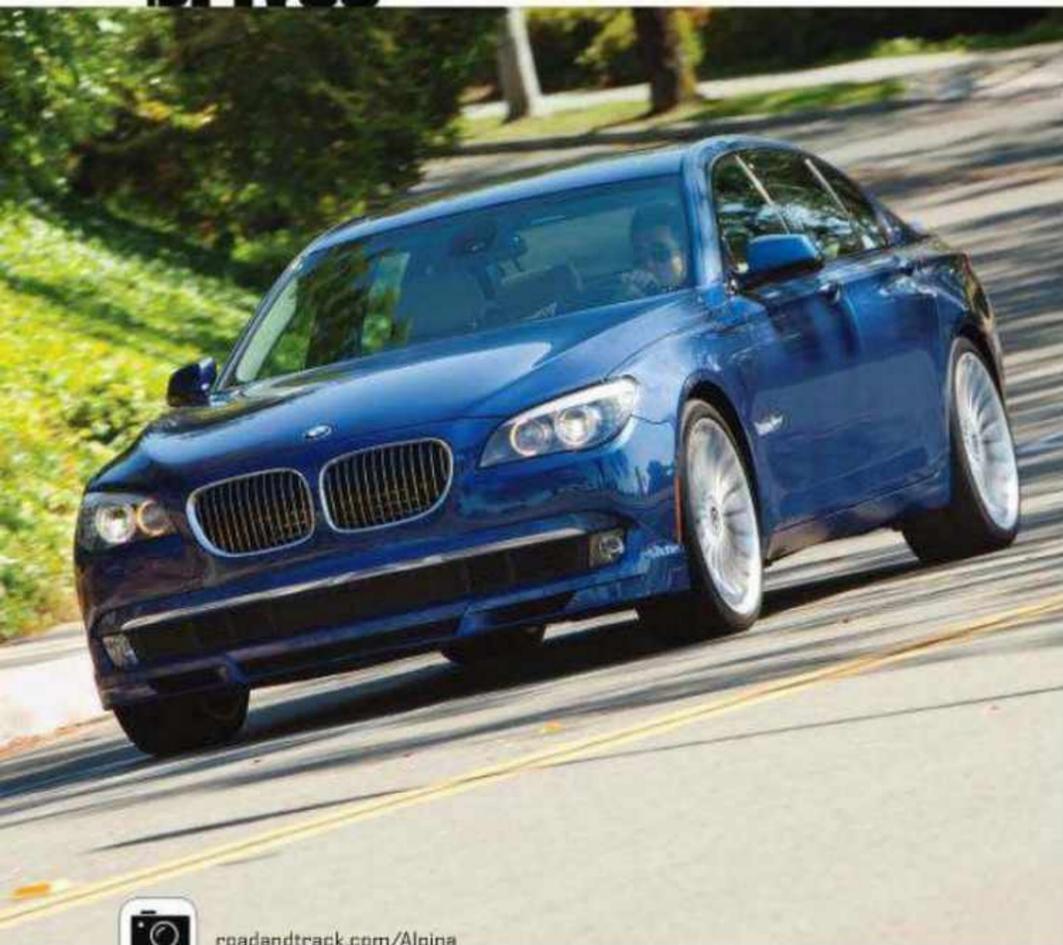
BE ONE WITH IT

ventus V12 evo



Be one with your tires, and the road will be one with you.
HANKOOK. Driving Emotion





2011 BMW ALPINA B7

Beastly fast for the highway

❑ For a vehicle that weighs 4795 lb., the Alpina B7 is surprisingly fast. Launch the beast from a highway onramp and the 7 Series' V-8 spools its two turbos and hauls the Bimmer to 60 mph in 4.3 seconds and through the quarter-mile lights in 12.7 sec. For comparison, our long-term 760Li with its twin-turbo V-12 goes to 60 mph in 4.3 sec. and the quarter mile in 12.6 sec.—impressive considering the B7 has two-thirds the cylinder count and 26 percent less displacement.

On Interstate 15 to Las Vegas, the B7's brawn really started to show. Finger the leather shift nub on the steering wheel down two gears and stomp on the throttle from any highway speed and the B7 takes off as if from standstill, even into triple-digit numbers. Via lower-compression pistons (9.2:1) and larger turbos and

intercoolers, Alpina raised the boost to 1.0 bar (14.5 psi), bumping the aluminum V-8's output to 500 bhp and 516 lb.-ft. of torque. The standard 750i's twin-turbo V-8 produces "only" 400 bhp and 450 lb.-ft.

That said, the Alpina B7 isn't for everyone. Painted Alpina Blue and lowered courtesy of tuned suspension (15 mm front, 10 mm rear) on huge 21-in. Alpina Classic wheels wrapped in Michelin PS2 tires (245/35 front, 285/30 rear), the B7 pops. While Alpina's functional aero package reduces lift (30 percent front, 15 percent rear), it also raises the level of attention—exponentially. If you're shy, take the B7 off your wish list. But if you're going to spend \$127,225 and want to get noticed (and really, who doesn't?), the Alpina B7 is for you.—Carter Jung



roadandtrack.com/Alpina

2011 BMW Z4 sDRIVE35i

More power, more character

R&T TESTED

List price	\$61,050
Price as tested	\$64,225
Curb weight	3555 lb
Engine	3.0-liter twin-turbo I-6
Transmission	7-sp paddle-shift manual
Horsepower	335 bhp @ 5900 rpm
Torque	332 lb.-ft. @ 1500–4500 rpm
0–60 mph	4.4 sec
0–100 mph	10.6 sec
0–1320 ft (1/4 mile)	12.9 @ 109.9 mph
Braking, 60–0 mph	119 ft
Braking, 80–0 mph	208 ft
Our mileage	20.0 mpg
EPA city/hwy	17/24 mpg

*Electronically limited.

0–60 MPH
4.4
SEC

0–1/4 MILE
12.9
SEC

TOP SPEED
155*
MPH

SKIDPAD
0.91
G

SLALOM
67.8
MPH



BMW's Z4 sDRIVE35i 2-SEAT COUPE PRODUCES A HEALTHY 300 BHP and 300 lb.-ft. of torque from its twin-turbo inline-6 engine. But for those who want more, BMW has fitted the 335i's uprated N54 engine into the Z4, along with their 7-speed dual-clutch transmission. The upshot? The sDrive35i (note that last "s") makes 335 bhp and 332 lb.-ft. of torque with an overboost capability pumping out an additional 37 lb.-ft. of torque for short periods of time.

Visible cues between trims are few, but mufflers that accentuate the low-end snarl of the engine make sure they sound different. We like the DCT gearbox, but not the steering-wheel-mounted thumb buttons and paddles. Thankfully, the standard shift-by-wire lever is configured appropriately: Push for downshifts and pull for upshifts.

Steering and suspension felt restrained, with front and rear suspension setups that did not jibe. The front strut-type suspension was taut, but the rear multilink felt sluggish. In Sport+ mode, the Adaptive M Suspension kept the tires on the road on bumpy sweepers, but patience was required through fast transitions, like the slalom, as the front end would point its way around the cones while the rear seemed slow to transition.

A power retractable hardtop makes the Z4 a genuine all-rounder; it even has a decent-size trunk (when the top is up). Even with its deficiencies, there's no better feeling than squeezing on the power with the top down through a set of fast bends in the road.—Calvin Kim



roadandtrack.com/Z4

Go More Places Per Gallon While Leaving Less Evidence You Were There.

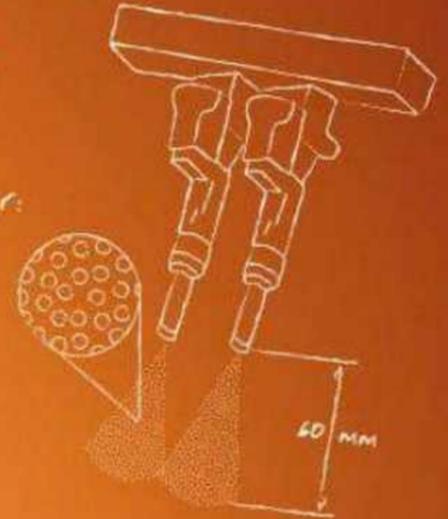
SHIFT the way you move



At Nissan, our commitment to lower emissions doesn't end with the Nissan LEAF[™]. Introducing PUREDRIVE[™], a new initiative by Nissan to create vehicles with improved fuel economy and lower CO₂ emissions. The all-new Nissan Versa Sedan is the first in the US to wear the PUREDRIVE[™] badge, thanks to a suite of technologies that are also world-first innovations.

Dual Fuel Injector System

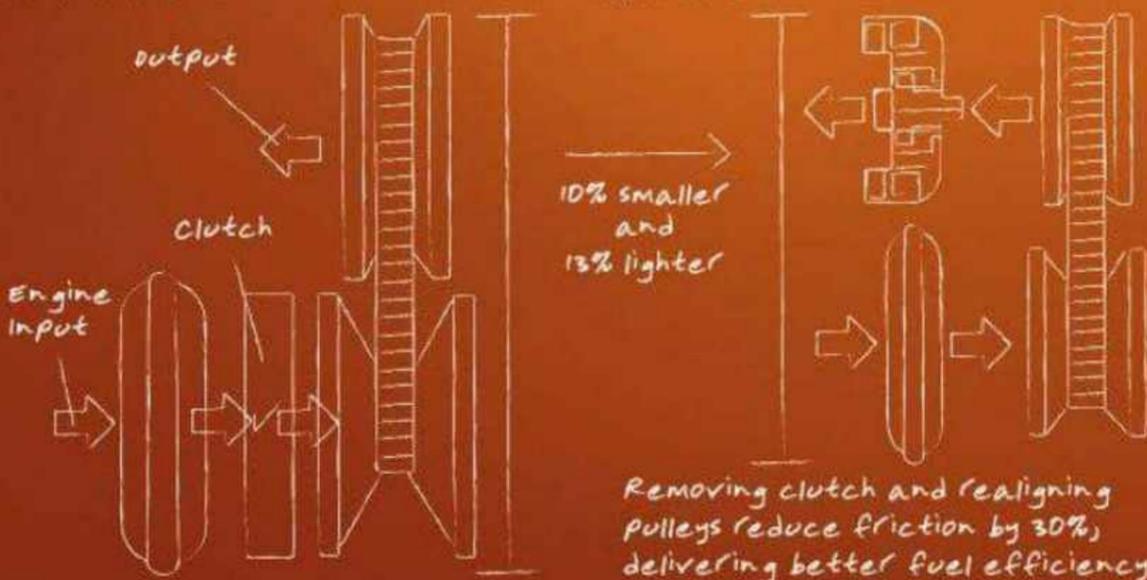
Average Fuel Droplet Diameter: 30 microns



Automatic CVT Improvements

Previous CVT

New CVT



PURE DRIVE

The Versa Sedan's revolutionary dual fuel injector system attacks emissions at the source, inside the combustion chamber itself. A mist of finer droplets burns more efficiently, wasting less fuel! It's also equipped with the next-generation automatic Continuously Variable Transmission (CVT). With one of the highest gear ratios, it optimizes engine rotation at all speeds, resulting in an impressive 38 highway mpg.² Together these technologies let the Versa go anywhere, without you worrying about what it leaves behind.

INNOVATION UPSIZED. INNOVATION FOR ALL. The All-New Nissan **VERSA SEDAN**

NissanUSA.com

¹Gas mileage and environmental impact/emission claims based on comparison to MY 11 Versa. ²2012 EPA fuel economy estimates, 30 city/38 highway mpg for Versa 1.6 SL Sedan with CVT. Mileage may vary with driving conditions – use for comparison only. Always wear your seat belt, and please don't drink and drive. ©2011 Nissan North America, Inc.

2011 GEMBALLA MISTRALE

❑ Uwe Gemballa hated door handles. And that's why, in his honor, the 2011 Gemballa Mistrale, based on the Porsche Panamera Turbo, doesn't have them, as the successors of the slain tuner (Gemballa was murdered while on a business trip last year to South Africa) put the pieces of his company back together.

Now under the leadership of Managing Director Andreas Schwarz, Gemballa is back with a car that carries all the classic cues—widened fenders, contrasting body accents, large 22-in. wheels and tires, and a prominent tail with round taillamps.

Inside, there are copious quantities of leather and Alcantara and aggressively bolstered sport seats, with padding that runs to the very firm side, almost to the point of being uncomfortable except for very lean drivers.

Beneath the hood, the engine is boosted to 707 bhp by enlarging the Garrett turbochargers on the 4.8-liter V-8 engine. Torque has been limited to 704 lb.-ft. in the interests in preserving the PDK gearbox.

The engine actually seems to have the horsepower Gemballa promised. The car launches with an immediate thrust that doesn't really let up, even close to redline. Obviously, traction is never an issue thanks to all-wheel drive, and the 7-speed dual-clutch transmission

rips through the gears quickly. The engine still responds smoothly and delicately to throttle input despite the larger turbochargers. Also, it has a much more audible American V-8 sound than the quieter, standard Panamera Turbo's. Handling is superb, as one would expect considering the stellar performance of the stock Panamera in this department. This is also helped by the fact that the larger wheels and additional bodywork don't really add extra weight to the car due to the use of lightweight materials. The brakes feel plenty strong, though Gemballa still needs to eliminate the persistent squeaking. Despite 22-in. rims, the Mistrale still offers a decent ride worthy of a luxury sedan that is primarily used for long-distance trips. All in all, Gemballa continued to focus on driveability and everyday usability while significantly enhancing the strong suits of the stock Panamera: performance and exclusivity.

Only 30 will be built (orders from the U.S. are being taken) and also in Gemballa tradition, the conversion is priced at 333,000 euros. That's 578,737 euros when including the base car. —Ben Arnold



roadandtrack.com/Mistrale



2011 HYUNDAI SONATA HYBRID

Efficient, but at a price

HYBRID TECHNOLOGY CONTINUES to appear in cars all across the spectrum, particularly in family sedans like the Sonata. Now at a time of \$4-a-gallon gasoline, this is a good thing, and the Korean automaker deserves kudos for doing its part to ease the hit on pocketbooks.

While the Sonata is an attractive, well-priced sedan with a lot of content, there is a price to pay in the hybridization of the car when it comes to driv-

ing enjoyment. Of course, one doesn't necessarily buy a hybrid looking to tear up the pavement, but by the same token, other cars, the Ford Fusion comes to mind, have adapted themselves to this new fuel-saving technology without sacrificing good road manners.

In particular, the Sonata stumbles when it comes to steering and braking feel, the former due to its electric assist, the latter a result of the use of

regenerative braking. On the steering front, while the effort is reasonable for a family sedan, it doesn't provide much feedback and at times the weighting feels artificial. In braking, because of differing regenerative demands on the battery, it's hard to get a consistent, linear feel from the pedal. Under heavy regen, a light pedal application is warranted, while a heavy foot is needed when the system feels like it has enough juice.

Overall, the Sonata Hybrid delivers mid-pack family sedan performance with 0–60 mph acceleration of 8.7 seconds, about 2 sec. slower than the 2.0-liter turbo version of the car. While it's not as quick, the Hybrid travels farther between pitstops, clocking an estimated 36.0 mpg in our tests, versus the 23.0 mpg from the turbo. And you can make those trips in relative comfort and style.

—MDL

R&T TESTED

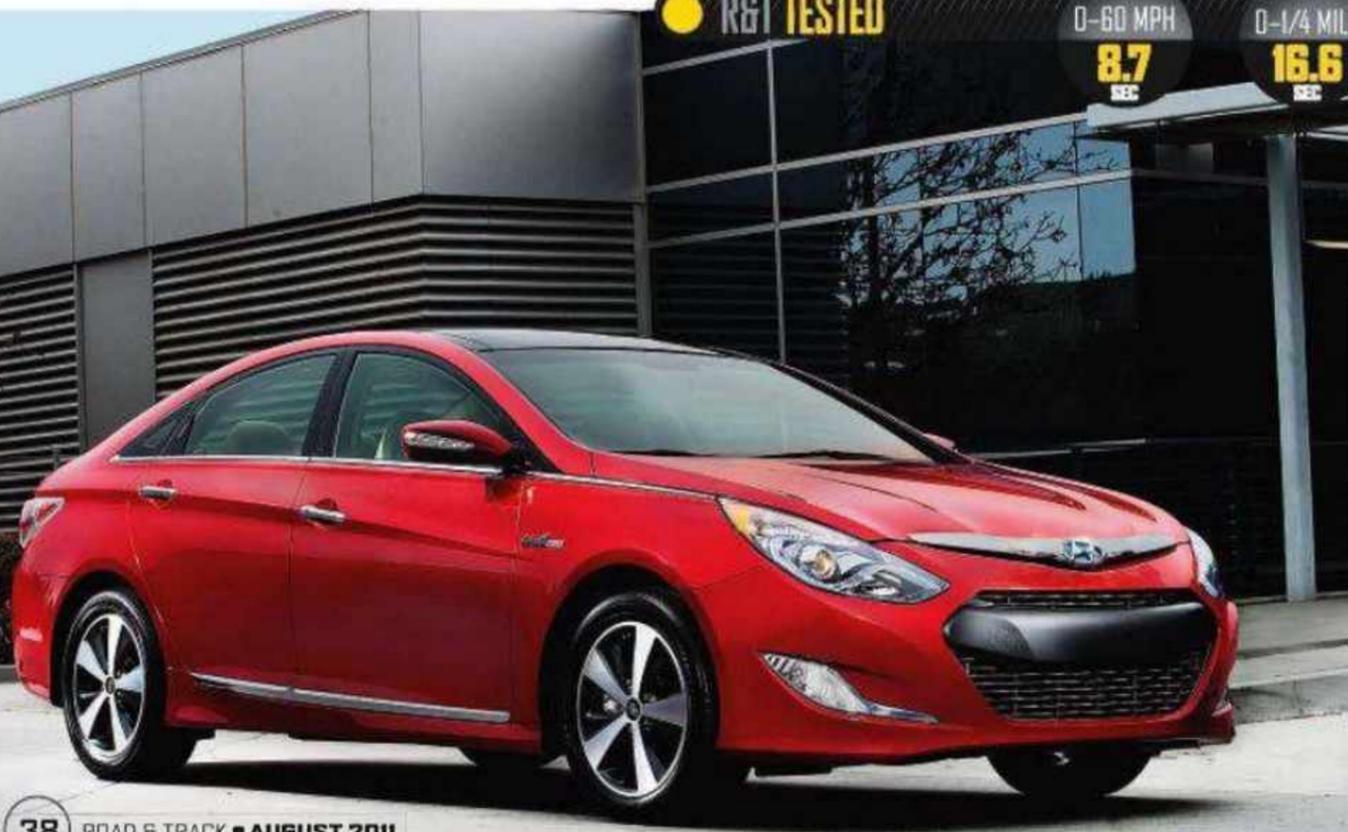
0-60 MPH
8.7
SEC

0-1/4 MILE
16.6
SEC

TOP SPEED
123*
MPH

SKIDPAD
0.78
G

SLALOM
63.6
MPH



List price	\$25,795
Price as tested	\$31,650
Curb weight	3650 lb
Engine	2.4-liter I-4, hybrid
Transmission	6-sp automatic
Horsepower	206 hp @ 6000 rpm (combined)
Torque	193 lb.-ft. @ 4500 rpm
0-60 mph	8.7 sec
0-100 mph	22.8 sec
0-1320 ft (1/4 mile)	16.6 @ 86.2 mph
Braking, 60-0 mph	137 ft
Braking, 80-0 mph	247 ft
Our mileage	est 36.0 mpg
EPA city/hwy	35/40 mpg

*Electronically limited.



roadandtrack.com/SonataHybrid



DRIVING **UNPLUGGED**



Driving the new Evora S gives you the best of both worlds. On the one hand, the sublime handling of the Lotus Evora. On the other, the surging linear power of a supercharged V6 engine delivering 345bhp. Together, they produce a sensational, elemental driving experience. Unplugged, unparalleled, unmissable.

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LOTUSCARS.COM

Fuel consumption for Evora S in mpg, City/Highway 17/26

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Drives



2012 TOYOTA PRIUS V

The v brings enhanced size and technicality to the Prius family

THE "V" IN PRIUS V STANDS FOR "VERSATILE," as Toyota's new upsize model expands this hybrid nameplate into small SUV/crossover/wagon territory. By the end of next year, the family will include the v, the standard Prius (now termed "Prius hatchback" in Toyota-speak) and the Prius Plug-In, with the Prius c concept car destined to extend things into the compact segment. What with an unsettled dollar/yen, prices are unannounced. Figure perhaps a \$2500 premium for the v.

Compared with the standard Prius, the v is an inch or a few larger in just about every dimension, this placing it into EPA's Midsize Station Wagon category (the Prius being a straight Midsize). Particularly noticeable are more shoulder and hip room, front and rear, as well as enhanced head room back there. Current Prii (Toyota's literate choice for the plural) are in eco-taxi fleets around the world, and I predict the v will own this niche before long.

The v's less raked roofline raises its coefficient of drag from 0.25 to a still enviable 0.29. The roof spoiler plays a trick in this: Its outer portions echo the styling; its center section is notched to mimic the standard Prius' more aggressive roofline.

Mechanically, the v shares its basic hybrid Synergy Drive with the standard Prius. The larger car's slight weight gain (about 250 lb.) and that aero deficit result in still impressive EPA mpg numbers, 44 city/40 highway/42 combined. I ambled

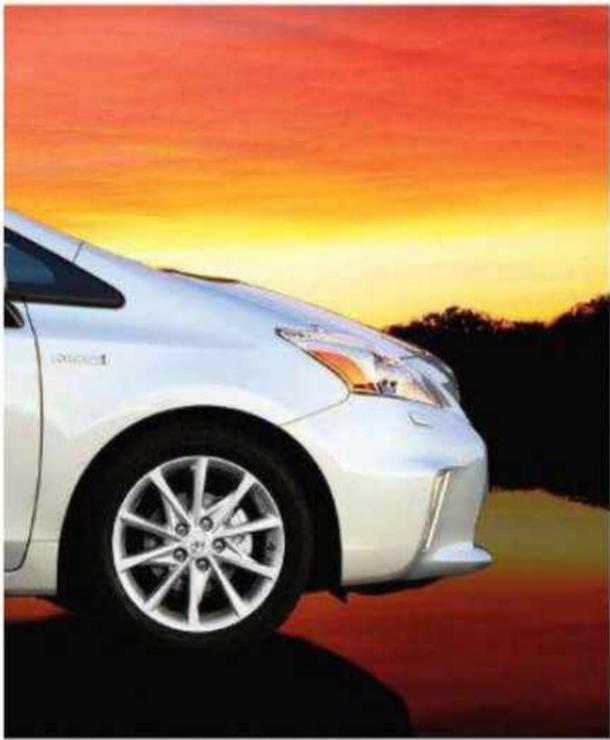
south from the car's Half Moon Bay, California, introduction with my usual mix of bookshops and other amusing detours (including the original Alice's Restaurant). My mixed-venue mileage bettered the EPA's combined figure by a few tenths.

The v's neatest technical innovation is oscillating the torque of its electric motor to cancel the pitch of freeway hop, minor frost heaves and the like. It's subtle but effective. Only once—along a particularly sinusoidal bridge surface—could I actually sense the motor's torque variance.

This and other v technicalities will find themselves incorporated into other members of the Prius family. A most intelligent family indeed.—Dennis Simanaitis

PHOTO BY JOHN LAMM





2012 FIAT 500c CABRIO

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Think of it as a mega-sunroof, a sliding fabric lid that (step 1) rolls back from the header to uncover the Fiat 500's passenger compartment. And then (step 2) folds back to lower the top still more, taking the rear window with it. The action is all powered and naturally you can stop it along the way for your favorite mix of light and breezy. We prefer it all the way back. Up and sealed, the top held out the rain we experienced and cut road noise more than in a normal ragtop. The sliding top bumps up the normal fun of driving the 500c, and at \$20,000-\$24,000 the Fiat's prices come in just under those of Mini's non-S Convertible. —John Lamm



"Replacing a clogged air filter...can improve acceleration time by around 6 to 11 percent."

- fueleconomy.gov



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TOM COTTER

FOREWORD BY **KEITH MARTIN**

Publisher Sports Car Market and Corvette Market magazines

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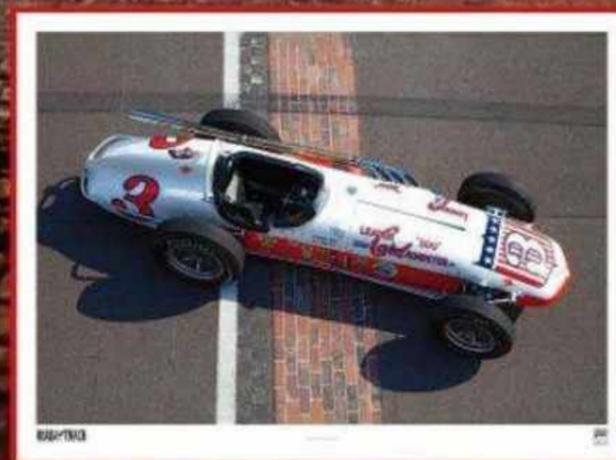
BEAUTIES

Indianapolis—there's no place quite like it. To celebrate the 100th anniversary of the first Indy 500 (won by Ray Harroun in the Marmon Wasp), we're offering these exquisite prints for sale—each featuring a winning car from a dramatically different era. Beautifully photographed and signed by John Lamm, these images are large (22 x 30) and printed on high-quality stock—ready to be framed and hung on the wall of your den.



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SCION

**Uncovering Toyota's much
anticipated future sports car**

BY SAM MITANI PHOTOS BY BRIAN BLADES



“HIGH ACHIEVEMENT ALWAYS TAKES PLACE IN the framework of high expectations,” so said the noted inventor Charles Kettering. If that’s true, then Toyota’s future compact sports car is going to be one impressive machine. The buildup the company has created for the car, which began more than two years ago, transcends that of the release of a Hollywood blockbuster or even a royal wedding. ♦ We first saw the compact front-mid-engine sports car at the 2009 Tokyo Motor Show as the FT-86 Concept, and no less than three other variations have appeared since, the latest one called the Scion FR-S. Spy photos reveal that the final production model, which will make its appearance at this year’s Tokyo Motor Show in October, will look very similar to the Scion FR-S show car. It’ll be approximately the same size as the last-generation Celica.





While we're excited by the release of the production FR-S, scheduled to reach dealerships in the summer of 2012, we wonder if the car can meet the high expectations cast upon it by Toyota and the media, or end up being the automotive equivalent of *Waterworld*.

The concept of the FR-S was borne from the passion of Toyota CEO Akio Toyoda, a car enthusiast of the first order. He stressed when he took the top job in 2009 that "excitement" and "passion" were missing from the company's products and needed to be restored quickly. One item on his short-term to-do list was to bring back an affordable sports car, one that embraced the spirit

of a car called the AE86.

Among import-car enthusiasts, the AE86, produced from 1983 to 1987, is legend. While there have been other sporty cars in Toyota's history, the AE86, dubbed the *Hachi-roku* (the numbers "8-6" in Japanese), stood out because of its inexpensive price and rear-wheel-drive layout. In today's world of high-performance sports machines, the car's specifications were nothing to write home about. The Japan-market AE86 (Levin and Trueno) came powered by a 1587-cc inline-4 that produced 130 bhp, which translated to a 0-60-mph time in the high 9s. That said, the lightweight car possessed features that were only seen on more expensive cars in

PHOTO BY BRENDA PRIDDY

Evolution of the FT-86

its day, such as dual overhead cams, an optional limited-slip differential and vented disc brakes. As a result, it became a favorite for tuners and racers, developing a cult following among import enthusiasts who didn't like that Toyota had switched to front-wheel drive for its replacement.

When it came time to plan for a new AE86 for 2012, Toyota pulled an ace from its sleeve. It turned to Subaru to develop the engine and chassis for its car. This collaboration is the result of Toyota's investment in Fuji Heavy Industries, the parent company of Subaru. So why did the world's largest automaker turn to Subaru? We asked the folks at Toyota, but they were not forthcoming with a clear-cut answer.

"The car is still being developed at the moment so we can't comment on exactly how much they did and how much we did. The team at Subaru has a lot of experience in motorsports through the participation in World Rally Championship. They have developed innovative and original cars with a pretty unique engine, which is one of their core technologies," a spokesperson for the company stated.

Translation: Toyota felt Subaru could make a better high-performance sports car in this price segment.

The heart of the FR-S will be Toyota's version of Subaru's FB20, a water-cooled flat-4. Although Toyota hasn't released technical specifications on the FR-S yet, we were able to dig up quite a

1983-1987 Toyota Corolla GT-S:

The original AE86 is officially called the Toyota Corolla Levin and Sprinter Trueno in Japan, and the Corolla GT-S here in the U.S.



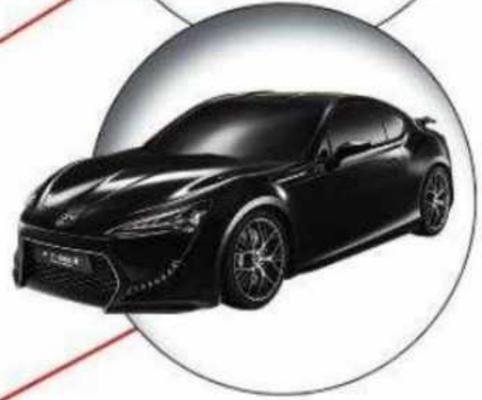
2009: Toyota unveils the spiritual successor of the AE86, calling it the FT-86, at the 2009 Tokyo Motor Show. We also find out about Subaru's involvement.



2010: Toyota's Japanese in-house tuning arm, G's, introduces a tuner version of the car months after the original made its debut. This one is called the FT-86 G Sports Concept.



2011: Toyota shows us another FT-86 at the 2011 Geneva Show, this one with more flair than the version two years earlier. This led to the introduction of the Scion FR-S in New York, a few months later.



2012: Our version of what the final production version will look like when it comes out next year. This image is based on recent spy photos of the car.

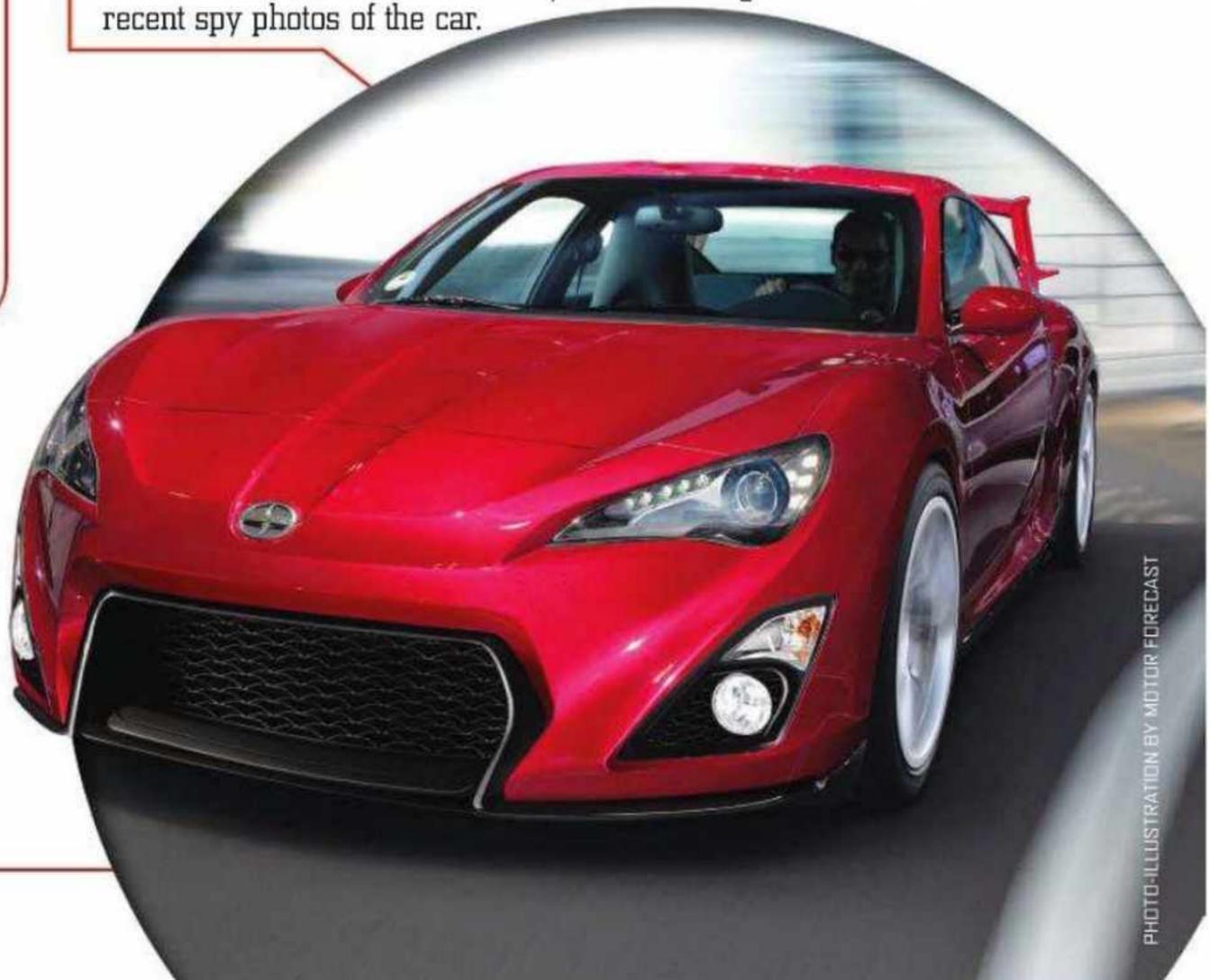


PHOTO-ILLUSTRATION BY MOTOR FORECAST



❖ This spy shot of the Scion FR-S, taken in Germany, reveals that the basic design of the FR-S show car will carry over to the production model. The large Supra-like wing will probably be an option, as will bigger wheels and tires.





■ ■ Subaru has been quiet about its version of the car. At the Geneva Motor Show, all the company showed was this skeleton model that revealed very little about the styling of the car. We have heard that it will be rear-wheel drive, making us wonder how the marketing folks at Subaru will position the car within the brand's awd products.

bit of information about the car. Displacement will be 1995 cc, and it will feature Toyota's D4-S direct- and port-injection technology. The 16-valve powerplant will produce about 200 bhp at 7200 rpm and 150 lb.-ft. of torque at 4600. It will come mated to a 6-speed manual or a conventional torque-converter 6-speed automatic. The obvious choice for enthusiasts will be the manual gearbox. According to Toyota, it will feature short throws, which will help the car hit 60 mph in roughly 7.5 seconds, making it as quick as the Hyundai Genesis Coupe; however, go the automatic-transmission route, and it'll take you nearly 9 sec. to get to 60 mph. We expect the car to tip the scales around the 3000-lb. mark.

The future Toyota sports car promises first-rate handling. With the anticipation that many FR-S owners will increase engine performance, the car's suspension and body structure are being over-engineered to handle the possibility of added power. We predict that the suspension will be similar to that of the Subaru Impreza, consisting of MacPherson struts up front and upper and lower A-arms at rear. Spy videos of testing show the production FR-S to look sport-tuned, but not overly stiff. Based on what we saw on the skeleton model Subaru showed at the Geneva show in March, the FR-S will have a limited-slip differential, the same one found on the Impreza.

While the car's official name hasn't been released, we found out at the New York Auto Show that the FR-S will be marketed as a Scion in the U.S. So why does it wear the knife-blade "S" here instead of the three-oval "T?"

The vice president of Scion, Jack Hollis, would only comment by repeating his statement on a press release at the New York Auto Show: "The FR-S is a perfect fit for Scion. Scion owners are the youngest in the industry, and I would argue with anyone that they are the most passionate about their cars."

Translation: At the time of the decision, Scion was losing momentum. With sales down consistently since 2006, the division needed a stronger halo car than the current tC, a front-wheel-drive sports coupe. Having the FR-S in its lineup would invite slightly more mature buyers (i.e., those



PHOTO BY JOHN LAMM



QUESTIONS WITH **Troy Sumitomo**

FOUNDER & DESIGNER, FIVE AXIS

5



A street racer turned automotive designer, Troy Sumitomo studied at Art Center College of Design and founded Five Axis, a design house based in Southern California. Toyota, Honda, Mercedes and Mitsubishi are some of his past clients. Sumitomo's most recent work is the Scion FR-S concept.

1

How did you get involved in the Scion FR-S project?

Five Axis has been involved with Scion since its launch when we built our first Five Axis Scion show car, the orange, DJ-booth integrated, first-gen xB. We've been working together ever since.

2

How closely did Scion work on the concept?

Due to the sensitivity of this project, we had a very strategic creative team on the Toyota side that the Five Axis design team worked with. Scion was very engaged in the entire design process even down to the suggestion of the body color.

3

Were there directives on how much to change the Toyota FT-86 to make it into a Scion product?

Our primary directive was to take the styling cues of the FT-86 and "Scionize" it with some over-the-top "concept" attributes: the center-lock 20-in. wheels with annular front brakes, F1-style inboard rear brakes, the aggressive aerodynamics and the low-mounted door handle suggesting a scissor-type door.

4

Compared to the FT-86, how extensively have the dimensions and sheet metal been altered?

We tried to stay true to the original engineering dimensions but took a few designer liberties by lowering the roofline a bit and increasing the overall width a tad to give the FR-S Concept a much more aggressive stance. On the surface, we tightened up the body lines, making the fenders and rear quarters more aggressive and added those concept-like styling cues.

5

What were the inspirations for your design?

Our design theory really focused on the two strongest performance attributes of the FR-S: the boxer motor and the rear-wheel drivetrain. The front end of the car is low and wide, emphasizing the boxer motor's flat architecture and low placement below the hood. The rear end's bulging fenders and aggressive rear diffuser accentuate the muscle and power of the rwd platform. We also wanted to make the FR-S Concept a moving visual experience, even at standstill. The lower aerodynamics were inspired by a twisting ribbon, taking your eyes on a visual journey from the front lower corners, over the wheel arch, across the rocker and over the rear arch into the rear diffuser. Even the headlight and taillight buckets have a similar styling theme, twisting and turning behind the lens.—Carter Jung

with better credit to get car loans easier) and more enthusiast-oriented customers to the brand.

That said, for 2011, Scion sales are up from last year, thanks to the all-new 2012 tC that's leading the charge.

It's evident that the FR-S has been designed with the aftermarket in mind. We predict there will be plenty of body and turbo kits available as the car establishes itself in the marketplace, including from Toyota itself via TRD (Toyota Racing Development) and Gazoo Racing (Toyota's aftermarket arm in Japan). And don't rule out the possibility of a super high-performance "F" version somewhere down the line. That said, the stock version of the car will be tame enough to appeal to a wide range of customers, from beachgoers to weekend drifters. The FR-S's price tag is also expected to generate broad appeal; we're hearing it'll run in the \$20,000 to \$25,000 range.

On paper, the FR-S looks like a sure winner—stylish, quick, rear-wheel drive, tunable and affordable. But what will ultimately determine the fate of the FR-S will be something that can't be measured or seen on paper, namely personality, charm and a unique character—the same traits that defined the AE86. Toyota's sporty cars have lacked these qualities in recent years, but with Subaru's help, perhaps it can recapture the magic that spawned cars like the AE86, the Sports 800 (nicknamed *Yota-hachi*) and 2000GT; if so, the FR-S will definitely meet the expectations of car enthusiasts everywhere.

2 OR 4 DOOR TO DOOR PERF

1 PORSCHE BOXSTER SPYDER VS. AUDI S4 QUATTRO

2 FORD SHELBY GT500 VS. CADILLAC CTS-V



PERFORMANCE Part Deux



A second look at the door-count conundrum, this time with German precision and American muscle

BY DOUGLAS KOTT
PHOTOS BY BRIAN BLADES

A CAR'S DOOR IS ESSENTIAL BUT OFTEN TAKEN for granted, lowly phytoplankton in the food chain of automotive assemblies. A collection of metal stampings, tempered glass, weatherstripping, switches, guides, motors, linkages and latches, it's a humble hinged cover for a body-in-white aperture that's outshone by the engineering dazzle of far sexier superchargers and torque-vectoring differentials. So why, exactly, should an extra pair of them intrude on the very thing we hold so dear—that oneness between man and machine through our favorite corner?

The “4-door sports car” is a path well-trodden by marketing types, and it is possible to infuse a sedan with ridiculously good handling qualities. But there's a weight penalty, reduced nimbleness owing to a sedan's typically longer wheelbase, and often a reduction in structural rigidity. And at the end of the day, do your rear-seat passengers, who have so painlessly entered the vehicle, really want to be centrifuged against the door panel (and each other) at 0.92g? With the promise of usefulness comes a taller and often stodgier roofline...just the ticket for rear head room, but its attendant higher center of gravity is physics-book Kryptonite when it comes to superhero handling.

Despite what seems like a deck stacked in favor of coupes/sports cars, the ultimate decision has more to do with what you feel in your gut and heart, and less with a 1-second lap time advantage. Go with the more utilitarian choice and satisfy spouses, children and friends, or choose the more glamorous 2-door route and have your kin clamber headlong past forward-tilted front seatbacks, unfurling like human lawn chairs once back there...that is, if your 2-door mode of personal expression has a back seat at all.

That didn't stop us, however, from taking a fresh set of 2- and 4-door pairings from Ger-



"The Audi's mistake-proof grip and Porsche's pinpoint precision are interesting counterpoints..."



2 Porsche Boxster
SPYDER vs.
OR
4 Audi
S4

many and the U.S., setting them up with VBOX data acquisition systems and lapping them around the 1.5-mile Radical Loop at Spring Mountain Motorsports Ranch in Pahrump, Nevada. Much as with our last pairings (Nissan 370Z Touring/Mitsubishi Lancer Evolution GSR; Lotus Evora/Jaguar XFR, June 2011), we drove them hard on the racetrack, over desert highways in the cloak of darkness and in our daily commutes; we then crunched the data and gauged their overall usefulness and appeal. Of course, their nuances in handling, braking and power delivery received the greatest scrutiny. As before, our pairings are based on country of origin, price and straight-line acceleration ability. So with full tanks of 91 octane and our beady eyes laser-locked on the next apex, we began in earnest.

TALK ABOUT AN EMBARRASSMENT OF riches. On one hand, we have the most powerful, most firmly sprung, lightest and quickest production Porsche Boxster on the planet (albeit with a fussy 2-piece carbon/canvas "emergency" top that remained in place only long enough to take a static photo). And on the other,

❑ Porsche's gentrified racing shells (left) speak of its focus, as does bold center-mount tach (below). Audi's gauges in teardrop enclosure (bottom) are similarly effective; high-back seats are superb.

the Audi S4 whose 3.0-liter supercharged V-6 delivers whip-quick, preternaturally strong surges of acceleration from seemingly everywhere in the rev range, each wheel driven through a sophisticated awd system that's augmented by the optional rear torque-vectoring differential.

Despite weighing nearly a half-ton more than the Boxster and having only 13 more peak bhp, the S4's prodigious torque and extra set of drive wheels practically punt it out of the drag strip's launch box, keeping it astride of the Porsche and giving away only 0.1 sec. in the quarter mile. But that extra heft is felt at Spring Mountain. "It felt capable," wrote Road Test Editor Jonathan Elfalan, "but the body motions felt more exaggerated than the Porsche's, and the Sport Differential had to work quite a bit to



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counteract the understeer on this relatively tight track.” Said Shaun Bailey, Associate Engineering Editor, “You can really trail-brake this car, especially in the tight stuff,” adding that slowing his steering inputs down really helped avoid the under/oversteer seesaw motion that can happen midcorner with the Sport Diff. “Safe and pitchable,” I wrote, “but nondefeatable stability control limits the crazy yaw-action fun.” From apex to corner exit, no finesse is needed; just flat-foot the throttle and let the four driven contact patches pull you onto the straight. The S4, true to its get-in-and-drive-fast-immediately nature, felt ultra-secure over The Drop, a section of the track where the car can completely unweight, then bottom its suspension. Where some cars require a throttle lift and a little “breather” to regain composure, the Audi just storms through without blinking.

If the Audi was an eye-opener, then the Porsche was a flat-out revelation. Boxsters are quite possibly the most forgiving mid-engine cars ever made, and the lightweight Spyder takes it to the next level. With less torque and

SPECIFICATIONS

	2011 Porsche Boxster Spyder	2011 Audi S4 Quattro
List price	\$61,200	\$46,600
Price as tested	\$67,820	\$53,500
Curb weight	3000 lb	3965 lb
Weight dist (w/driver), f/r, %	47/53	55/45
Engine, transmission	3.4-liter F-6, 6-sp manual	3.0-liter supercharged V-6, 6-sp manual
Horsepower, bhp @ rpm	320 @ 7200	333 @ 5500-7000
Torque, lb-ft @ rpm	273 @ 4750	325 @ 2900-5300
Tires	Bridgestone Potenza RE050A; 235/35ZR-19 f, 265/35ZR-19 r	Pirelli P Zero Rosso; 255/35ZR-19

PERFORMANCE

0-10 mph, sec	0.4	0.2
0-20 mph, sec	1.0	0.8
0-30 mph, sec	1.6	1.5
0-40 mph, sec	2.2	2.2
0-50 mph, sec	3.4	3.4
0-60 mph, sec	4.4	4.4
0-100 mph, sec	10.4	11.0
0-1320 ft (¼ mile)	12.8 sec @ 109.2 mph	12.9 sec @ 108.8 mph
Braking, 60-0 mph	111 ft	118 ft
Braking, 80-0 mph	196 ft	205 ft
Lateral accel (200-ft skidpad)	1.01g	0.93g
Speed thru 700-ft slalom	74.2 mph	68.4 mph
Our mileage, EPA city/hwy	21.0, 20/29 mpg	18.4, 18/27 mpg
Top speed	166 mph*	155 mph*

* Electronically limited.



Pointable, precise and predictable, the Boxster Spyder (top) turns in low lap times with ease and never fails to make its driver look good. The S4 impresses with its utter unflappability, and its Sport Diff's ability to erase understeer with a squeeze of the throttle.



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V1 says **2 radars** ahead.

Situation Ignorance:
Other detectors
always say "BEEP!"

SA on the Road

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Situation Awareness:

V1 says **2 radars**, ahead and behind.

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Situation Ignorance

Our patents prevent our competitors from matching V1's SA. So they try to distract you with technology. "Intelligence" is the latest claim for a GPS scheme aimed at reducing your Shrug Factor by reducing beeps. But GPS doesn't find new threats, just false alarms you already know about.

Arrows and the Bogey Counter

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— MPH

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Popular Science

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Wired

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Best Life, quoting Alex Roy, four-time trophy winner of the Gumball Rally

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what felt like tighter gear spacing, the Boxster called for 2nd gear where the Audi liked 3rd, but the Porsche just devoured the course with 1.01g of measured grip, and a bare minimum of understeer on the track's tightest right-hander. It's as if all the course's turns can be connected with a single flowing arc; there's no wrestling with the car, it's simply a matter of guiding it down to the apex. "Really telepathic in its handling," offered Assistant Road Test Editor Calvin Kim. "The quintessential track car." There's so little wasted motion in transitions, and never a fear of a spooky yaw "moment" with lift-throttle...only smooth easily controlled rotation. Fly in the ointment? Well, we'd like to see a firmer brake pedal on initial application. Once past the free play, there's a lot of confidence to be had.

Maybe the highest compliment paid to the Boxster is that it's so composed, tidy and locked down that it didn't feel blazingly quick. Yet a peek at the data showed a huge 3.4-sec. lap-time advantage over the Audi...a car that kept us "busier in the cockpit," as we like to say around here.

Being an open car just heightens the Porsche's driving experience, with great sounds churning forth from the 3.4-liter 320-bhp flat-6. It's as if Zuffenhausen's acoustic engineers have resurrected the metallic howl/gnash of a 1967 911, muted only slightly for today's requirements. The carbon-shell seats upholstered in both smooth leather and Alcantara are excellent on both aesthetic and functional fronts, and the red door latch straps and seatbelts add some extra distinction...as if the flowing aluminum engine cover with



the faired-in headrests wasn't enough.

The Audi continues to impress with its pitch-perfect interior with always-tasteful textures and surfaces, the focal point being the aggressively bolstered high-back bucket seats. There's also a suitably meaty wheel, and a shifter that's quite good, if not as rifle bolt-positive as the Porsche's cable linkage. The V-6's sound is engaging, not enthralling, but it's unfair given its role to make a direct comparison with the Boxster. A faint

❖❖ **The Boxster amazes again with its twin-trunk luggage capacity, but the Lack of Center-Stack Clutter Award goes to the S4 (right). Porsche's shifter is slightly better.**



purr emanates from the supercharger, and the Titanium Package (silver spears along the rocker panels, 19-in. broad-spoke gray-painted wheels, black grille trim) lend a little extra attitude to a car that had seemed almost too stealthy compared to lesser-powered A4 stable mates, even by Audi's conservative yardstick.

Given the Porsche's emergency top (a full 10 pages in the owner's manual are devoted to its fitting), this pairing is beyond apple and oranges...apples and coconuts, maybe? Maybe Kim said it best: "The Audi and Porsche together would make the ultimate 2-car garage." Bailey, however, professed his love for the Boxster and chalked up his return trip from Pahrump to Southern California—canvas buttress panels at full vibrato at 80 mph—as an adventure. "Thanks to an iPod with good earbuds, I could handle the drive back to L.A. easily." Said it reminded him of driving his heatless, windowless Spec Miata, in the rain, to a race in Michigan, in the dead of winter. Ah, youth.





**PORSCHE
BOXSTER SPYDER**
AUDI S4

Segment	Porsche Boxster Spyder	Audi S4
A	+0.13	4.08
B	9.50	+0.39
C	8.90	+0.23
D	5.71	+0.08
E	9.62	+0.53
F	10.47	+0.46

Segment times for each car, in seconds. Quicker car's time displayed with yellow background; slower car's segment deficit, with black background.

- 1** It's no contest for sustained lateral grip through section **B**'s hairpin turn and elsewhere; credit the Boxster Spyder's physics-friendly combo of ample tire, light weight, minimal roll and mid-engine balance. Considering its weight and comfort, the S4 still impresses with its torque-vectoring rear diff.
- 2** The Boxster Spyder gaps the S4 dramatically in the long, fast sweeper of section **E**, a corner made far more interesting with a suspension-unweighting heave in its middle. The S4's mass overwhelms the tires here, the squawking sounds a conformation of understeer. The Porsche? A real asphalt leech.
- 3** Light weight certainly helps the Boxster's transitional ability as well as the autocrossy section **H** leading in the tightest corner **I**, where an early apex can put you off the track at exit. Notice how the Porsche gets off this corner maybe 2 mph faster, an advantage compounded through the fast **J** and **A** sections.
- 4** The GT500 carries a noticeable speed advantage through section **A**, where understeer with the CTS-V before the apex in **J** requires a throttle lift or even a dab of the brakes to get the necessary front grip. More planning is required with the Caddy, where the Shelby gives more options of line.

**FORD
SHELBY GT500**
CADILLAC CTS-V

Segment	Ford Shelby GT500	Cadillac CTS-V
A	3.99	+0.14
B	9.45	+0.41
C	9.02	+0.17
D	5.62	+0.03
E	+0.03	9.56
F	10.59	+0.18



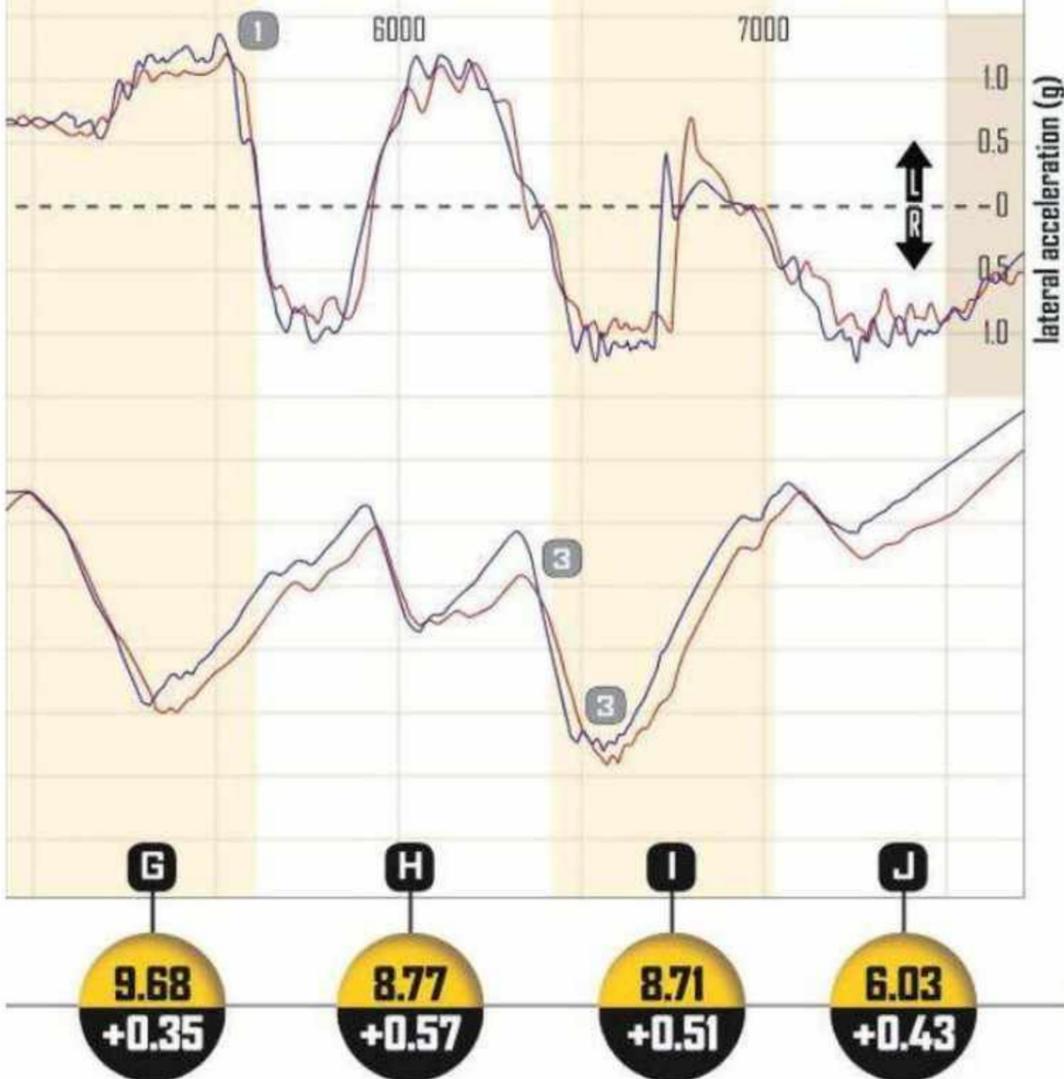


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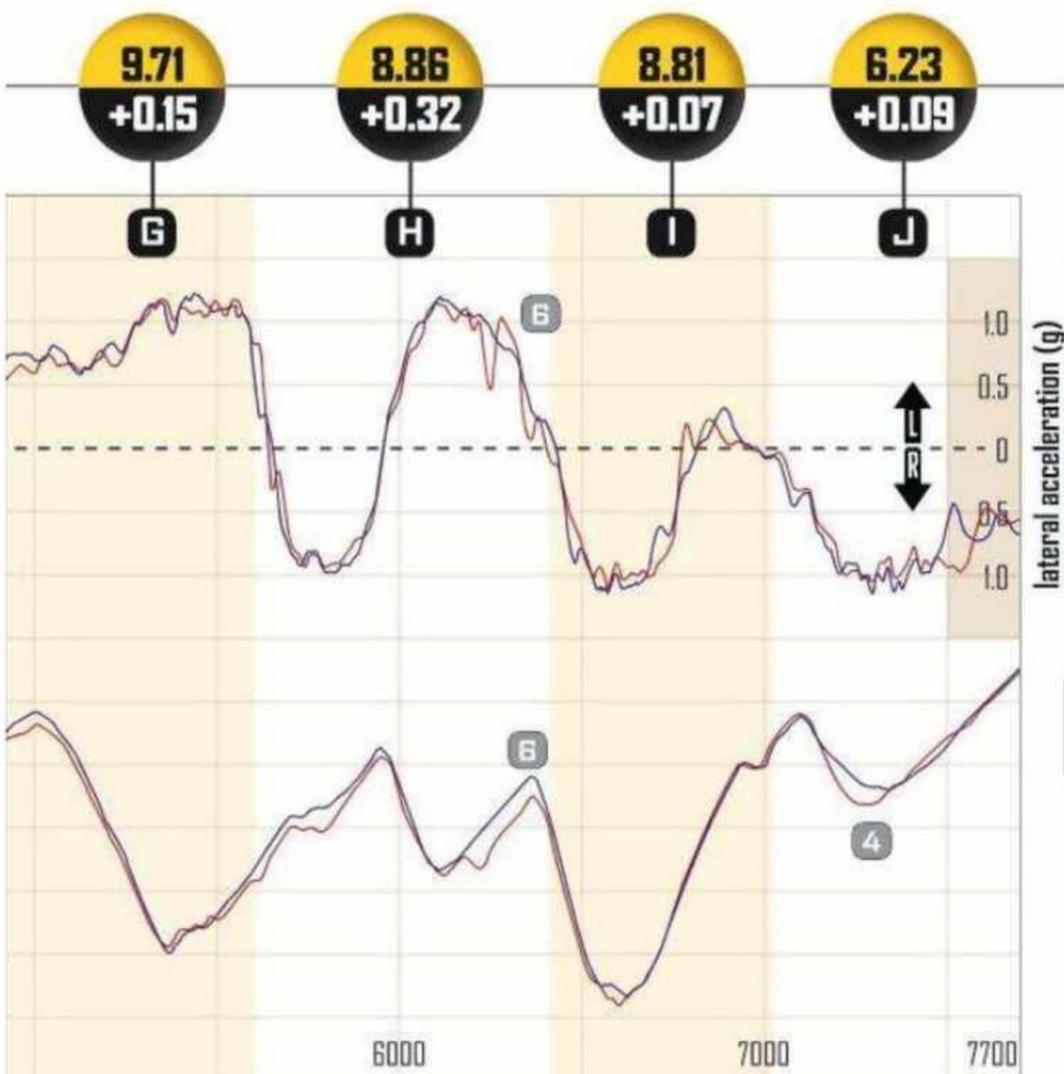
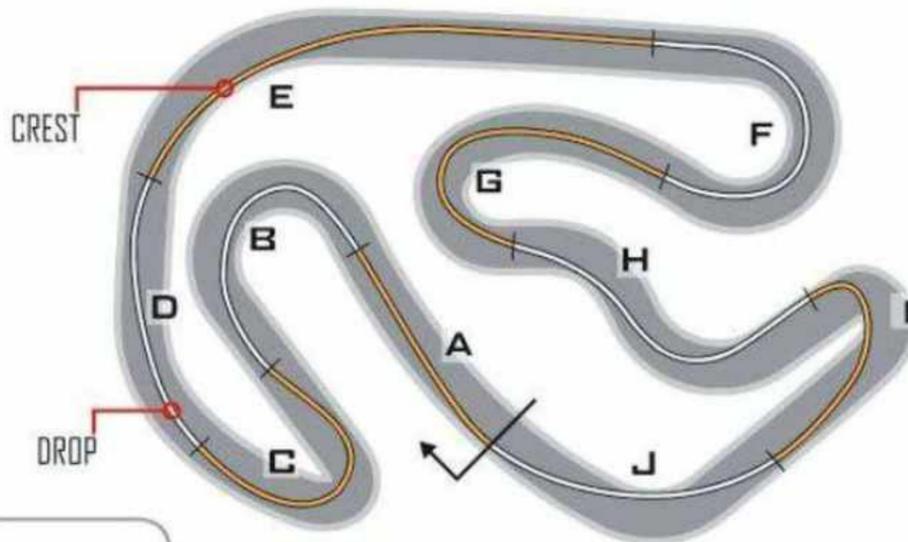
Part Deux

The Radical Loop at Spring Mountain Motorsports Ranch in Pahrump, Nevada, was our test venue. It's so named because this 1.5-mile circuit at the facility's north-west corner is the preferred training ground for the school's impressive Radical sports racers, and ideal for us, as its 11 turns, daunting elevation



5 There's some noise in the data, but you can see the trend in sections **B** and **G** of the GT500 building grip sooner and sustaining it at a higher level than the CTS-V. Despite having a slightly more nose-heavy weight distribution, the GT500's lighter overall weight and 265-section front tires help here.

6 A more jagged lateral g trace for the CTS-V through **H**'s ultimate corner shows the need for throttle/brake manipulation to reduce understeer; note relative smoothness of GT500's data. The corresponding spot on the speed/distance graph shows the GT500's speed to be 2-3 mph faster here.



changes and tight infield sections bring out the kinematic goodness (or weakness) of suspension systems and test the fortitude of brakes. The Drop (section **D**) fully unweights the car, while the crest in section **E**, usually taken in 3rd gear, combines unweighting with significant side loading. Section **F** requires heavy braking from over 100 mph, while section **I** exposes any understeering tendencies. Section **J**, a fast 3rd-gear "pucker factor" corner, is great for evaluating at-the-limit balance; finding the apex here can be a challenge in an understeering car.



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2 Ford Shelby
GT500 vs.
OR
4 Cadillac
CTS-V

IF CARS WERE WEAPONS, THE GERMANS IN this test would be precision-made, easily concealable handguns. But these two? Brass knuckles, battering rams, and maybe a medieval mace thrown in for good measure. They are V-8-powered, supercharged rear-drive thugs of the automotive world,

blunt-force devices that make glorious power and great sounds, not apologies.

But even here, there are shades of gray. Take the Ford Shelby GT500, the more, shall we say, elemental of the pair. Even at idle, its V-8 rumble throbs urgently out of speed shop mufflers with raw-edged tailpipes; its massive gray wheels (part of the SVT Performance Package that also includes lower, stiffer suspension, a shorter 3.73:1 final drive ratio and the latest Goodyear F1 Supercar G:2 tires) seem barely contained in

❑ **GT500's time-machine interior (left) with striped seats takes us back to the Johnson administration, while the CTS-V's is snug and agreeably futuristic. Cadillac's gauges (bottom) are easier to read.**

the fenders, and its cue-ball shifter and pleated racing-stripe seats look straight out of a sepia-tone 1960s brochure.

It was also a pretty effective machine at devouring large chunks of racetrack. Check out our graphs/data spread and you'll see it beat the CTS-V by 1.5 sec., and was only about 0.3 sec. away from the day's quickest car, the Boxster Spyder. Much credit goes to the suspension tuning, the grip and progressive breakaway characteristics of the tires, but also remember that for 2011, the GT500 went to an aluminum block for its 550-bhp 5.4-liter supercharged V-8, taking about 100 lb. off the front axle.

“So pointable, so playful; leaves a lot up to the driver,” said Elfalan. With sub-



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stantial 265-section front tires (the CTS-V has 255s up front, and both have 285s at the rear), understeer is minimal and easily managed. The live rear axle bobs and writhes around, its inertia felt, but never to the point of breaking traction. The engine's torque, though (a peak of 510 lb.-ft. at 4250 rpm) will haze the inside rear on corner exit, so *squeeeezing* on the throttle, or short-shifting to 3rd out of the tightest spots yielded the best lap times. We must point out that the GT500 was by far the loosest car before its tire temps came up, but we applaud Ford for not dumbing down the balance, because the GT500's front grip gives you more options of line and encourages deeper and deeper braking points. Demerits, though, for slippery seats that had us using the steering wheel as a circular grab handle in fast turns. With

❑ Crazy oversteer is possible with either car; you just have to work harder in the CTS-V to get it, due to superior rear traction. With front grip, the situation is reversed; the Shelby simply turns in better.

1.01g of cornering force on tap, the seats should have better support.

Step out of the GT500 and into the CTS-V, and go from slightly backwoods to metropolitan suave. Inside it's more of a jet-fighter ambience, snug and enconced rather than the GT500's high-in-the-saddle feel overlooking a bulky, tall hood. There are seat bolsters that properly pin you in place, and bits of Alcantara at touch points on the wheel and shifter. And the Caddy's linkage here feels solid, precise, yet nicely delicate compared to the GT500's high-effort tug-and-click setup. Exterior-wise, we aren't big fans of the Black Diamond Edition

paint (the package also includes gray 19-in. wheels, yellow paint for the Brembo calipers, Recaro seats and special wood trim). Embedded with "SpectraFlair bright silver pigment," it's not for the timid, but might save your neighbors a trip to the local planetarium ("I think I see the Orion Nebula on the fuel flap, Bill!").

No complaints whatsoever from the engine room, where the 556-bhp supercharged 6.2-liter pushrod V-8—the LSA, or Corvette ZR1 Lite—manages to be genteel and world-conquering at once. Working in concert with a Tremec 6-speed manual and independent rear suspension (plus adjustable magnetorheologic damping all around), the V-8 gobbles ground in huge, huffing strides. Throttle response is immediate, and the exhaust note is deep, powerful, but never obnoxious.

The CTS-V is no petite flower, its curb



weight of 4300 lb. some 430 lb. heavier than the GT500's. Couple that with the slightly narrower front tires, and the result is understeer, especially excruciating on some of the Radical Loop's tighter turns. Our skidpad testing reaffirms the deficiency, with excessive front scrub and a 0.92g number that's simply outclassed by the Shelby. Said Elfalan, "In Sport mode, the suspension feels like it has too much compression damping, to the point where the front end washes out prematurely." Bailey counters, "Where the GT500 gets ragged, the Cadillac felt solid and stoic under duress of hard lapping." Certainly, the Caddy is more at home on the fast, fluid sweepers of the Nürburgring, where its chassis engineers have put in considerable development time, but here under Nevada's bright sun, you need to think well ahead of the car, trail-braking deeply to keep the front tires stuck and get the more lightly loaded rear end to rotate.

Once front grip is shored up, power delivery on exit is sublime...no wheel-spin issues, just glorious, swelling speed and admirable compliance when a bump is thrown into the mix. Like the GT500's, the CTS-V's braking is powerful and virtually fade-free. Ultimately, for a quick lap, the Caddy requires a little restraint, smooth inputs and some advanced planning. Continuing the aviation analogy, Kim said, "The CTS-V is like a jet on final approach...you have to conserve the energy."

So in our hypothetical ultimate 2-car garage, there's a place for both—the stiffer-riding, varsity jacket-wearing GT500, the perfect around-town hooligan, and the CTS-V, the Gulfstream G550 of sports sedans with the heart of a Corvette. We side with the Caddy for a 2 a.m. sortie to Vegas, but for track work, we've got to give it to the GT500, rough edges and all. 



SPECIFICATIONS

	2011 Ford Shelby GT500	2011 Cadillac CTS-V
List price	\$48,645	\$62,165
Price as tested	\$55,330	\$69,490
Curb weight	3870 lb	4300 lb
Weight dist (w/driver), f/r, %	56/44	54/46
Engine, transmission	5.4-liter supercharged V-8, 6-sp manual	6.2-liter supercharged V-8, 6-sp manual
Horsepower, bhp @ rpm	550 @ 6200	556 @ 6100
Torque, lb-ft @ rpm	510 @ 4250	551 @ 3800
Tires	Goodyear Eagle F1 Supercar G-2; 265/40ZR-19 f, 285/35ZR-20 r	Michelin Pilot Sport PS2; 255/40ZR-19 f, 285/35ZR-19 r

PERFORMANCE

0-10 mph, sec	0.5	0.5
0-20 mph, sec	1.2	1.2
0-30 mph, sec	1.9	1.8
0-40 mph, sec	2.5	2.4
0-50 mph, sec	3.6	3.4
0-60 mph, sec	4.3	4.1
0-100 mph, sec	8.9	9.2
0-1320 ft (1/4 mile)	12.4 sec @ 119.4 mph	12.3 sec @ 118.4 mph
Braking, 60-0 mph	116 ft	114 ft
Braking, 80-0 mph	198 ft	198 ft
Lateral accel (200-ft skidpad)	1.01g	0.92g
Speed thru 700-ft slalom	69.9 mph	70.1 mph
Our mileage, EPA city/hwy	14.4, 14/19 mpg	15.2, 15/23 mpg
Top speed	191 mph*	155 mph*

* Electronically limited.

❑ We're a little conflicted about the interiors, as we like the straightforward appeal of the Mustang's center-console controls (left), yet prefer the lower-effort, more highly refined shift action of the CTS-V. The Cadillac's trunk wins hands-down for volume and ease of loading; the Shelby's high liftover and pinched opening between big taillights reduce usefulness somewhat.

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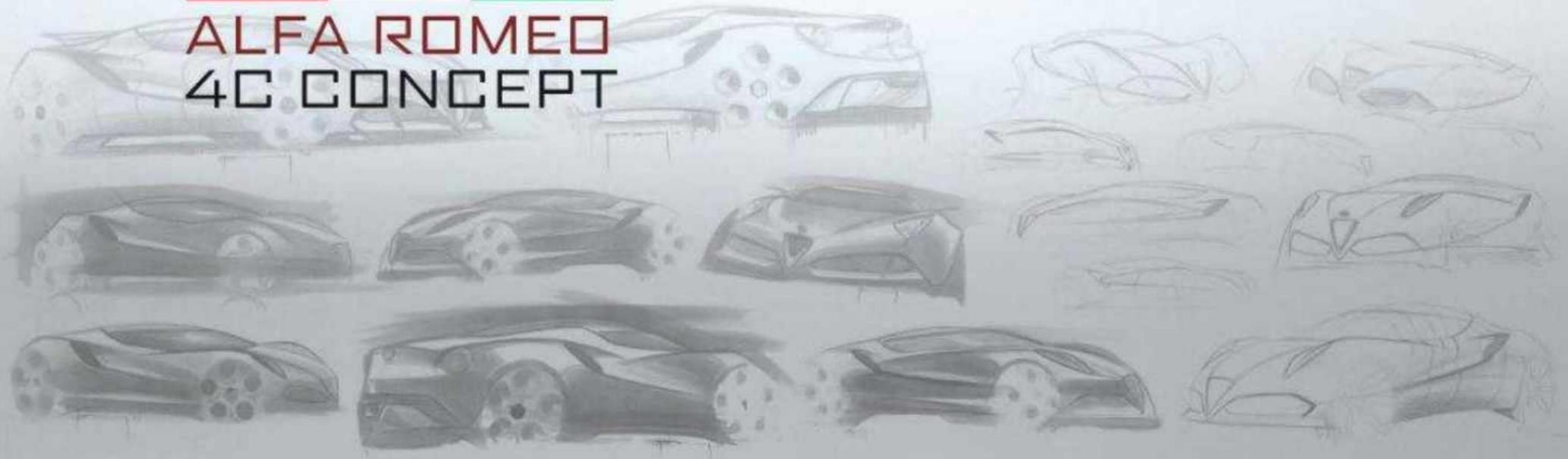


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ALFA ROMEO
4C CONCEPT



Flair
GAME



Alfa Romeo's 4C concept is the essence of Italian style

BY JOHANN LEMERCIER

G

ARS BORN MERELY AS STYLING EXERCISES RARELY EVER make it past the motor show stage. But, if we are to believe Alfa Romeo's top execs, the stunning 4C Concept seen at the Geneva show in March might just turn into one of those rare exceptions. We met with Lorenzo Ramaciotti, the current design director for the Fiat Group, to find out whether the 4C really is a sign of things to come for Alfa.

Formerly the head of Pininfarina's design activities, Ramaciotti has helped reshape Alfa Romeo's products since 2007 and believes the 4C is the next logical step in the brand's rebirth.

"The 4C was born as a side project, not something planned for the long term and definitely not in the mainstream of our product plan," he explains. "It was a way of thinking forward between design and engineering. Designers certainly, but also engineers need to have time to think out of the box, a way of relieving themselves from everyday assignments and getting a breath of fresh air."

The project started with the chassis, and a scale model was presented to the project committee in late November. Management liked what it saw and asked for a concept car for the Geneva Motor Show. "So we had just three months to move from the scale model to the real thing, and we didn't even have anything defined for the interior," Ramaciotti recalls. "It presented us with a big challenge, but since we had not shown any concept car since 2003 with the 8C Competizione, it was a task that we immediately accepted."

He stresses that since the concept was developed in concert with engineering, the shape is close to what we'll see in production. "We need not make major changes to it," he says, adding that, "it's just a matter of shut-lines and details. Although the 4C incorporates some typical 'show car' features such as the front and rear lamps, and elements of the interior, the concept is actually very close to what we want to bring to the market."

In explaining the approach to the car, Ramaciotti said he wanted to keep the look simple. "At Alfa Romeo, we like shapes that are more refined. In terms of size and proportions, despite the short wheelbase (93.7 in.) we didn't want a car that looked too slim, but muscular and with a presence, so we kept it fairly wide. If you compare it to an Elise, the Lotus is much skinnier. Ours conveys more of a feeling of solidity."

Compared to the taut lines of the exterior, the cabin is much more flamboyant. "A lot of work has been done to bring it to a high level of detail," Ramaciotti points out. "The idea was to have a very driver-oriented feel, whereas the passenger is treated almost like an option. The road version will feature motorcycle-type instruments as seen here. We want to feature a very light dashboard, and we are discussing whether to have a center console at all. In general terms, the production model will have a very light and simple interior."

The goal is to produce a car with a curb weight of about 1875 lb. "I don't know if we'll meet this target, but we will not allow ourselves to wander far from that. Hence we have to carefully

weigh every element that we will put into the car," Ramaciotti says.

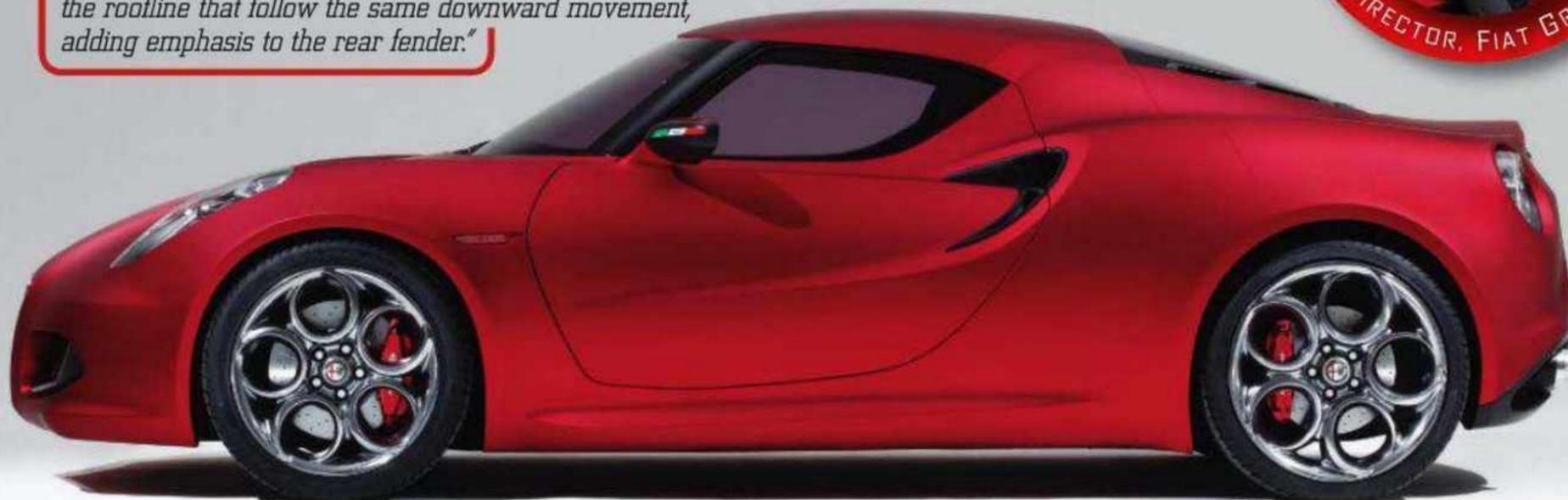
In engineering the concept, Alfa Romeo worked closely with Dallara (supplier of IndyCar chassis) to develop the 4C's carbon-fiber tub, which Ramaciotti says can be quickly and relatively inexpensively built. The suspension will use standard A-arms rather than pushrods. These components are attached directly to the tub in the front and an aluminum subframe in the rear.

Given the very short time frame, Alfa Romeo elected not to make the 4C a fully running concept, but the car is fitted with an actual engine and all functioning elements. Its 1750-cc TBi unit is known to deliver 235 bhp in its most advanced production version to date, although Alfa Romeo is stating a conservative 200-bhp target. Less conservative is

"At the rear we have a strong, deliberate disproportion between the size of the cabin with the narrow rear window, and the very wide fenders. This again makes the styling comparatively very solid, due to the cabin appearing so tight."



"The windscreen wraps around like a helmet visor. The front fender slopes down toward the rear. This really defines the car in side view, together with the beltline and the roofline that follow the same downward movement, adding emphasis to the rear fender."



the 4C's TCT twin-clutch transmission. The plan is to bring the car to the market in the second half of 2012, and Alfa Romeo CEO Harald Wester promised at Geneva a return to the U.S. market by 2013 with this car as part of the lineup.

Ramaciotti echoed that promise by saying: "The vehicles we are developing today are developed from the outset with an American version already planned contemporaneously. It's important to consider how the project fits into Alfa Romeo's brand development. The 8C was the flagship of the 2000s; this one is the flagship for the 2010s."

While the 8C was developed primarily as a halo car for Alfa Romeo, the 4C has a different mission. "It carries a message that says we do not want to lose our roots, we want to honor our sporting heritage," Ramaciotti explains.

"The front of the car is just a surface with two tension lines, which go from the traditional Alfa triangular air intake onto the bonnet—it is the same as on the current Giulietta and no longer creates a bulge on the hood as it did on the 8C."



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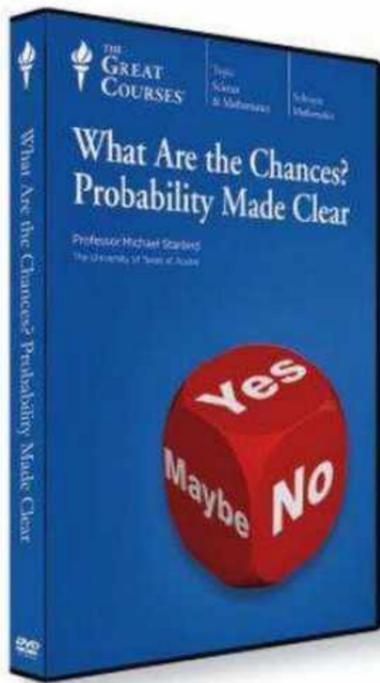
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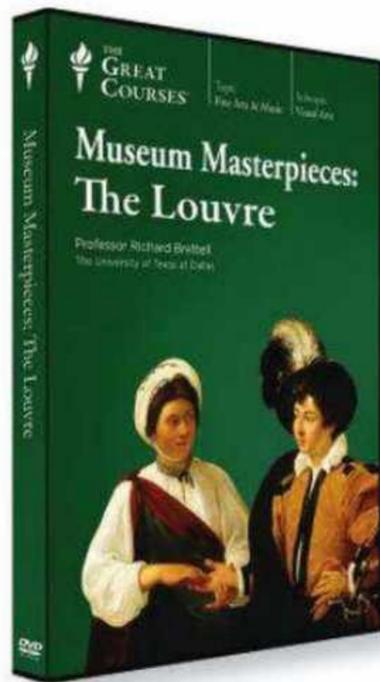
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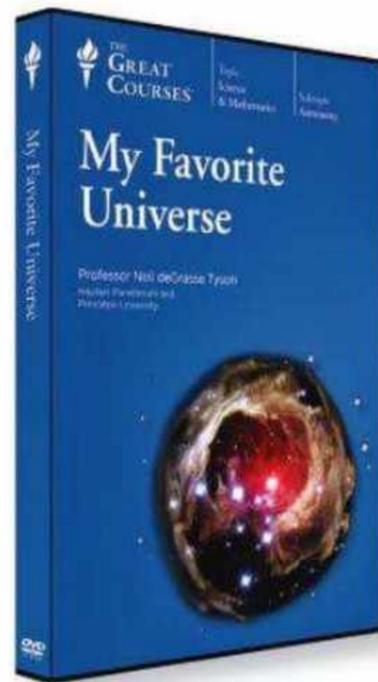
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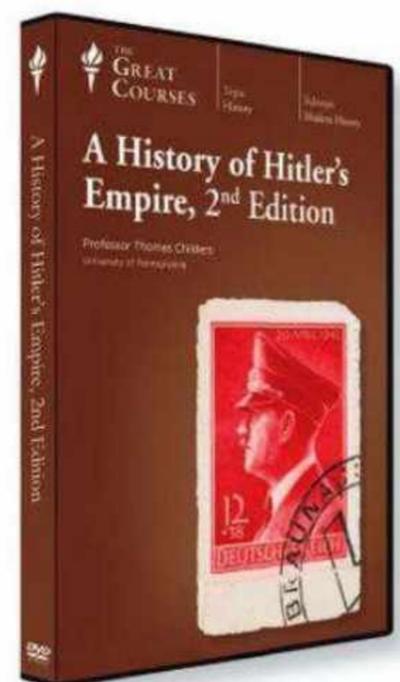
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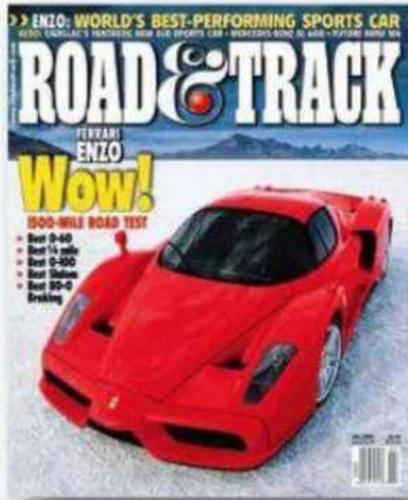
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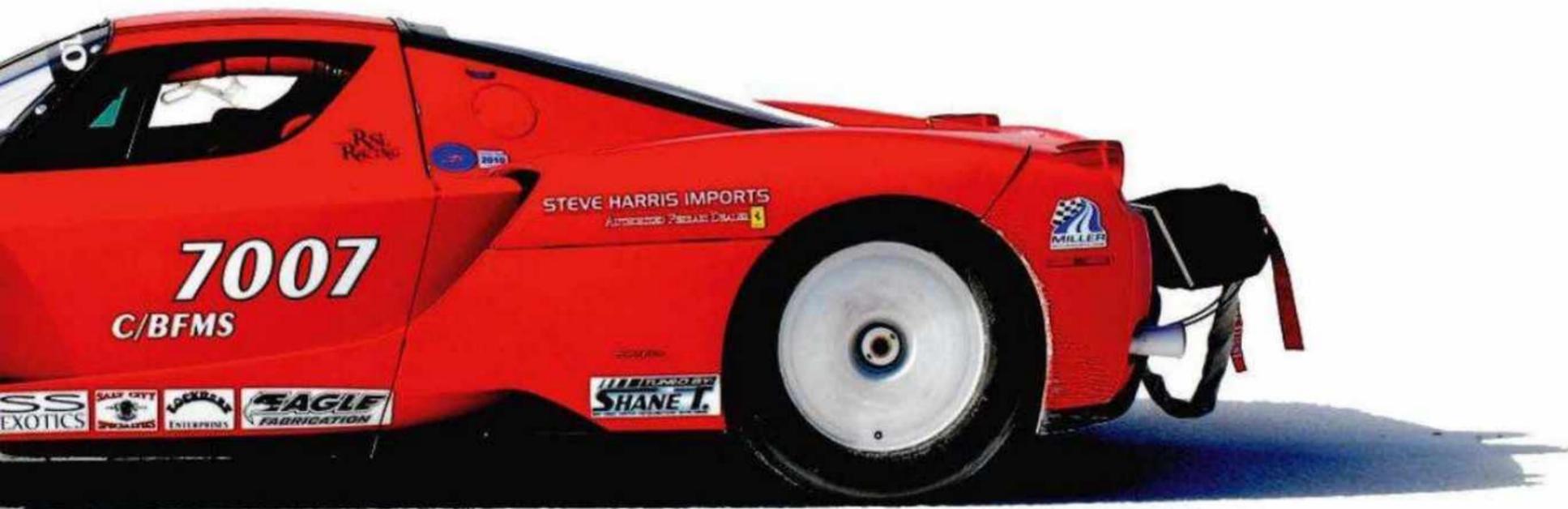
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The Resurrect

ROAD & TRACK'S RELATIONSHIP WITH RICHARD LOSEE GOES BACK MANY years and covers a variety of cars belonging to him and his father, including our long-term test of his Ferrari Enzo. R&T called Losee and asked if he would allow us to do a road test with his new supercar in 2003, as Ferrari had made it clear that this very limited-production model would not be available for the usual testing procedures. Losee enthusiastically agreed. As a result of his generosity, we sent our crew to Losee's home in Utah to do the testing and photography for our July 2003 issue. And what a crew we sent: Ferrari World Drivers Champion Phil Hill, a long-time associate of R&T; photographer John Lamm, Design Director Richard Baron and Road Test Editor Patrick Hong. The test was fabulous—as was the Enzo—and some several days later our crew traveled from Utah to Nevada and into Southern California for the performance testing, accumulating some 1500 miles on Losee's new Ferrari, and setting multiple R&T test records.



ion of the Enzo



From disaster to land speed record

■ BY THOS L. BRYANT ■ PHOTOS BY MATT HALES

Shortly thereafter, Losee talked to us about the endeavor of his putting many, many miles on the Enzo and we collaborated on the idea of making it an R&T Long-Term Test. As he told me during that discussion, “My father told me when I was a youth, ‘If a man is fortunate enough to have the means, he should drive a Ferrari.’ And while he collected a variety of cars in those days, we always had Ferraris in the garage.”

I agreed to Losee’s offer and he even got a Utah license plate that read “MM ENZO”—with the MM standing for Most Miles. Within a few years, he managed to accumulate more than 31,000 miles on the Enzo, as it seemed to show up at Ferrari events and charity functions all over the West.

Losee was having a lot of fun, and he was demonstrating his skills behind the wheel—after all, he had been the SCCA’s Group 2 National Pro Rally Champion in 1997. So it was no surprise that he, along with navigator Sean Harris of Steve Harris Imports (the authorized Ferrari dealer in Salt Lake City), snagged two wins in the newly created Ferrari Challenge Rally competitions.

In the summer of 2006, disaster struck. Losee was participating in the Utah Highway Patrol’s Fast Pass charity event. This is a 3-day drive for limited-production cars on Utah’s most scenic roads to benefit families of injured or killed Patrol officers, as well as small cities and students throughout rural Utah. The final day’s headline

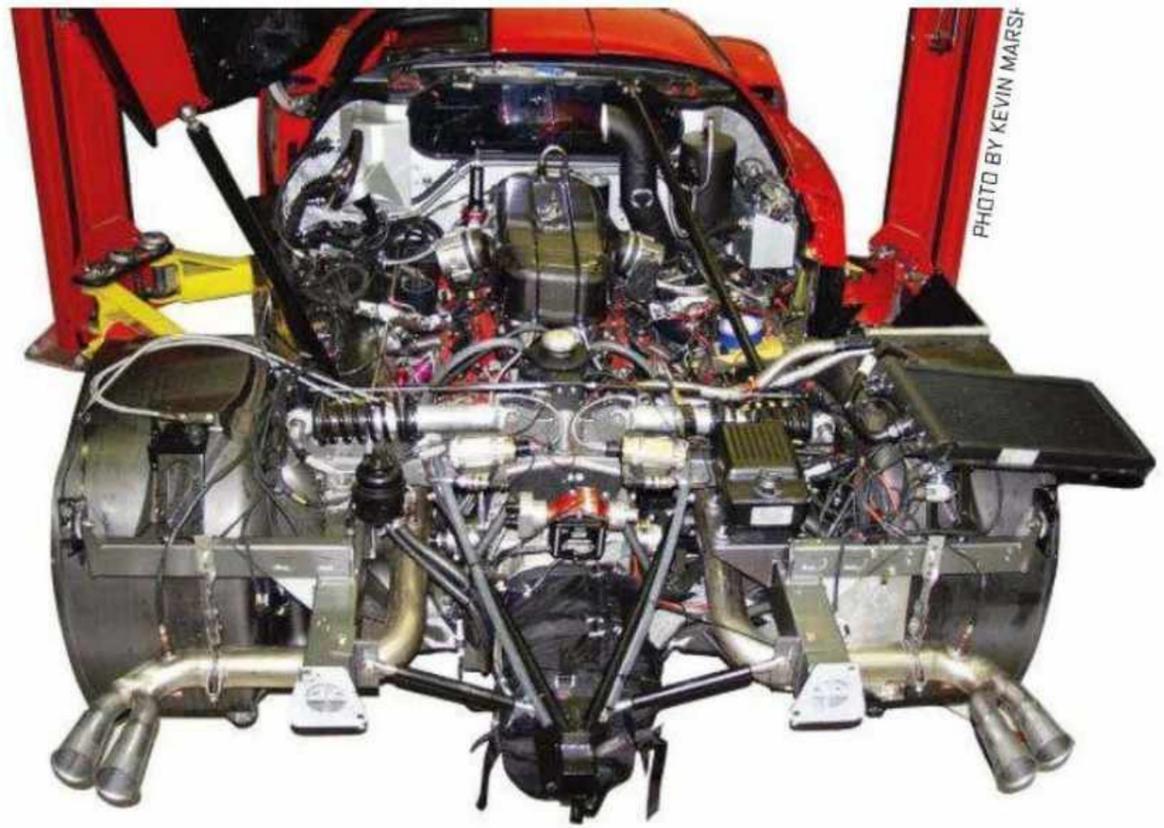


PHOTO BY KEVIN MARSH

It took about 30 months of painstaking work to piece Losee’s crashed Enzo back together again. The modifications from stock trim included the installation of a red leather-wrapped rollcage and twin turbos on the the car’s normally aspirated V-12 engine. The Enzo’s output for the final attempt at the land speed record run was increased to 847 bhp.



PHOTO BY KEVIN MARSH

The violence of the 206-mph crash is attested by the fact that the engine was ripped from the chassis (right). The pieces were taken to a garage at Miller Motorsports Park, where they sat on the floor in a heap for 18 months.

event was a high-speed run over a closed 14-mile stretch of road, with no-points “citations” given for highest speeds to raise money. Unfortunately, there was no pre-run of the course, and Losee had his Enzo up to 206 mph when he encountered a whoop-de-doo stretch of the road. The car went airborne. He recalls a big slide, a thought that this was not good, and that’s all.

The incident made the front page of *The Wall Street Journal*. The Enzo Ferrari was demolished, with pieces strewn over a quarter mile of Utah landscape. Losee remembers but a few seconds of the ride in the life-flight to the hospital. His injuries were major and included multiple broken bones, including two vertebrae in his neck, that kept him in the hands of a neurosurgeon for the next



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12 months. Losee credits Ferrari for safety engineering of the Enzo (and his full-face helmet) that allowed him to survive this horrendous crash.

As the recovery time went by, he began to think about what to do with the Enzo. Eventually he discussed it with his wife, Boni, and told her he was thinking of rebuilding the car, and making it faster and stronger than it had been. She knew Losee needed to do this and quietly said, "It's okay—go ahead." During that recovery period, Losee also spoke with me about the concept, and I assured him that *Road & Track* would want to be involved with the story all the way through this miraculous reconstruction.

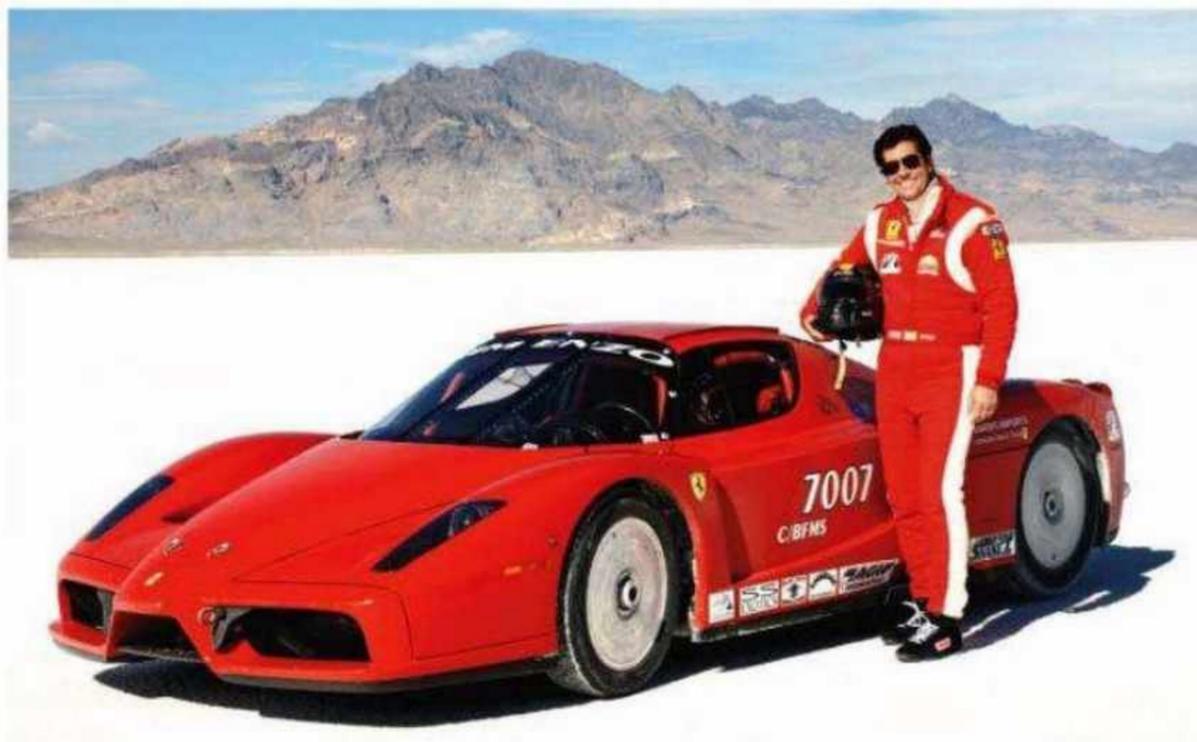
"I knew this was personal," Losee admits. "I consider myself a purist and I was putting back together a wrecked Ferrari with a story of disaster, and Ferrari automobiles don't typically do well with stories and wrecks. But I truthfully didn't care, because it was my car, we had a tremendous amount of history together... it meant something to me."

So it was with the help of Sean Harris, who agreed to devote his chief technician Randy Felice to the project, that Losee set out to resurrect the Ferrari Enzo. All of the pieces had been stored at Miller Motorsports Park in Utah for about 18 months. With the help of Felice and restoration expert Kevin Marsh, they went through all the parts and pieces, and then aided by Ferrari North America, began to order what was needed

to complete the rebuild—which took some 30 months.

The next step was the increased power and that's where turbocharging guru Shane Tecklenburg of Mission Viejo, California, came into the picture. Losee explains, "Ferrari had established the use of twin turbos before on the 288 GTO and the F40, and I felt with the resurrected car having been mostly destroyed, that even Enzo himself would not have minded that I added twin turbos to this storied car to go after a land speed record in my backyard at Bonneville."

Thus RSL Racing was created to go for the speed record, and the team headed out to the Salt Flats in August 2010 for the SCTA Speed Week. This was a time for licensing, trying different configurations and learning as much as possible from the veter-



■ Losee (above) poses with his record-setting Enzo. The only changes from the car's stock look are the special wheels and tires and the rear parachute. Losee is waved onto the salt flats (left) by SCTA officials.



*"Don't try to correct the wandering the car does on the salt,
just think it back into the groove."*

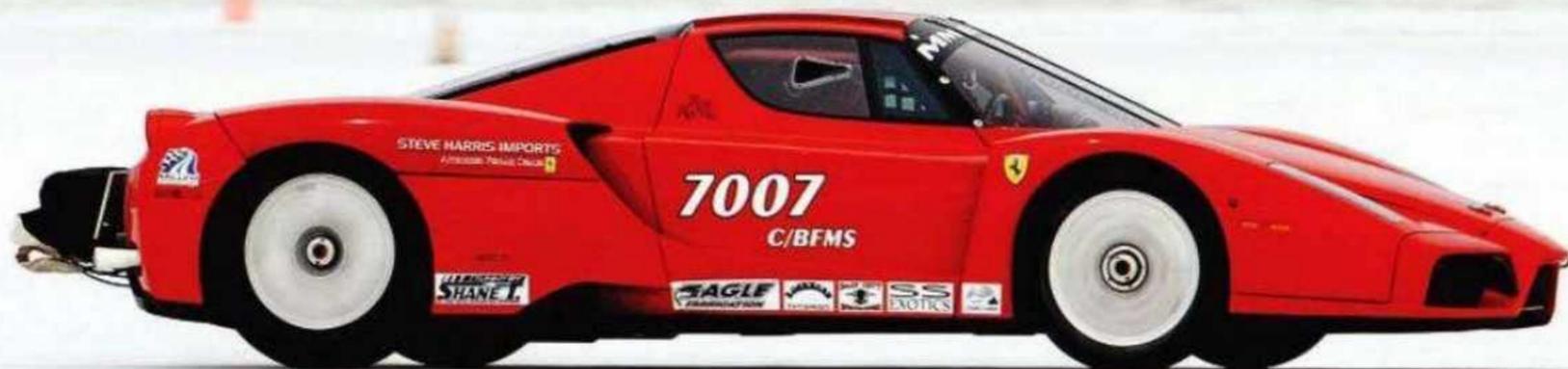


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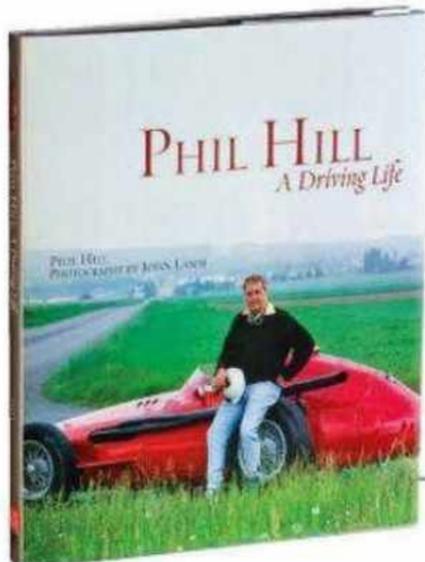
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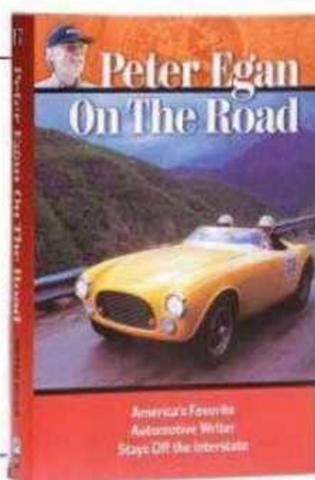


There will never be a man like Phil Hill again: Our friend, the 1961 F1 World Champion, was uniquely qualified to write about the most notable cars ever built. And here are 26 of the finest stories he wrote for Road & Track.

\$75 Signed by John Lamm

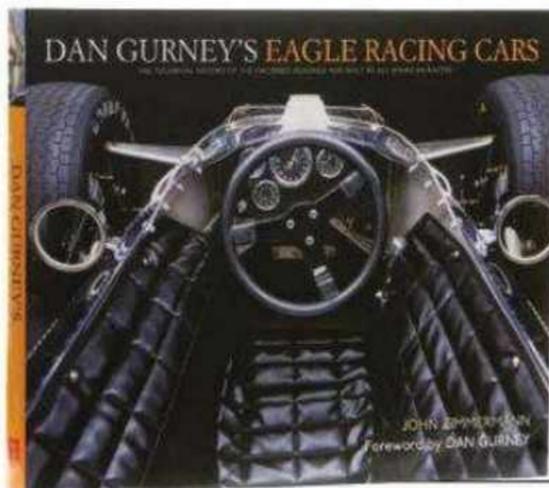
Road Trips... the only true antidote for wanderlust. And no one writes about them as enjoyably as R&T's Peter Egan, who's made a career of traveling the U.S. and the world in some fascinating iron. You'll love this collection of his travel stories, which appeared in R&T between March 1983 and December 1996.

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John Zimmermann delivers the definitive account of the planning, development and race history of every car built by All-American Racers. With chapters on all of the Eagles that came out of Gurney's Santa Ana, California, shop, plus great photos and drawings and an appendix of all Eagle victories and poles, this book is a must.

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Can-Am Cars in Detail revisits 22 of these epic machines through stunning studio photography by Peter Harholdt and vivid descriptions by Pete Lyons, long considered the dean of Can-Am journalists. Can-Am cars are beautiful blends of art and action, pinnacles of engineering and craftsmanship that express the heights of imagination, ambition and achievement.

\$99⁹⁵ Signed by Pete Lyons



ans of the Salt Flats. And it was a time when Losee spun the Enzo at about 195 mph—and realized he and his team had a lot to learn about the salt, including scrub radius, alignment, correct tires and Salt Flat-specific driving skills. “The great thing was the advice and coaching that came from some of the other competitors and the SCTA officials—people who had been dealing with the Salt Flats for many years. And one veteran driver in particular gave me the best advice after the spin—‘Don’t try to correct the wandering the car does on the salt, just think it back into the groove.’”

After exploring a different nose piece and a modified gear in the transmission, Losee and his crew decided to put the Enzo back into stock form (except for the Salt Flat tires and wheels, the SCTA-required safety equipment and, of course, the twin turbos) “and we felt it was capable of breaking the class record.”

October came and the SCTA again was ready to oversee attempts to set new land speed records. On October 10, a news release went out: “Team RSL Racing based out of Salt Lake City, Utah, took its Steve Harris Imports and Miller Motorsports Park-sponsored Ferrari Enzo to a new Southern California Timing Association World Land Speed Record of 237.871 mph Saturday at the Bonneville Salt Flats. The new record was set using the average of the qualifying speed of 237.600 mph and the record run of 238.142 mph, as per SCTA rules.”

As smoothly as the above reads, it was nothing like that on the Salt Flats. Thursday afternoon the Enzo had set a qualifying speed of 221.316 mph on the down run to qualify for a record run. But early Friday morning during the record attempt and after waiting out the effects from the heavy rains of the night before, the drag chute unexpectedly deployed and ruined that chance for the record. In the meantime, another team going after the “C (360-cu.-in.) Blown Fuel Modified Sport” category record had raised the bar from the 213.316 record to a new figure of 231.804 mph.

“We were disappointed that we were unable to set the record because the chute fell out,” said Tecklenburg, “and we were ready to load up, thinking we didn’t really have a shot at a speed that high because we were out of gear using the stock drivetrain in the Enzo. But after a few calculations we determined that we might be able to get there by raising the factory rpm limit and dialing up the moderate turbo boost to 847 bhp.”

Saturday morning dawned beautiful and wind-free, and RSL Racing was

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ready to give it another shot—yet unbelievably, at approximately 225 mph, the drag chute again deployed prematurely! But after that frustrating run, Richard was even more convinced the Enzo was strong enough to set the record, so the team quickly repacked the chute and towed the car back to the staging lanes, where it was the second to last car before the close of qualifying.

And then, as the last car to run at the 2010 SCTA World Finals, the Enzo



“But after that frustrating run, Richard was even more convinced the Enzo was strong enough to set the record.”

Ferrari went 238.142 mph with an exit speed of 238.780, making it not just the record holder for its category, but also the fastest Ferrari ever.

Throughout the two and a half years of rebuilding the Enzo and getting it ready for the Bonneville Salt Flats, Losee says he knew in his heart he had to attempt this. And as the restoration was being finished, Losee partially straightened the severely bent MM ENZO Utah license plate and it was again bolted to the Ferrari. “I felt that I had been blindsided by the accident in the Enzo. And I lost some of my confidence and, frankly, some of my pride as a result of a crash that occurred by my irresponsibly failing to insist that I pre-drive the Utah Fast Pass high-speed course. Then, as I completed the Bonneville record run and knew we had set a new mark for the class, a calming sense of peace started to come over me. It was really nothing earthshaking, it was simply a speed record in a sports-car category, but I had needed to get back on that Prancing Horse. It made me realize that I had come to terms with an unplanned and unpleasant detour in my life, had journeyed through the long process of coming back from a terrible incident, and now I was going to be okay with myself again.”



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THE
CLASS OF
1960

BY DAN GURNEY

PHOTOS BY
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THE YEAR WAS 1960. IN THE FALL, MANY OF THE world's best drivers came to Riverside, California, for two races: the *Los Angeles Times-Mirror* Grand Prix for Sports Cars, an October event that paid \$4000 to the winner, and the U.S. Grand Prix held in November, which was won by Stirling Moss at the wheel of Rob Walker's Lotus-Climax. Prior to these events, several of the drivers gathered at the Mission Inn in downtown Riverside to have their portraits taken by Christian Du Bois Larson, who sought to show these racers as distinguished gentlemen, not a bunch of speed-thirsty guys in greasy coveralls. The photos, commissioned for the Inn's Hall of Fame, did just that, and they hung there on the walls for years until the hotel changed ownership.

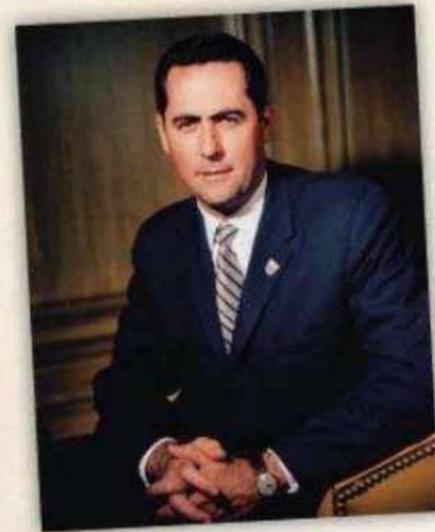
In 1962, Larson sent the portraits to *Road & Track* for possible publication, only to hear back from Editor Dean Batchelor, who graciously wrote that he'd be unable to publish them in color (our magazine was largely black and white back then). "I feel we would be unable to pay you what they're worth if used in black & white," wrote Batchelor.

Fast forward to today. In the spirit of "what's old is new again," Larson, now 85, sent in the images again—printed from the original color negatives. This time, though, we took the bait, and we're glad we did—these are classic portraits of racing legends in their prime, of great interest and historical value. And we agree with Larson—they're much better displayed in our magazine than stored in some metal file cabinet.

For added perspective, we shared the portraits with our friend Dan Gurney, who competed in both races and was among the drivers photographed. Dan, fittingly, put his name on the international road racing map in the inaugural Riverside Grand Prix (1957) with a masterful drive of an ill-handling 4.9-liter Ferrari. Following that, he became a vital part of the F1 fraternity for nearly a decade, the tall blond American first competing with Ferrari and then with BRM, Porsche, Brabham and his own All-American Racers team. In the process, he won Grands Prix for Porsche, Brabham and AAR in the Eagle he built.

So join us now in the conference room at All-American Racers in Santa Ana, California, and imagine Dan picking up each photo, thinking back—sometimes five decades—and then offering his personal thoughts. Sometimes his voice is tinged with sadness; other times it's accompanied by his still boyish grin. Enjoy.

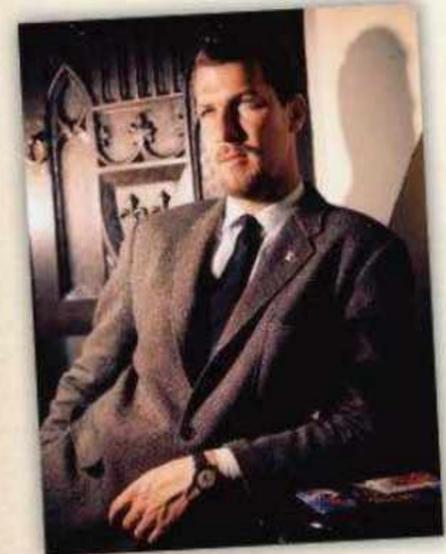
—Andrew Bornhop



JACK BRABHAM

"He was my boss for three years. We used to call him 'Black Jack.' He had that very dark hair. A very good thinker, he was. He carried the Aussie flag everywhere. He had a huge following.

"He seemed to like driving with the tail out. Drove like he was on dirt, even when he wasn't. He had an interesting mix of talent—at times, he was up against Moss, the quintessential F1 type. Jack wasn't considered as much of a virtuoso, but he used to beat Moss frequently. It takes more than pure driving talent to win races."



JOAKIM BONNIER

"Jo was my teammate at BRM and at Porsche in Formula 1 and sports cars. He was a handsome guy from a very well-to-do and prominent publishing family in Sweden. He was very impressive; he won the only F1 race for a front-engine BRM.

"He was in the top half-dozen GP drivers, equally good in sports cars. He was a private person who played his cards close to his vest. Still water runs deep. His lap times were always there."



PHIL HILL

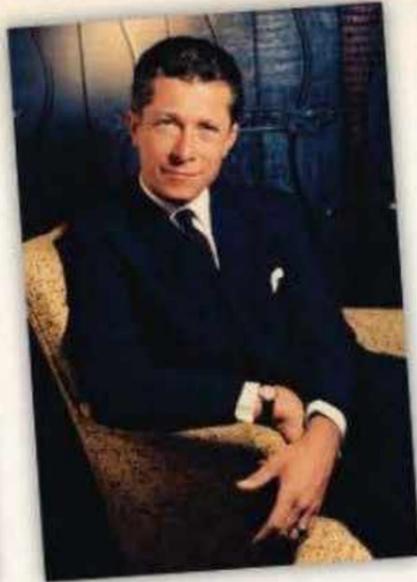
"First time I became aware of Phil was at Pebble Beach in his Jag XK120, which he had shipped over from England. Probably 1951. I was watching from the forest, rooting for him. He was almost a generation ahead of me.

"He was intense. Drove hard. Had a bad case of the racing virus. He seemed to have the most luck in the endurance races.

"I always had a very high regard for Phil. When I first went to Europe, he helped me quite a bit. He, and Denise McCluggage, and Bernard Cahier.

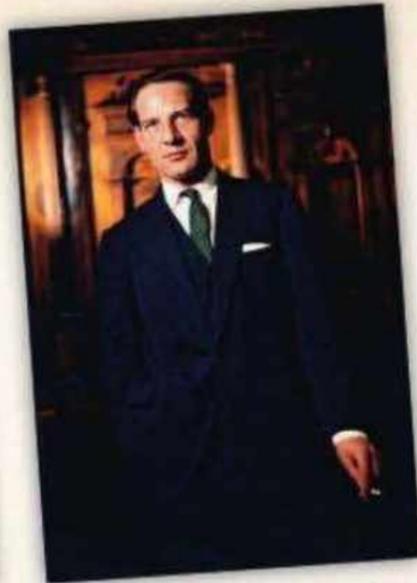
"I would have liked to see Phil go to Indy, and do a little more racing in America.

"At Ferrari in 1959 we were teammates and we got along just fine. At the Targa Florio in Sicily he gave me my first ride as a passenger in a 2-seater 2-liter Ferrari Mondial nicknamed "the Muletta" [mule]. One lap around the circuit equals 42 miles! He scared the Dickens out of me. Later I gave Cliff Allison a similar ride, generating the same feelings in him. When Cliff got in the car to drive by himself, he went off! Phil and I and our families have been friends in California ever since."



OLIVIER GENDEBIEN

"Phil Hill's great partner. Much like Bonnier, he didn't have much dirt under his nails, but he had some special talent for driving. At the Tour of Corsica, or some open-road event like that, he was very fast in that sort of situation. He had a patrician air about him. Very Belgian in a way, a bit remote like the corner of the world he came from. You might beat him, but it wasn't easy."



INNES IRELAND

"Another good friend. He was a straight-up tough guy. You could count on him to give you a hard time. He was a colorful character, very capable. He thought he was very competitive with Jim Clark, yet somehow or other it didn't work out.

"He smoked a lot. Drank a fair amount. I guess you could say he had a World War II outlook on life. There were more risk-takers back then."



STIRLING MOSS

"When Juan Fangio retired from active driving, Stirling was considered by his peers to be next in line as the best in the business.

"He was exciting. Unpredictable. He could usually get to the front. Stirling did have a fair amount of mechanical difficulties... some drivers had trouble in practice, some had trouble in the race.

"He was a superstar. He had a manager, when the rest of us didn't. He raced once a week, traveled a lot all over the world, reminds me of my own life at the time.

"We drove together on several occasions and won the 1960 1000-km sports car race at the Nürburgring together in a Birdcage Maserati for the Camoradi Team. It was a thrill. You knew how good he was. So you knew where you stood also... It was a bit like driving for the Wood Brothers in NASCAR; if you went into the pits in 4th place, you left in 3rd. He was great!"



PHOTOS BY BILL NORCROSS

■ U.S. GRAND PRIX ACTION, 1960. THAT'S JO BONNIER, ABOVE, IN A BRM, AND JIM HALL, LEFT, WHO FINISHED 7TH THAT DAY AT RIVERSIDE.

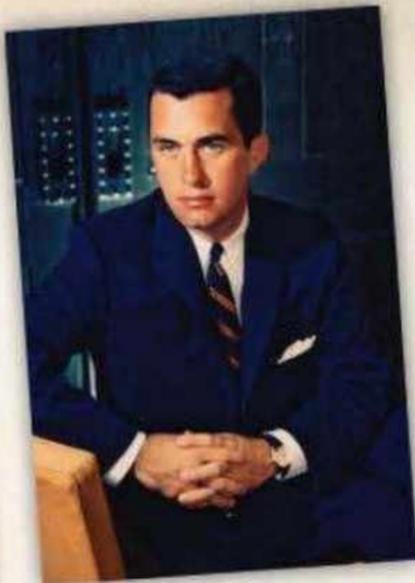


JOHN SURTEES

"I have the utmost respect for John. I was there when he won the F1 World Championship down in Mexico City in 1964. I remember because I won the race..."

"I knew his mom and dad. I knew his sister. I bought a motorcycle from his brother. He was his own man. Still the only motorcycle and automobile World Grand Prix Champion we have ever had."

"I like the way he came up. I like motorcyclists being able to do that... they're taking bigger risks than the car guys do. I like his integrity, his family. We keep in touch and I consider him a real friend."



ROGER PENSKE

"Remarkable. A fantastic businessman. I think he has 40,000 employees, and I'm not exaggerating."

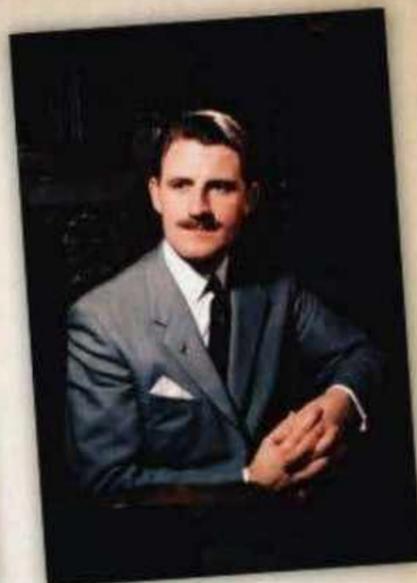
"He was also a very good and successful race driver. An East Coast guy. He was always reaching for the big stuff. Early on he saw himself as a mover and a shaker, and he was. When he went to Traco [Travers and Coons] to get engines built, he bought all of their production capacity. His career as a team owner is the stuff of legend."

"We keep saying to him, 'Why don't you run for President?'"



BRUCE MCLAREN

"A Cooper-Brabham graduate from New Zealand. Bruce had a lot of engineering enthusiasm and ability. He brought other good engineers under his wing—guys like Teddy Mayer, Tyler Alexander and Gordon Coppuck. His career was on a steep climb globally. He looked like he was on his way to hanging up his helmet and becoming a full-time manufacturer when fate so tragically interfered at Goodwood."



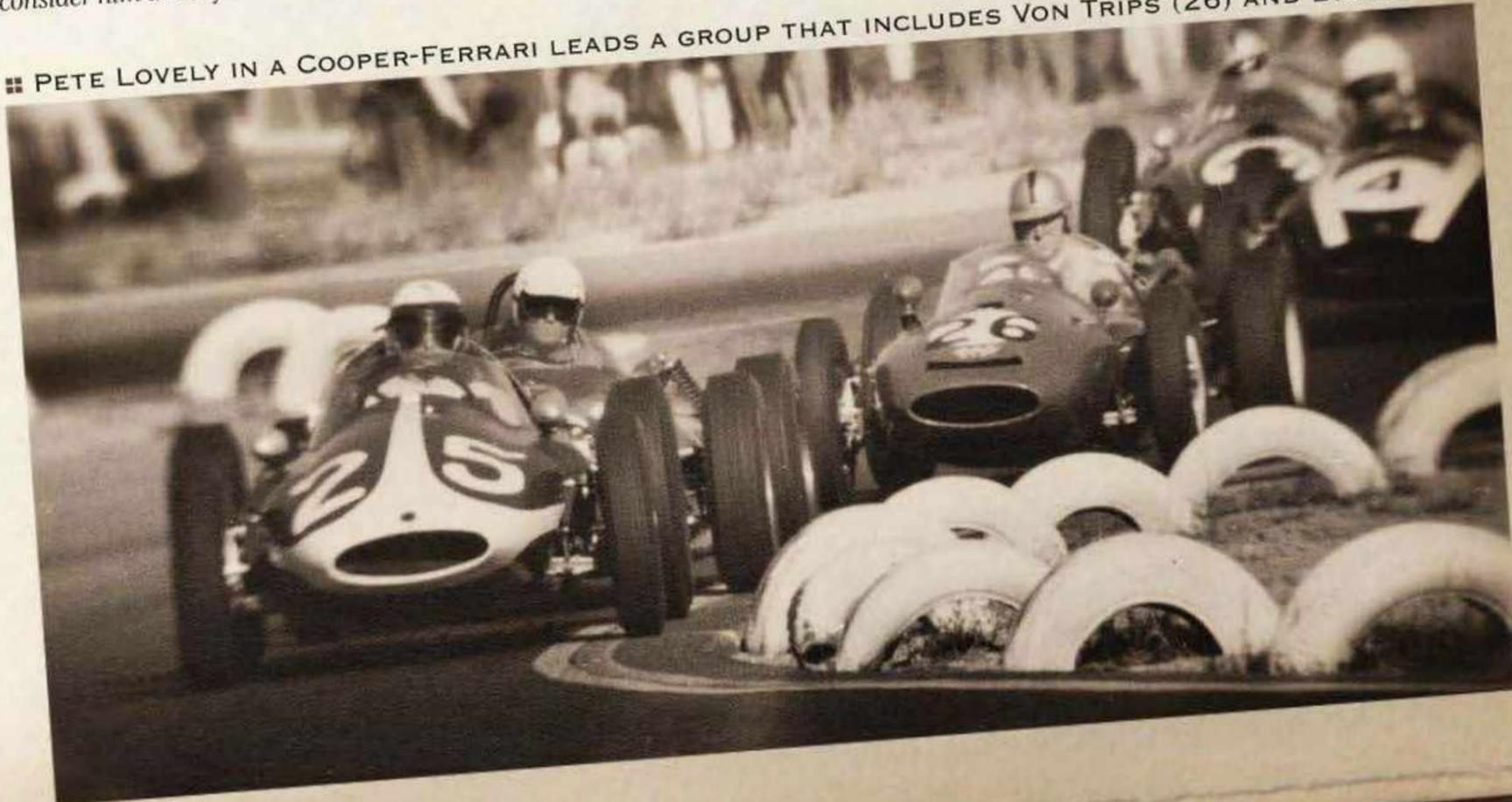
GRAHAM HILL

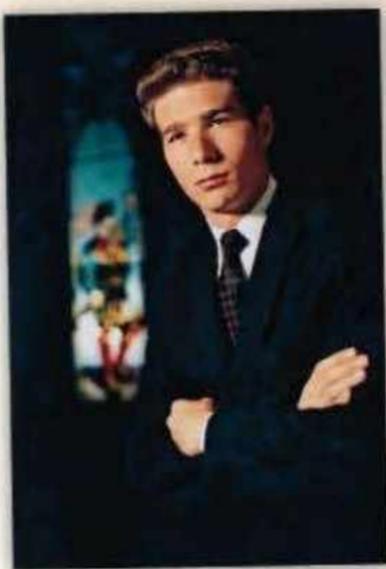
"Graham was a teammate of mine at BRM together with Jo Bonnier. He was intense and secretive when it came to being a teammate, but he was a very likable person."

"He had a naughtiness about him that appealed to everybody and made him a great after-dinner speaker. He was seriously tenacious. We were pretty close. In the early days, he had invested in Speedwell aftermarket parts for Minis and Austins. I bought some stuff from him."

"Just think, if he hadn't won Indy, he probably wouldn't have had the money to buy a plane, and he might be alive today."

■ PETE LOVELY IN A COOPER-FERRARI LEADS A GROUP THAT INCLUDES VON TRIPS (26) AND BRABHAM.





JIM HALL

"A Texican. He didn't tell you what time it was, either. He had a secret relationship with GM. He was innovative, and always wanted to push the envelope. He and Hap Sharp, young Texas oilmen, were formidable in every way.

"Rattlesnake Raceway was probably better than Ferrari's test track at the time. We didn't know much about vehicle dynamics in those days. That's what made it exciting, more enticing—none of us knew when the next big breakthrough might come. Now we know a lot more, and that takes some of the fun out of it.

"We were very proud when Jim and Phil took the Chaparral to the Nürburgring and won the 1966 1000-km sports car race."



JIM CLARK

"I've often said a great deal about Jimmy. He really earned his place in the hierarchy of outstanding F1 drivers. He could jump into any car and make it seem better than it really was.

"He had a great sense of humor—he enjoyed pranks. He was brave—which he was almost expected to be by the Lotus group he was with. He really looked up to Colin Chapman, and to Chapman's racecraft.

"Jimmy loved to race. I think he wasn't terribly thrilled with all the adulation...or the loss of time and privacy that came with fame.

"If you were running with Jimmy, you knew you were doing damn well. He always extracted almost everything there was in a car."



WOLFGANG VON TRIPS

"I met him in 1958. I was in the race when he was killed [Monza 1961]. Saw it happen. He was obviously very good. How good? That was difficult to tell as his career was cut short.

"He was easy to get along with. He could speak different languages. He started out with Porsche. Huschke von Hanstein, Porsche's 'Racing Baron' and race director, became his mentor. He paved the way for many young men from the aristocracy to get into motor racing.

"Over here, racing wasn't called the 'Sport of Kings,' but in Europe it still was at that time, and handsome Count Berghe von Trips fit the bill perfectly."



CARROLL SHELBY

"If you want to have a contest as to which of these drivers can talk the shirt off your back the soonest, Shelby would be in the lead. He's good. He was a connoisseur of human nature. He knows what buttons to push. Still does today.

"He had a serious amount of outstanding driving talent. We used to think he was telling a falsehood when he said he had to take nitroglycerine pills before the race for his heart problems. When he was waiting for a heart transplant, fellow driver and heart transplant recipient Lee Mueller told him that he needed to be in bed, prepped and ready, when the donor chopper arrives. We used to kid Shelby about getting the heart from a 20-year-old nympho. Cobra... Ford GT40... Le Mans—great memories!"



DAN GURNEY

"A photo from many miles ago! Great-looking sport coat! Mom and Dad and my sis and I moved to Riverside from Long Island in 1948, drove there mostly on Route 66... When they were scratching out the initial layout of the Riverside course in the middle '50s, my friend Skip Hudson and I followed the bulldozers on motorcycles. Southern California was hot-rod heaven then, and racing fever spread like wildfire." 

■ GURNEY SET A RECORD QUALIFYING THE LOTUS 19, LAPPING RIVERSIDE AT 2:00.93.



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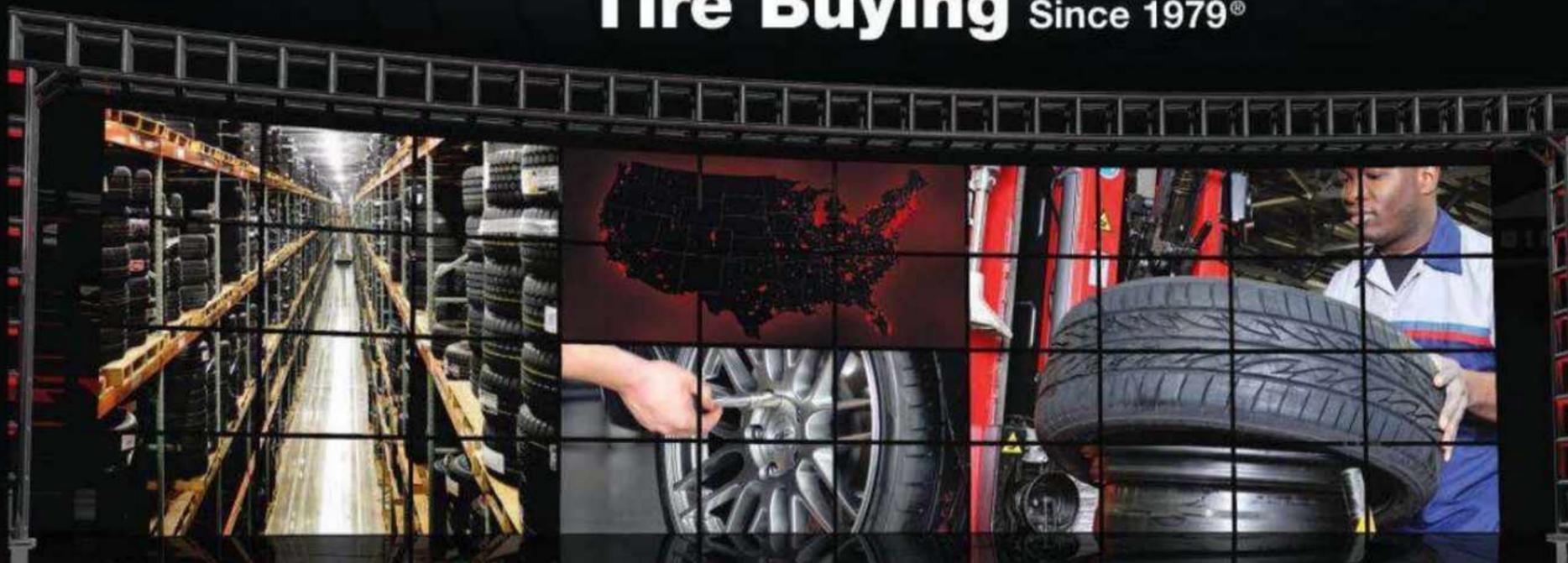


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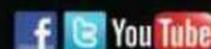
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Déjà Vu, 1902

What a MODERN CAR Should Be

**H. Ward Leonard got
an amazingly lot of it
right—a long time ago**

BY DENNIS SIMANAITIS
ILLUSTRATION BY CHRIS GALL

THERE'S A GREAT DEAL OF SOUL SEARCHING these days about options for personal mobility—just as there was more than 100 years ago. Thanks to the kindness of reader P. Mueller sorting through papers in his attic, here's "What a Light Touring Car Should Be," presented by industrialist H. Ward Leonard to the Long Island Automobile Club on February 26, 1902.

According to Nick Georgano's seminal *Encyclopedia of Motorcars 1895 to the Present*, the Ward Leonard Electric Co., Manufacturers of Motor Cars, Bronxville, New York, built the Knickerbocker, a 2-cylinder gasoline car, as well as an electric car under its own name from 1901–1903.

In his paper, Leonard assesses the three propulsion choices of his era—gasoline, electric and steam. He rates



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them with regard to his own measures of goodness, specifically safety, reliability, speed, depreciation, economy, hill climbing, appearance, first cost, noise and smell. Not a bad list, nor absurd ordering even today. In offering these particular criteria and his evaluations, he notes, "I have given my own opinion of the matter in order to invite discussion."

I'm delighted to do the same here. What follows, directly from this paper, is a summary of his evaluations, together with an annotated selection of his observations, many of which remain uncannily spot-on today.

{ LEONARD'S EVALUATIONS }

Relative Importance	Feature	Relative Value		
		First	Second	Third
1st	Safety	Gasoline	Electric	Steam
2nd	Reliability	Gasoline	Steam	Electric
3rd	Speed	Gasoline	Steam	Electric
4th	Depreciation	Gasoline	Steam	Electric
5th	Economy	Gasoline	Steam	Electric
6th	Hill Climbing	Steam	Gasoline	Electric
7th	Appearance	Electric	Gasoline	Steam
8th	First Cost	Steam	Gasoline	Electric
9th	Noise & Smell	Electric	Steam	Gasoline

ON SAFETY

Leonard's safety priorities certainly satisfy the modern idea of fail-safe design. There's irony here as well: "The gasoline type is safest, then electric and then the steam, this being due to the fact that the maximum power of the gasoline engine is so limited, as compared with that of the electric and steam, and that almost any derangement of the mechanism tends to reduce the power and stop the car, while a derangement of certain devices of the steam or electric car may greatly increase the power for a short time, and consequently the danger."

A comment on brakes hints at Leonard's enthusiastic driving style: "The most skillful chauffeur is the one who so handles his car that he uses his brakes least." It's as though he could foresee racing a Formula Ford.

ON RELIABILITY

Leonard's definition of reliability isn't inappropriate today: "...going from where you start, to where you want to get to, whether it is very cold or very hot or very wet or very dry or very hilly or very sandy."

His ordering of goodness is gasoline (a weak link, its electrical system), steam (boiler and burner being suspect) and electric ("the battery, which is almost unreliability itself when considering long tours over country roads"). *Plus ça change, plus c'est la même chose....*

One of Leonard's hopes has been fulfilled, though it took 100 years: "There seems to be no good reason why a sparking plug should not last indefinitely." On this, his timing was off: "I have good reason to believe that such sparking plugs will be on the market before long."

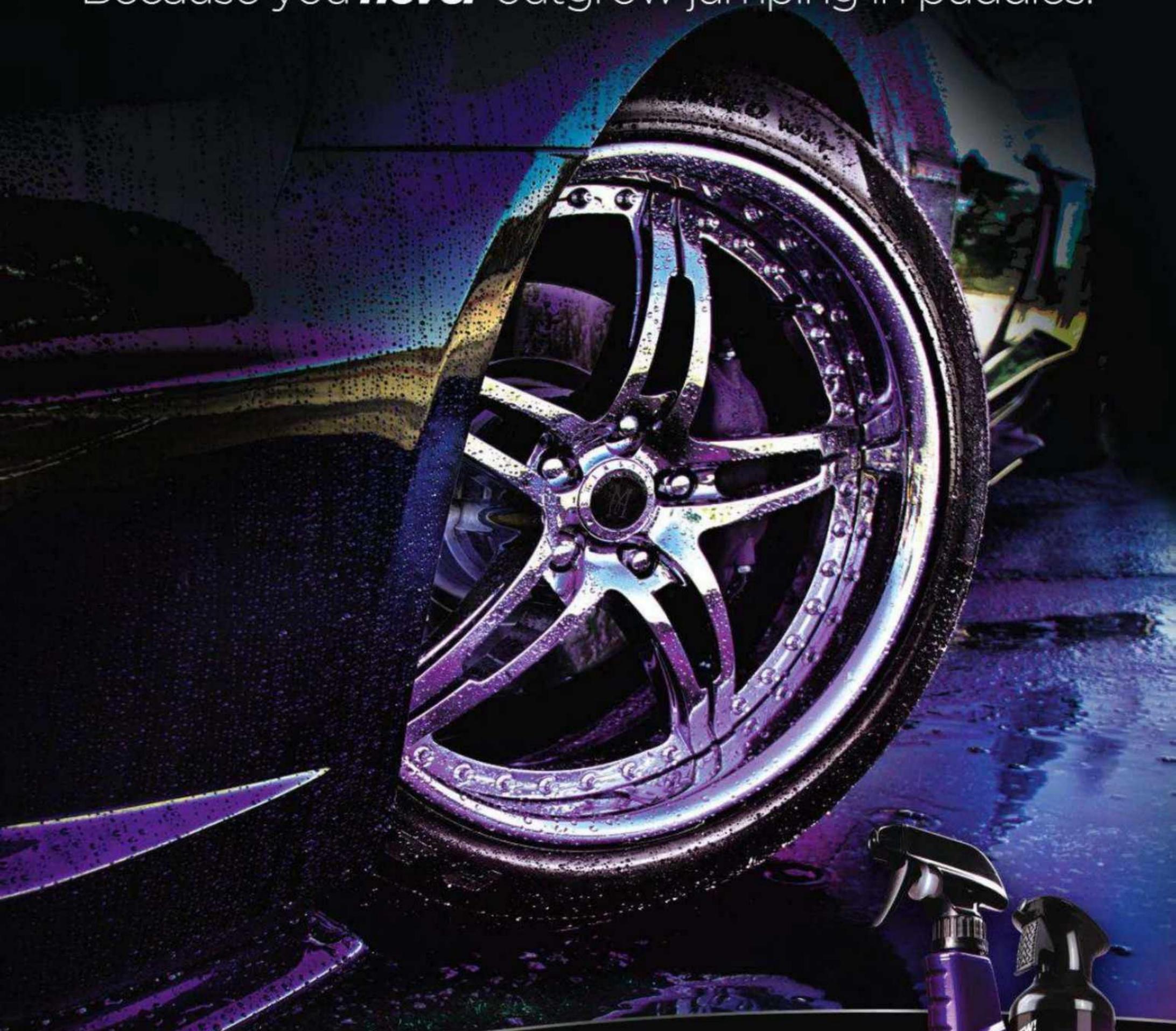
ON SPEED

Observes Leonard: "The chief cause for the existence of the modern automobile is its speed. There are few persons



■ A state-of-the-art gasoline Knickerbocker from Leonard's original paper: It already had a steering wheel and other "modern" features in 1902.

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■ This Stanley Steamer of the era appears substantially more primitive than the 1902 Knickerbocker. A virtue: It can "rush almost any grade."

who want a slow automobile after having ridden in a moderately fast one."

To which I can only add "amen."

Even in 1902, "A touring car should be capable of making from 30 to 35 miles per hour on a first-class level road." Recall this is about 10 times a brisk walking pace, perhaps five times that of a horse and buggy.

On the benefit of direct drive in top gear: "There is no necessity of having any gear wheels in motion at high speeds... a very considerable amount of power is wasted in driving two or more wheels in a bath of oil." Leonard continues, "This is really a well-known form of brake for consuming power in making tests." And, of course, here he's talking about the brake dynamometer, a device still used today to measure the output of an engine (and the reason for the term bhp, brake horsepower).

As for the electric car and its heavy battery: "Its weight is the principal matter to be considered in designing the car."

ON DEPRECIATION

"The most difficult one to judge beforehand," Leonard notes of depreciation, citing "the inability to get promptly from the manufacturers the interchangeable parts desired."

Recall, this was 1902, three years before a Society of Automobile Engineers (today's SAE International) took on the standardization of automotive parts. It was six years before Cadillac won the British Royal Automobile Club's Dewar Trophy. Its achievement in March 1908? Disassembling three Model K Cadillacs, scrambling their parts into a heap, even swapping 89 of the components with those from separate stock, then re-assembling the cars—and demonstrating that all three operated just fine.

Leonard gets positively jingoistic with this: "The foreign made car is, of course, the worst of all in this regard. It is usually out of the question to attempt to cable to the foreign maker, because he would probably not understand what you wanted, and if he did would pay no attention at all..." He cites experience with several French cars and says he'd pay a

50-percent premium for American iron.

Leonard's ordering of depreciation is gasoline, then steam (mainly boiler depreciation) and worst electric (you guessed it: "The storage battery, which is its chief defect").

ON ECONOMY

"The economy of the gasoline car is much greater than the steam car, and the economy of the steam car is again much higher than the electric car." Alas, Leonard's evidence focuses only on gasoline: "Recent tests in France have shown that a car... was driven on a first-class level road 30 miles with a consumption of 1 gallon of gasoline."

Hmm, 30 mpg, not bad for the mechanical inefficiencies of 1902.

His own experience: "...a light touring car, with four passengers, can be driven about 20 to 25 miles in average touring per gallon of gasoline. This means roughly about 12 cents per hour while touring or about 1–2 cents per mile."

Expanding a bit on his analysis, let's assume a touring speed of 20 mph (likely a bit high, but we are enthusiasts, after all). Taking his low estimate of 20 mpg, we get one gallon of gasoline per hour of touring. Hence, given his "about 12 cents per hour," Leonard must have been spending about 12¢/gal. for his gasoline. A handy Google-sourced Inflation Calculator pegs 12¢ in 1902 being worth \$2.98 today.

ON HILL CLIMBING

Leonard's ordering on hills is steam, gasoline and electric. He observes: "...the steam car has one great advantage. It can stop and get up a high steam pressure and then rush almost any grade."

I like that image of rushing the grade.

By contrast, "A gasoline touring car should have three speeds in order to get the proper application of the power to the conditions of usual touring."

Leonard makes no mention of an electric motor's generation of maximum torque from 0 rpm. On the other hand, electric cars of the era were designed to be sedate city transport and were not renowned for their performance.

ON APPEARANCE

Leonard's aesthetic sense, albeit without much discussion, sets his ordering as electric, gasoline and then steam.

"On this score," he observes, "little need be said except that the tonneau type of car, with motor forward, is rapidly becoming the favorite model for gasoline car, and even the steam cars abroad are now made this way.

"The most serviceable design will survive," he predicts, "and the public will all soon think it the best in appearance, even though it may not impress them so at first.

"To confirm this," Leonard suggests, "examine a picture of a locomotive of twenty years ago [i.e., 1882] which at the time was thought very fine and now looks ridiculous to us."

ON FIRST COST

In terms of increasing initial cost, Leonard orders them steam, gasoline and electric. Though he doesn't really analyze differences among technologies, his overall assessments strike a decidedly modern chord: "It is a surprising fact that the first cost seems to steadily go up both abroad and in this country. This is due to the fact that the expensive improvements added each year more than offset the savings due to reduction in cost of manufacture...."

Citing French car pricing, "a light touring car of first-class make for four passengers having about 8 horse power and weighing about 1300 pounds costs from \$1200 to \$1500." The Inflation Calculator is helpful again: Figure on this 1902 range being equivalent to \$30,000-\$35,000 today. To put this in perspective, the average new car price in 2010 was \$29,217.

Continues Leonard: "...the price of the best made cars is not likely to get much below this and the people who are waiting to get a first-class passenger car for about \$500 will never get it."

What with this equating to about \$12,500 today, a lot hinges on the defini-

tion of "first-class." What's more, Leonard couldn't have known of a fledgling automaker named Henry Ford, nor of the latter's Model T coming in only six years. With mass production, a 1916 Model T Runabout could be had for as little as \$345 (figure \$6850 in our dollars). By that time, more than half the cars in the world were Model T Fords.

ON NOISE & SMELL

"On the question of noise and smell, there is much more talk in this country than abroad." Is Leonard paralleling our 1970s' recognition of automotive emissions, a decade before Europe caught on?

No, actually his reasoning is along different lines. "This is due to the fact that the steam and electric cars are more common over here and were the first ones in the field in any considerable numbers." Leonard's ordering on noise and smell is based on this: electric best, then steam and last gasoline.

But then he cites "the doctrine of survival of the fittest" and observes "the bad smell of unburned gasoline vapor which is so familiar is to a large extent inexcusable and indicates an improper mixture or a defective ignition. Similarly there should be no smell from a properly designed and properly handled steam car."

Of course, no one in 1902 talked of dwindling energy resources, peak oil production—or OPEC. In fact, early refineries optimized for producing kerosene and lamp oil had been known to discard their excess higher distillates—gasoline!—into nearby streams. And matters of clean air were far from being crucial in any criteria of design.

Yet, observes Leonard darkly, "The electric car is free from any objectionable odor except when it is being charged, and the public knows very little about this."

Though his company built the gasoline Knickerbocker as well as an electric car under its own name, I get the impression that H. Ward Leonard had already seen his own particular automotive future. 

■ Studebaker, wagon and carriage maker since 1852, built its first car, this electric Runabout, in 1902. By 1904, it too had a gasoline model.



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LONG-TERM TEST



2011 Honda CR-Z

Powered by dichotomy

BY JONATHAN ELFALAN

PHOTOS BY BRIAN BLADES

A SHEEP IN WOLF'S CLOTHING? PAPER tiger? Such colloquialisms have come to mind regarding Honda's newest offering in the hybrid market. On paper, it's a car that splits the difference between "sport" and "economy" and unfortunately fails to impress in either. Yet strangely, after coming face to fascia with the CR-Z in the real world, we found charm in its bold design and likable character within its tidy, 2-seat

confines. Perhaps "compromise" is not such a heinous word after all? This is what we intend to sort out over the next year with one of 15,000 new CR-Zs Honda intends to sell in 2011. If that sounds like a relatively low number, it's because it is. Honda isn't planning to push Civic-level production volumes (i.e., 260,000 units) of CR-Z because they understand its special nature—the first step into a new niche—even though the price tag is pretty reasonable. For example, our top-line EX model that benefits from items such as automatic xenon headlights, a 7-speaker 360-watt sound system replete with subwoofer, Bluetooth and satellite navigation, among other extras, totals out to \$23,455.

At the heart of our CR-Z is Honda's proven Integrated Motor Assist (IMA) hybrid system that stacks an under-square 1.5-liter, single-cam inline-4 with a 10-kW DC brushless electric motor, which then backs up to a CVT

or, in our case, a clutch and short-throw 6-speed manual gearbox. This layout requires the electric motor to always spin with the crankshaft, though a voltage is not necessarily applied at all times, meaning you can run solely off the gasoline engine when prudent, but not the electric motor.

The engine/motor duo, in addition to having a start/stop fuel-saving function, produces a modestly augmented power curve that crests at 122 bhp at 6000 rpm with 128 lb.-ft. peaking at an extremely low 1000 rpm, which exploits the inherent torque characteristics of the electric motor. We did forfeit some mpg going sans CVT (31/37 city/highway versus 35/39), but what we lost in EPA-measured efficiency, we more than make up for with 5 extra lb.-ft. of torque and a closer connection with the car.

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High-tech instrument cluster glows blue in spirited driving, green with a light foot. There's plenty of content in this 2-seat hybrid Honda—everything from a touch-screen navigation display to the IMA electric motor system.

manual) accordingly, not to mention the glowing digital speedometer orb that morphs from green to blue to red within the tachometer.

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Trackside

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One for THE AGES

The centennial Indy 500 lived up to its billing

As the checkered flag fell over the Indianapolis 500 on May 29, a formation of U.S. Navy aircraft swept across the sky, bringing to a close the celebration of the 100th anniversary of the event.

In one of the most memorable—and unlikely—finishes in Indianapolis history, rookie J.R. Hildebrand saw victory slip through his fingers within sight of the checkered flag, reminding us that the keystone of auto racing is the constant uncertainty that swirls just beneath the surface.

❑❑ Dan Wheldon takes the win after J.R. Hildebrand crashed in Turn 4 of the last lap. Replays show that the winning pass occurred before the yellow came out.

It was a fitting conclusion to the first century of competition at IMS, capping off a two-year “Centennial Celebration” campaign. A wide range of commemorative events took place during the month, creating a unique and classic atmosphere for this year’s 500.

As the month got underway a couple of distractions had to be dealt with. The first was the bizarre decision of IMS officials to have Donald Trump drive the pace car; after a firestorm of controversy, Trump fired himself and Speedway officials selected Indy

legend A.J. Foyt to take his place. Then there was the weather; the wettest spring season in a century stole more than half of the allotted practice time.

When the skies eventually cleared, Canadian Alex Tagliani took the pole position for Sam Schmidt Motorsports, while the mighty Penske and Ganassi teams struggled. The competitors found themselves in a unique situation this year; the technical platform is quite mature, essentially unchanged since 2005. Contemporary equipment will be obsolete when

new specifications are implemented in 2012, leading to a fire sale of sorts. Nearly all of the older cars that could run were in play at this year’s 500, and with technical knowledge abundant the smaller teams found themselves in a rare bout of parity with well-heeled titans such as Penske and Ganassi.

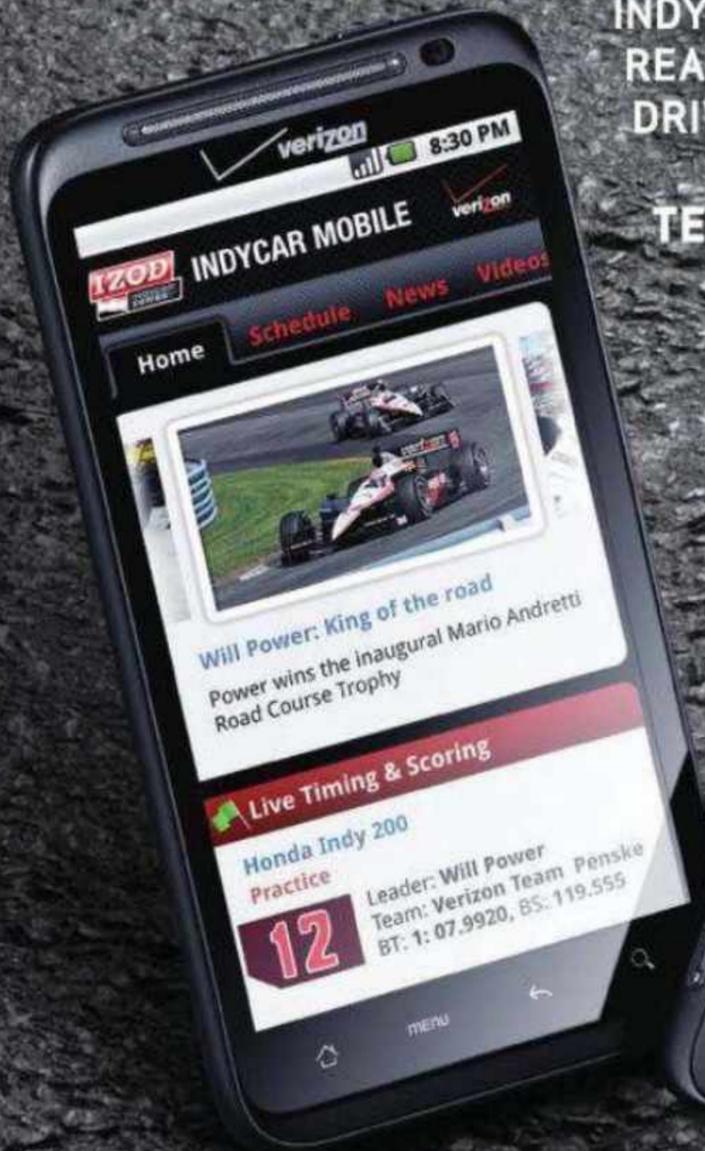
Amid the competition on the track, a host of functions offered a unique celebration of the history and tradition surrounding the 500. On opening day, a dazzling variety of vintage machines was displayed,

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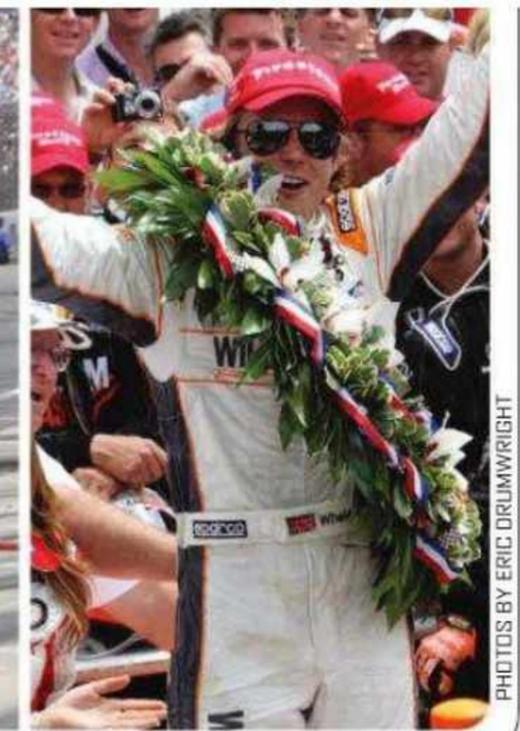
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PHOTOS BY ERIC DRUMWRIGHT

featuring more than 250 classic cars that included several Pebble Beach Concours winners. Another centerpiece was an exhibit of nearly 70 race winners from the IMS Hall of Fame museum, the largest such display in 500 history. Also, fans were treated to some eye-popping sights on race morning, as some of the most notable machines from the museum huffed and chugged around the oval in all of their 20th century glory—the highlight had to be the inaugural race winner, the famed Marmon Wasp with 1963 Indy 500 winner Parnelli Jones at the wheel.

Race day came with 90-degree temperatures and the largest crowd in recent years. They were treated to an unusual race that saw a subdued performance by the powerful Penske team, with none of their three cars finishing in the top 10.

The Target Chip Ganassi team struggled with fuel issues throughout the month; both Scott Dixon and Dario Franchitti ran out of fuel on their qualifying runs. But the team was strong on race day, with Dixon, Franchitti and Graham Rahal leading 130 of the 200 laps. In the late stages, both Dixon and Franchitti were in a position to

win, but fuel strategy again haunted the team. Franchitti followed his same winning strategy as 2010, pitting for what he thought was his final stop on lap 164. But his fate was sealed with a splash-and-go just one lap from the finish.

Dixon was leading when he made his final stop on lap 179. He looked to be in great shape to win, but suddenly came up short of fuel in the waning laps. Dixon seared the team's strategy in his post-race comments, calling it "complete stupidity." However, Ganassi team manager Mike Hull said they simply miscalculated by one fateful gallon. The gamble that didn't pan out was this: Without a caution flag over the final 35 laps, Dixon and Franchitti simply couldn't conserve enough fuel to finish.

As Franchitti and Dixon faded, a number of contenders emerged over the final five laps. None were as unlikely as Hildebrand; a bona fide "rookie" is historically not a winning candidate at Indianapolis. Like Franchitti, he had pitted on lap 164, but received enough ethanol to finish the race. When Hildebrand assumed the lead on lap 198, he had a lead of several seconds over Dan Wheldon...

■ Franchitti and Hildebrand both stopped on lap 164, but Dario wasn't topped-off under the assumption that there'd be a yellow in the last 35 laps. There wasn't, and while he had to pit for a splash, Hildebrand came within one turn of winning. At right: the Marmon Wasp.

and appeared to have the race in hand.

Then came the moment that will live forever in Indianapolis 500 lore. As he exited Turn 2, Hildebrand's spotter told him Wheldon was in the short chute between Turns 1 and 2. Between Turns 3 and 4, Hildebrand encountered the fourth Ganassi entry of Charlie Kimball, slowing dramatically as he sputtered out of fuel. This was an unwelcome surprise to both Hildebrand and his spotters; with no time to formulate a strategy, Hildebrand kept his foot on the throttle and moved outside to pass Kimball as they negotiated the fourth turn.

With a mass of humanity cheering him on, Hildebrand suddenly had the haunting realization that he was out of control. A similar move earlier in the race had worked perfectly; however, now he was on

PHOTO BY JIM HATFIELD



worn tires, and the lack of adhesion would seal his fate. The car skated across the racing surface, banging into the wall and damaging the front suspension. As the crowd looked on in complete shock, Wheldon whisked past to capture his second Indy 500 win.

Aside from the emotional agony, the miscue could be measured in real dollars. Wheldon collected more than \$2.5 million, while Hildebrand earned just over \$1 million for 2nd place. IMS officials later measured the point of impact from the finish line: 300 yards.

Another variable that brought additional chatter this year was the introduction of double-file restarts, a first at Indianapolis. The racing groove at Indy is narrow by any measure, and this change in procedure brought predictions of nothing short of the apocalypse. While no accidents were directly related to the change, post-race interviews brought

a distinct mixed bag of reactions. Several drivers felt they weren't a bad idea, while others were much more critical. Dixon, in fact, referred to them as "a joke."

The dramatic conclusion of the race seemed to validate the entire Centennial Celebration, a contemporary reminder of why this event is a cornerstone element of the American sports landscape. One hundred years is indeed a great milestone, particularly for what is widely considered the most important auto race in history.

IMS and IndyCar officials now must ponder some challenges for 2012. The new technical formula looms, with the inevitable questions of performance and economic viability. But auto racing is a resilient sport, able to navigate through nearly every type of calamity. The first century of competition at the Indianapolis 500 certainly proved that. —Dave Argbright

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THE PODIUM

**R&T GUEST EDITOR:
SEBASTIEN BOURDAIS**

A four-time CART champion and a two-time Le Mans runner-up, Sebastien Bourdais deftly balances a Peugeot factory ride with part-time IndyCar racing for Dale Coyne.

Indy to F1... and Back

I KNEW IT WASN'T GOING TO BE EASY TO COME BACK to IndyCar racing. U.S. teams are usually very loyal to their drivers, and they're not going to drop their own and sign someone else. So in early 2009, when I didn't know what was going to happen with Formula 1, I started making calls about IndyCar but most teams were already full. In 2010, Dale Coyne called me and we tried to put something together, but the timing wasn't right. My wife was expecting our second child, so I decided not to do it. Still, Coyne kept in touch and we came up with a deal for this season that's perfect for me because there's no conflict with Peugeot's Le Mans program.

Unfortunately, IndyCar has proved to be a lot harder than we would have liked. We basically had to start an entire program from scratch just before the start of the season. But I think we're heading in the right direction. We're still not where we want to be, but at least we made it into the fast 12 in Brazil. We seem to have a fairly decent car. And that's without going anywhere near a wind tunnel or even the seven-post shaker rig that tests a car's suspension. So I think we're making some progress, which is encouraging for the second part of our season.

But being an underdog like we are now makes

things very hard. I would have liked to have been a top-12 contender straight off and then be a top-6 contender even if we're not really a winning contender. Because being a winning contender is *quelle* difficult. But that's okay. When you're in a B-team car and you place in the first six, you feel pretty good about it. The level of satisfaction is relative to what your expectations are.

This season is a dip in the water. I'd love to get back to full-time IndyCar racing. But it needs to make sense for me financially because that means bringing the family back to the States and dropping Peugeot. Right now, I can kind of mix things, and I've always enjoyed that. I've done endurance racing, Formula 3, Formula 3000, Champ Car and even F1. My experience was one of the keys to my success in Champ Car.

When I arrived, people saw me as this 23-year-old kid. But I had driven so many cars, and every car has a different personality—it was all part of my database. When I actually made it to the top in open-wheel racing, I was ready.

As for F1, that's over. It's way over. I'm 32 years old now and I'm thankful for the opportunity I had, but I'm disappointed things didn't work out. When I tested the car in 2006, I told the Toro Rosso team, "You seem to think I did a good job, but I'm not good at driving the kind of car that you gave me right now." The car was loose as hell, and I hate cars that don't have a good back end. And they were like: "Oh, this is great. He knows what he wants, he's got the experience," and blah, blah. But when they

signed me for 2008 after I won my fourth Champ Car title, they said, "You're going to drive that car because we're not in charge of the development."

Initially, in 2008, it wasn't so bad because the car was a little flexible and you could do things with the setup. But the second car was my worst nightmare because it was the opposite of what I liked. It understeered like hell in quick corners and oversteered massively everywhere else. In the end, we got some aero updates, which changed the balance of the car, and the last seven races kind of saved my season. Still, it could have been so much better. F1 was not the way I wanted it to be, but I don't regret anything. It just wasn't meant to be. But now I've got a different career, and I'm enjoying it as much as I can.

"Being an underdog like we are now makes things very hard. I would have liked to have been a top-12 contender straight off..."



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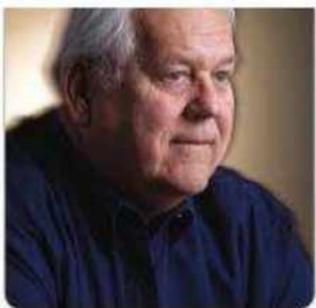


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TECH TIDBITS

BY DENNIS SIMANAITIS
ENGINEERING EDITOR

Pornography, Pot and Speed!

ON BIOMORPHS—AND “SELLING PORNOGRAPHY” IN AUTOMOTIVE DESIGN: Have you noticed how car designs occasionally pay homage to biological shapes? William Porter, retired stylist, GM Design, offered analyses of such automotive biomorphs at the annual gathering of SAE International. Being the symposium-whacko I am, I was there too.

Porter had a lot to share about marine biomorphs. Fins are an obvious example, he noted, “since we live in a huge sea of air.” More subtle is the BMW Vision, “...marine too, especially at the front and rear, but a bit of jet aircraft as well in its clipped edges.” Porter also recalls the BMW Gina, the active skin ripples of which reminded him of a shark in motion.

These mixed biomorphs have shapes that echo animals, plants, humans—and even humans in comic book form.

Spider-Man’s eyes, Porter observed, are showing up in a lot of headlight designs. He likened the Hyundai i-Mode’s grille textures to the random growth of coral formations. Also noteworthy is the Mazda3 front styling that reminded him of masks in Japanese Noh theater. “Brand consistency is rare today,” Porter noted, “but Mazda has it.”

Last, Porter joked about a critic who accused legendary GM design head Harley Earl of “selling pornography.” The

offending element? Buick’s hood ornament of the late 1940s.

I guess pornography, like beauty, is in the eye of the beholder.

9-SPEED TRANSMISSIONS: The automatic-transmission ratio war is escalating once more with German supplier ZF announcing development of a new 9-speed gearbox. Model year 2013 Chryslers are slated as a first application. These will be front-wheel-drivers with transverse engines and torque capacities no greater than 295 lb.-ft. Think compact and midsize cars that might have otherwise been fitted with continuously variable transmissions.

Generally, CVTs offer enhanced efficiency through optimizing engine rpm with road speed. Though continuous in ratio progression, they’re often designed with stepped operation. The point of these virtual “gear shifts” is to give a familiar feel and avoid perceptions of motorboating.

In a sense, adding ratios to a conventional automatic transmission works the other side of the street. A growing multiplicity of ratios counters two factors. Fuel economy regulations are getting increasingly stringent, and engine power is expected to level off. As with CVTs, more ratios make for more optimal matchups of torque and road speed.

Transaxle weight and overall dimensions of these new ZF designs are expected to be comparable to those of current almost ubiquitous 6-speed units, yet the company predicts double-digit percentage improvements in fuel economy. Some clever engineering here.

Mercedes-Benz is also developing a 9-speed for larger-displacement engines and rear-drive applications. Many of its current products have 7-speed automatics; indeed, the M-Class Hybrid has an 8-speed.

A scan of *Road & Track’s 2011 Car Buyer’s Guide* shows other 8-speed automatic transmissions fitted to various models of Audi, BMW, Lexus, Porsche and Rolls-Royce.



PHOTO BY JILL REGER

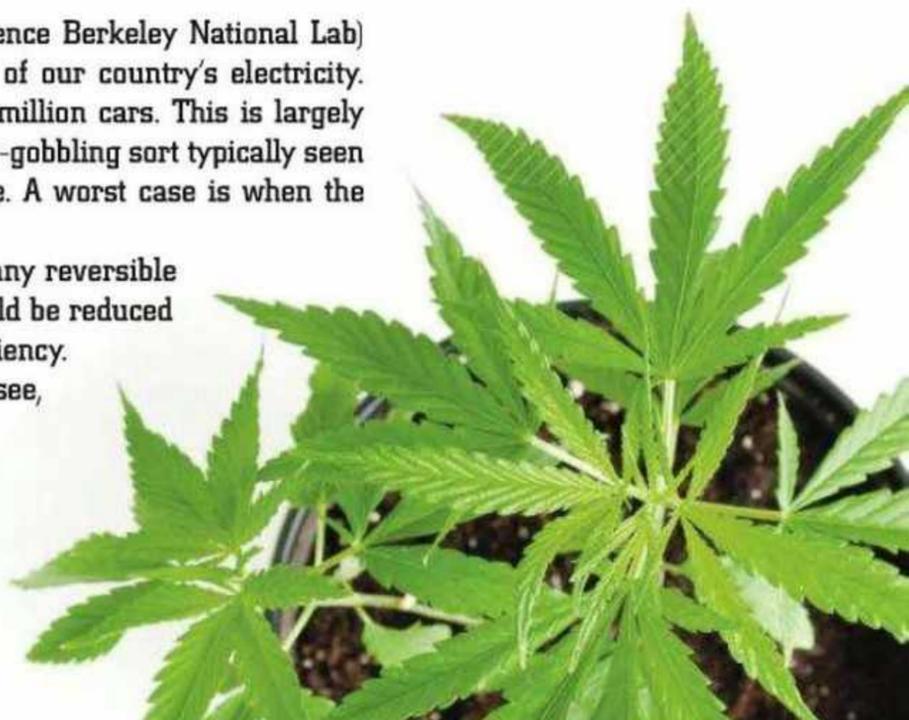
MARY JANE’S GREENHOUSE GASES = THREE MILLION CARS?:

Researcher Evan Mills (I stress: working independently of his day job at Lawrence Berkeley National Lab) has determined that indoor production of marijuana consumes about 1 percent of our country’s electricity. Said another way, this is equivalent to the greenhouse gas contribution of three million cars. This is largely because indoor cultivation of cannabis makes use of high-intensity lights, the power-gobbling sort typically seen in hospital operating rooms, as well as biotech clean-room levels of air exchange. A worst case is when the operation depends on diesel- or gasoline-fueled off-grid power generation.

In arguing neither for nor against marijuana use, Mills makes the point that many reversible inefficiencies are part of current cultivation. He senses that its carbon footprint could be reduced by 75 percent, simply by following conventional market practices of enhanced efficiency.

What’s more, all this apparently translates into big business in California, Tennessee, Kentucky, Hawaii and Washington, these considered the top five production states. In fact, some say cannabis has long been the largest cash crop in the U.S.—ahead of corn, soybeans and hay.

Now if we can only figure an efficient way to use the roaches for biofuel. 🐞





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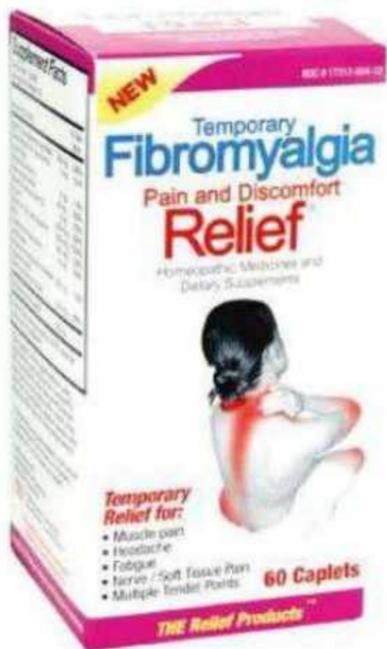
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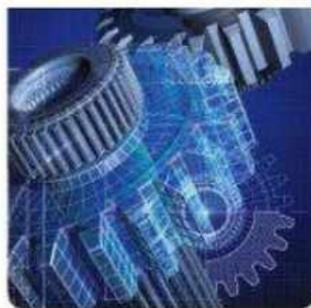
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TECH ADVICE

BY TOM WILSON

Real-Time Answers

MEASURING MILEAGE: Our 2005 Chevrolet Corvette, which we purchased new, has a real-time display of instantaneous gas mileage and to-date average gas mileage. Since we bought the car it has averaged about 24 mpg. How is the gas mileage measured and how accurate is it?

Barry Bodhaine
Marana, Arizona

In-car mileage displays compute mileage using information from the vehicle speed sensor and the injector dwell time—the time the fuel injectors are open. It's an elegantly simple system requiring no additional hardware and is quite accurate.

ELECTRIC SUPERCHARGERS: I have a car with a little 2.5-liter motor that could use a little extra push off the line. A while ago I stumbled upon an "electric supercharger" while on eBay and a couple of other sites. Looking around, there were several designs of the electric supercharger. I'd put money on it that some of them are just exhaust fans off of a boat, while others appear to be more "real." Reading a couple of forums, some people thought they were bogus while others were believers. I don't know if anyone has ever done a comparison test or used one. I would appreciate your input on the subject.

Justin Harper-Smith
Taylorsville, Utah

After reading your letter we took a quick cruise around the internet looking up "electric supercharger." The results did not impress us.

After sampling and dyno testing perhaps 50 different supercharger installations from ATI, Edelbrock, Kenne Bell, Paxton, Powerdyne and Vortech for more than 20 years, we've come to understand the drive power, airflow and tuning requirements of effective supercharging, and the electric blowers we found on the internet don't measure up in any of these categories.

To address just one of these points, even a small, low-output and yet efficient supercharger requires a minimum 20 bhp of input to move sufficient air to matter in a small-displacement automotive engine. Higher-output street superchargers easily consume 70-plus bhp, and the giant, super high-output blowers on dragsters require many hundreds of horsepower to drive them. We see nothing approaching even the most modest of these power levels in the electric supercharger offerings. Compare them to a 25-hp electric motor on an industrial fan and you'll see what we mean.

Furthermore, the general tone, presentation and vocabulary used in marketing electric superchargers make us want to clutch our wallet. The lack of airflow or dyno testing is also a red flag in our book. Knocking over an 18-in. section of 2x6 board with what looks like a bilge blower is not scientific testing.

"If you're looking for the most cost-effective increase in acceleration, consider lower final-drive gearing..."

If you are looking for the most cost-effective increase in acceleration, consider lower final-drive gearing. If that is not easily done, then super- or turbocharging is next. Nitrous oxide injection is also very cost effective, but most people soon tire of its management requirements. Swapping to a larger engine is also good Rx for tepid standing-start acceleration, too.

AUDI CERAMIC BRAKE PADS: I was thinking of purchasing ceramic brake pads for my Audi A3 but was told ceramic pads have to heat up before they offer optimal stopping power. Is this true? If so, how long would it take for the pads to heat up? Should they not be used on daily driven vehicles?

Cory Lippert
North Wales, Pennsylvania

As StopTech pointed out to us when we called regarding their ceramic pad offerings: "There isn't anything definitive about a ceramic pad. If there is any ceramic content in a pad, the manufacturer can just call it 'ceramic'; there's nothing consistent about the word 'ceramic' in a brake pad."

Having once, courtesy of Baer Brakes, played with brake pad formulations at Roulands in Denmark, we must agree. Mind-numbing combinations of ingredients are available to the brake pad designer, seemingly ranging from sawdust to lathe turnings, with a bit of glass, a touch of molybdenum and eyebrow of newt tossed in for good luck. So yes, one ceramic pad is not quite like the other.

That said, the common ceramic formulations offered in street-car brake pads tend toward low dust, low noise and good initial bite. That is, light brake pressure from the driver gains aggressive initial braking action. Reassuring stuff for the around-town driver says StopTech, and definitely not a warm-up issue as you asked.

Interestingly, ceramic brake pads are not noted for their high heat threshold. As the folks at StopTech put it: "If you're driving a dump truck in the mountains, they're not a great idea."

So, in contrast to your warm-up concerns, it seems that the typical ceramic street brake pad is well suited to casual or occasional heavy use applications where there is sufficient cool-off time between those periods of heavy braking.

DO YOU HAVE A TECHNICAL QUESTION?

Send it to RTletters@hfmus.com, or Tech Advice, Road & Track, 1499 Monrovia Ave., Newport Beach, Calif. 92663.

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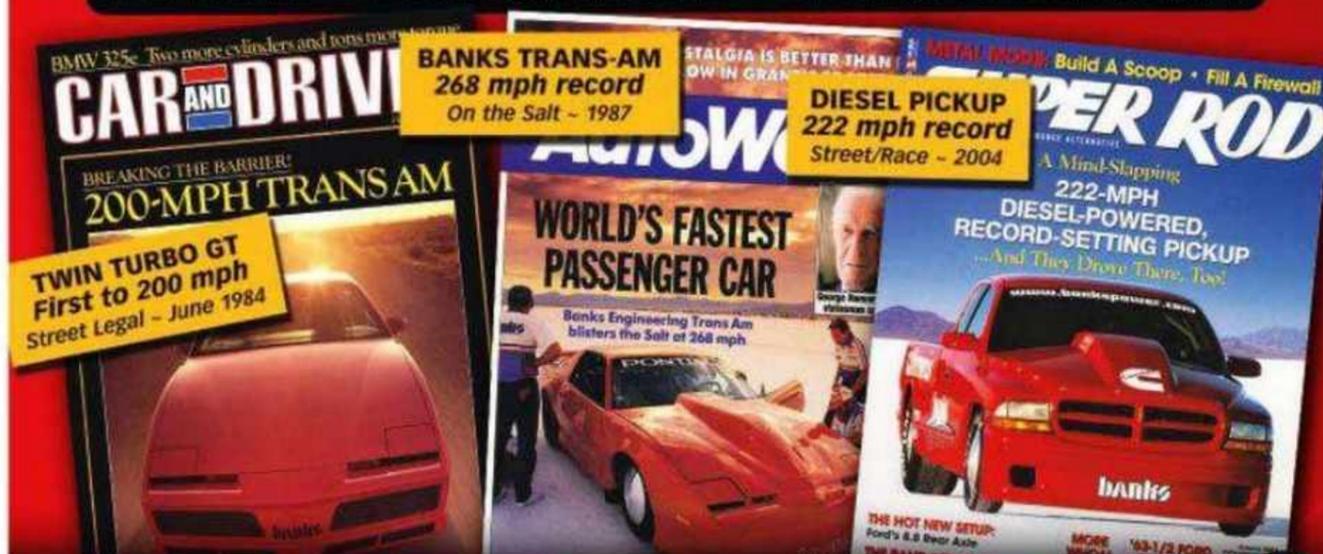
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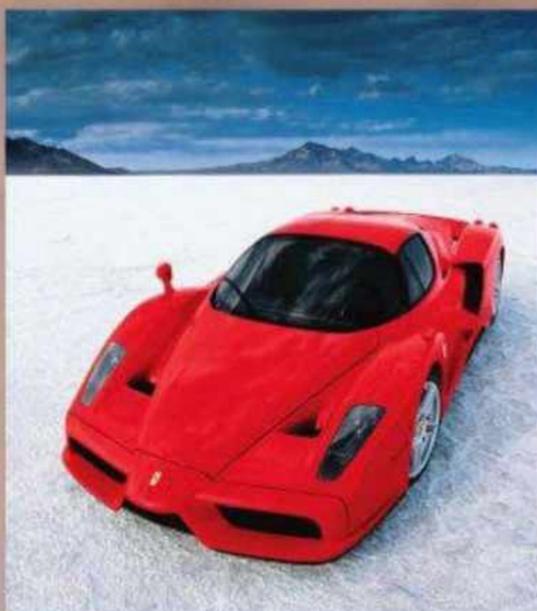
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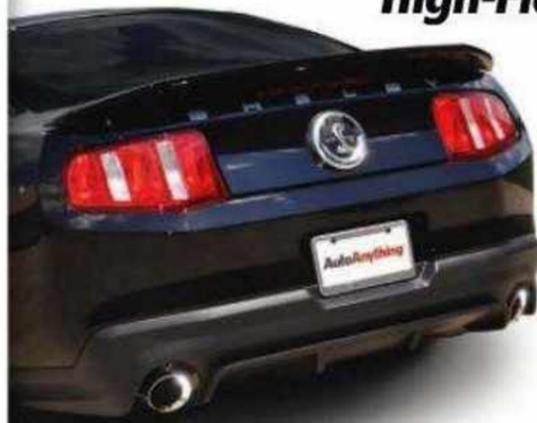


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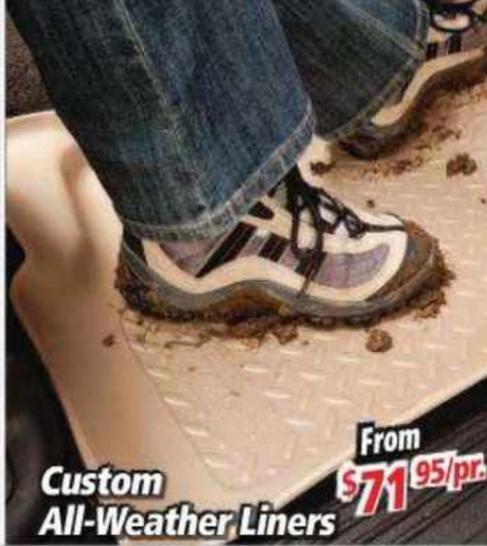
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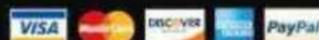


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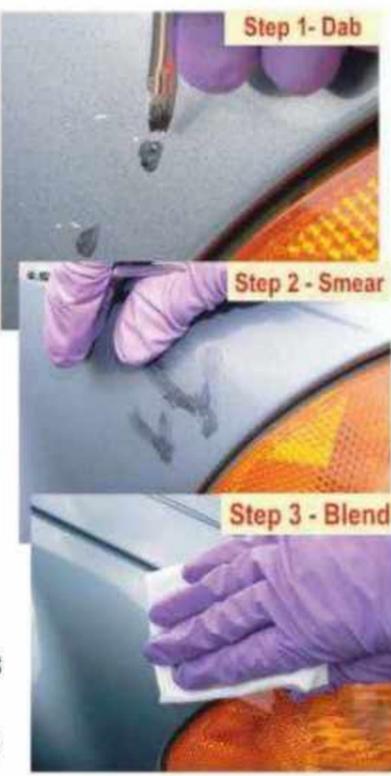
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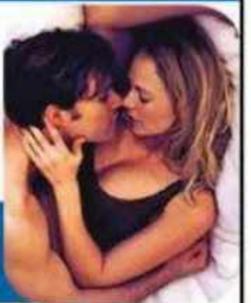
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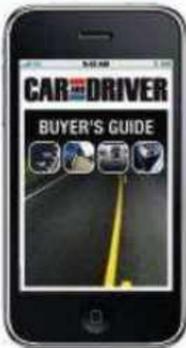
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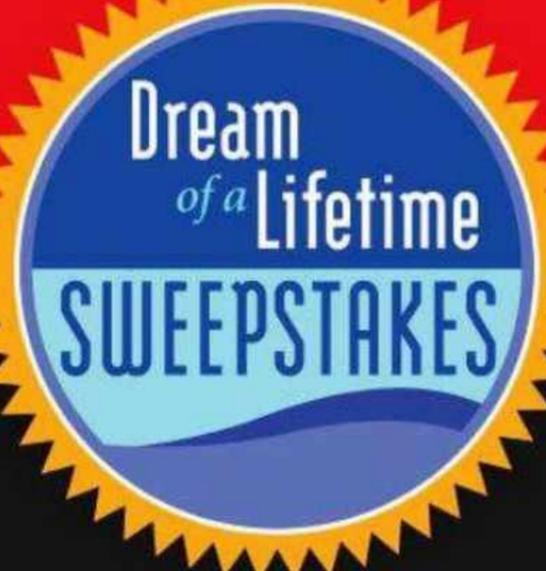
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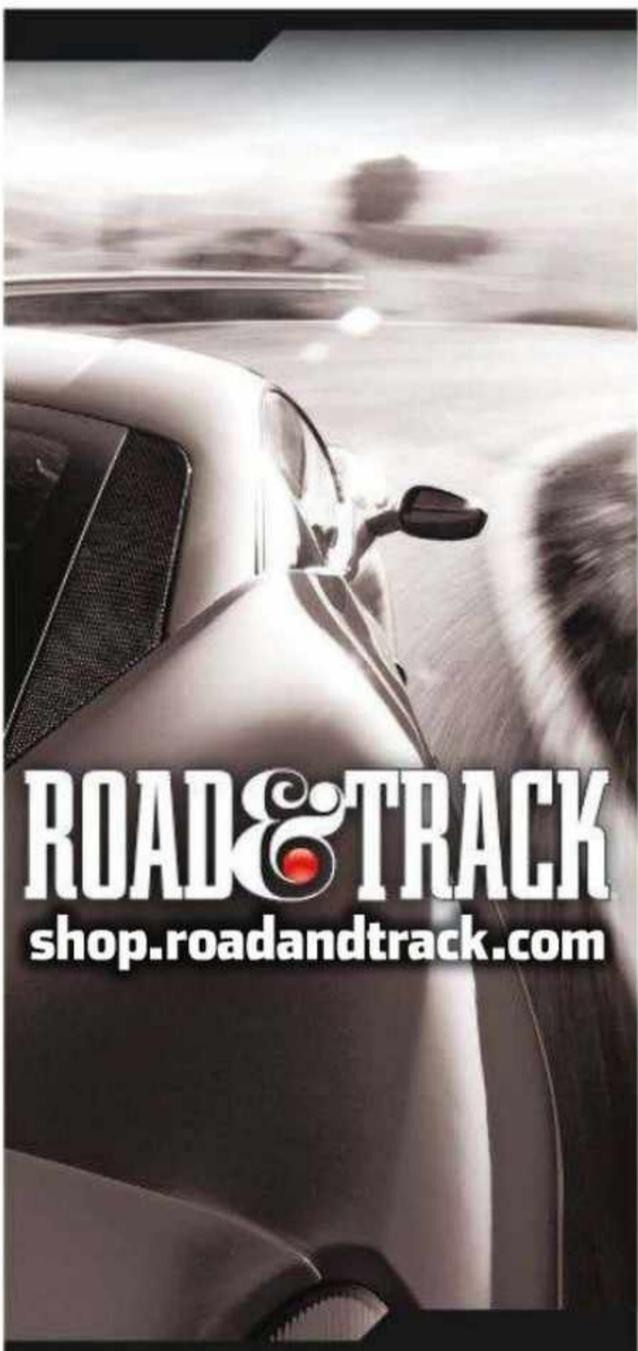


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ROAD TEST SUMMARY

ROAD TEST LEADERBOARD

0-60 MPH

	sec
1 Bugatti Veyron 16.4	2.6
2 Porsche 911 Turbo S	2.6
3 Lamborghini Murciélago LP670 SV	2.8
4 Nissan GT-R	2.9
5 Ferrari 458 Italia	3.0

1/4 MI

	sec @ mph
1 Bugatti Veyron 16.4	10.2 @ 142.9
2 Saleen S7 Twin Turbo	10.6 @ 139.8
3 Porsche 911 Turbo S	10.7 @ 128.9
4 Lamborghini Murciélago LP670 SV	10.9 @ 129.4
5 Lamborghini Gallardo Superleggera	11.0 @ 128.9

SKIDPAD

	g
1 Dodge Viper SRT10 ACR	1.12
2 Chevrolet Corvette Z06	1.06
3 Rossion Q1	1.06
4 Callaway Corvette SC606	1.05
5 Chevrolet Corvette ZR1	1.04

SLALOM

	mph
1 Porsche 911 GT3 RS	77.5
2 Porsche 911 GT2	75.9
3 Nissan GT-R	75.4
4 Chevrolet Corvette ZR1	74.9
5 Porsche Boxster Spyder	74.6

Data apply to the model at the time (issue date) of testing. Legend: For engine types, I is an inline design, F is a flat; V and W describe cylinder configurations; the number following the letter is the number of cylinders. An additional letter, a "t" or an "s" designates turbo- or supercharging; "d" designates diesel; "FC" designates fuel cell; "Elec" designates electric motor; **boldface**=extremes in that particular category, excluding nonproduction cars; **yellow** = newest entries; na=not available, na/U.S.; "CL" Car Life magazine; ¹automatic transmission; ²comparison test; ³price at time of test, some estimated; ⁴estimated; ⁵electronically limited; ⁶DIN bhp; ⁷from previous test; ⁸altitude-affected; ⁹aero-limited; ¹⁰Road Test Update.

INTERPRETING THE NUMBERS: Factors that affect test numbers include air temperature, barometric pressure, condition of track surface, tune of test car. When comparing cars' performances, look for the **Significant differences** in each category, as listed below. This is the amount of difference that is meaningful.

WEIGHT of a car is generally accurate to **within 1 percent**.

ACCELERATION numbers are obtained using drop-clutch starts and lift-throttle shifts.

Significant difference: 0-60 mph, 0.3 sec.; 1/4 mile, 0.5 sec.

TOP SPEED is typically as reported by the manufacturer, but occasionally we measure it on a closed test track.

Significant difference: 5.0 mph.

BRAKING distances are initiated when the pedal is touched, and just enough effort is used to avoid wheel locking; on cars equipped with anti-lock braking systems, the ABS is fully invoked.

Significant difference: 60-0 mph, 10 ft.; 80-0 mph, 15 ft.

HANDLING is quantified two ways: The skidpad measures steady-speed cornering grip around a 200-ft.-diameter circle (run in both directions). The slalom, run through eight cones spaced at 100-ft. intervals, samples both controllability and grip during transient handling.

Significant difference: Skidpad, 0.02g; slalom, 1.0 mph.

Our FUEL MILEAGE is measured largely during urban driving and typically falls between EPA's city and highway estimates.

Significant difference: 0.5 mpg.

MAKE & MODEL	ISSUE	PRICE AS TESTED ³	ENGINE TYPE	HORSEPOWER, SAE	TORQUE, LB-FT	CURB WEIGHT, LB	0-60 MPH, SEC	0-100 MPH, SEC	1/4 MILE, SEC @ MPH	TOP SPEED, MPH ⁴	BRAKING 60-0 MPH, FT	BRAKING 80-0 MPH, FT	SKIDPAD, G	SLALOM, MPH	OUR FUEL MILEAGE, MPG
Acura TL SH-AWD	5-10 ²	\$44,195	V-6	305	273	3860	5.2	13.1	13.7@102.3	130 ⁵	113	198	0.91	68.4	15.8
Ameritech McLaren F1	12-97	\$1,131,120	V-12	627	479	2840	3.4	7.7	11.6@125.0	231	127	215	0.86	64.5	11.5
Aston Martin Rapide ¹	9-10	\$212,445	V-12	470	443	4385	4.7	10.9	13.1@109.5	188	119	214	0.92	69.7	12.0 ⁴
V8 Vantage Roadster	4-10 ^{10,2}	\$157,630	V-8	420	346	3775	4.5	10.2	12.8@113.3	180 ⁵	119	211	0.95	72.5	10.9
V12 Vantage Coupe	1-11 ²	\$193,755	V-12	510	420	3800	4.3	9.3	12.5@116.8	190 ⁵	106	187	0.98	73.7	13.4
Audi A5 2.0T Quattro	4-10 ¹⁰	\$45,150	I-4t	211	258	3645	6.2	16.4	14.8@95.2	130 ⁵	118	204	0.94	68.9	21.3 ²
A8 ¹	12-10	\$92,925	V-8	372	328	4395	4.8	12.1	13.4@105.4	130 ⁵	113	200	0.88	68.7	18.0 ⁴
R8 5.2 FSI	1-11 ²	\$170,350	V-10	525	391	3725	3.7	8.4	11.9@118.7	196	112	199	0.97	72.9	13.6
S4 Quattro	5-10 ²	\$58,675	V-6s	333	325	4010	4.5	11.0	12.9@108.6	155 ⁵	114	202	0.96	70.1	14.4
TTS ²	11-09	\$52,075	I-4t	265	258	3235	4.6	11.8	13.2@105.2	155 ⁵	115	202	0.98	72.0	19.9
Bentley Cont. Flying Spur Spd ¹	8-10 ²	\$226,485	W-12tt	600	553	5575	4.3	11.0	12.9@108.5	201	116	202	0.90	61.2	14.1
Continental GT ¹	7-11 ¹⁰	\$215,675	W-12tt	567	516	5305	4.3	10.4	12.8@111.3	198	117	207	0.89	65.4	13.0 ⁴
BMW 335is	3-11 ¹⁰	\$57,450	I-6tt	320	332	3560	4.6	11.2	13.2@106.2	150 ⁵	116	204	0.93	69.0	19.0 ⁴
550i	3-11	\$68,525	V-8tt	400	450	4410	5.0	11.4	13.4@106.8	150 ⁵	125	218	0.88	66.0	17.8
550i Gran Turismo ¹	7-10 ¹⁰	\$74,025	V-8tt	400	450	4720	5.1	11.6	13.4@106.5	150 ⁵	122	220	0.89	66.7	16.0 ⁴
750i ¹	10-10 ²	\$95,725	V-8tt	400	450	4600	4.9	11.3	13.3@108.0	155 ⁵	119	210	0.89	68.2	14.9
Bugatti Veyron 16.4	2-07	\$1,482,700	W-16qt	1001	922	4470	2.6	5.5	10.2@142.9	253	111	199	0.94	68.0	9.0 ⁴
Buick Regal CXL ¹	2-11 ¹⁰	\$35,380	I-4t	220	258	3600	7.4	18.6	15.7@92.1	149	131	238	0.83	65.4	20.5
Cadillac CTS-V Coupe	1-11 ¹⁰	\$69,585	V-8s	556	551	4210	4.3	9.9	12.6@114.8	191	115	201	0.91	69.7	15.0 ⁴
CTS-V Sport Wagon	3-11 ¹⁰	\$70,1885	V-8s	556	551	4510	4.3	9.9	12.6@114.5	190	116	204	0.88	70.4	17.8
Callaway Corvette SC606	9-10	\$116,560	V-8s	606	553	3445	3.8	7.8	11.8@125.3	205	106	193	1.05	74.2	16.0
Chevrolet Camaro SS Conv.	7-11 ²	\$42,180	V-8	426	420	4190	4.8	11.0	13.1@109.3	155 ⁵	116	203	0.89	68.4	16.7
Corvette Grand Sport	2-10 ¹⁰	\$68,365	V-8	436	428	3360	4.1	9.2	12.4@116.5	190 ⁵	112	197	0.96	70.7	17.0 ⁴
Corvette Z06	1-11 ²	\$98,010	V-8	505	470	3305	3.6	8.2	11.9@123.5	193	114	199	1.06	74.1	16.9
Corvette ZR1	6-10 ²	\$121,425	V-8s	638	604	3365	3.5	7.3	11.5@128.7	205	112	194	1.04	74.9	14.0
Cruze Eco	5-11 ¹⁰	\$19,745	I-4t	138	148	3050	8.1	23.1	16.2@86.8	130 ⁵	134	235	0.84	67.3	37.7
Volt ¹	2-11 ²	\$43,485	I-4/Elec	149	273	3825	8.8	28.1	16.8@82.8	101 ⁵	127	231	0.79	62.6	50.0 ⁴
Dodge Challenger SRT8 392	5-11 ²	\$44,380	V-8	470	470	4350	4.6	10.8	13.0@109.8	180	117	198	0.90	68.7	15.0
Charger R/T ¹	4-11	\$39,235	V-8	370	395	4410	5.2	12.7	13.7@104.2	145 ⁵	119	209	0.87	67.8	17.0
Viper SRT10 ACR	4-08 ¹⁰	\$98,110	V-10	600	560	3430	3.4	8.0	11.6@122.6	177 ⁶	109	187	1.12	73.4	na
Ferrari California	2-10	\$200,822	V-8	453	358	3925	3.5	8.6	11.9@116.9	193	106	188	0.96	69.2	14.0 ⁴
Enzo	7-03	\$652,830	V-12	650	485	3230	3.3	6.6	11.1@133.0	218	109	188	1.01	73.0	13.3
458 Italia	12-10 ²	\$280,572	V-8	570	398	3490	3.0	6.7	11.0@128.5	203	112	190	1.00	73.4	13.5
Ford Fiesta SES 5-Door	11-10 ¹⁰	\$19,305	I-4	120	112	2580	9.7	33.2	17.2@80.6	118 ⁵	138	241	0.82	62.2	30.0 ⁴
GT	12-03	\$150,525	V-8s	500	500	3390 ⁴	3.8	8.8	12.2@121.6	190	117	199	0.99	69.5	15.0 ⁴
Mustang Boss 302 LS	5-11	\$47,990	V-8	444	380	3690	4.1	9.1	12.3@117.2	155 ⁵	112	191	1.02	74.0	16.7
Mustang GT Convertible	7-11 ²	\$42,585	V-8	412	390	3745	4.7	10.8	13.1@110.7	145 ⁵	116	203	0.91	69.1	17.0
Shelby GT500	10-10 ¹⁰	\$55,537	V-8s	550	510	3820	4.4	9.2	12.6@118.9	155 ⁵	117	197	1.00	69.6	16.0 ⁴
Taurus SHO ¹	12-09 ²	\$42,985	V-6tt	365	350	4285	5.2	12.8	13.6@103.2	131 ⁵	122	216	0.88	64.8	17.5
Hennessey HPE700 Camaro	4-10	\$125,000	V-8s	725	741	3930	4.1	8.0	12.0@125.4	201	117	204	0.92	71.0	11.0 ⁴
HKS Nissan GT-R	10-10 ¹⁰	\$107,000	V-6tt	638	606	3900	3.0	6.8	11.1@128.9	195	122	205	0.97	73.8	na
Honda Accord V6 EX-L Coupe	1-11 ¹⁰	\$32,480	V-6	271	251	3475	6.2	15.7	14.8@96.8	130 ⁵	138	225	0.84	62.9	18.0 ⁴
CR-Z EX	12-10 ¹⁰	\$22,560	I-4/Elec	122	128	2654	8.6	24.7	16.4@83.7	123	128	226	0.82	66.8	32.0 ⁴
FCX Clarity ¹	5-09	\$600/mo.	FC	134	189	3575	8.6	27.3	16.8@84.3	100 ⁵	129	241	0.82	64.1	na
Hyundai Genesis Coupe Track	6-09 ²	\$30,345	V-6	306	266	3470	5.7	14.7	14.4@99.1	149 ⁵	118	211	0.90	69.3	18.0 ⁴
Sonata SE 2.0T ¹	4-11 ¹⁰	\$25,000	I-4t	274	269	3450	6.1	14.6	14.5@99.6	146 ⁵	131	231	0.83	65.9	23.0 ⁴
Infiniti G25 ¹	4-11 ¹⁰	\$34,225	V-6	218	187	3515	7.7	19.5	15.7@90.2	145 ⁵	124	223	0.87	65.9	21.0 ⁴
G37S Sport	5-10 ²	\$40,085	V-6	328	269	3665	5.1	12.3	13.6@105.6	155 ⁵	117	210	0.90	67.8	16.6
M56 ¹	1-11 ²	\$68,145	V-8	420	417	3930	4.6	11.0	13.1@108.7	155 ⁵	121	214	0.87	66.7	17.9
Jaguar XFR ¹	6-11 ^{2,10}	\$80,475	V-8s	510	461	4425	4.3	9.7	12.6@114.0	155 ⁵	116	204	0.86	67.2	17.1
XJL Supercharged ¹	11-10	\$90,500	V-8s	470	424	4350	4.4	10.2	12.8@112.3	155 ⁵	117	202	0.87	64.8	15.3
Kia Forte Koup SX	6-10 ¹⁰	\$20,090	I-4	173	168	2920	6.9	18.9	15.4@92.3	130 ⁵	125	220	0.89	67.2	23.0 ⁴
Optima Turbo ¹	5-11 ¹⁰	\$30,840	I-4t	274	269	3595	6.1	14.7	14.5@99.4	146 ⁵	135	239	0.81	65.6	23.0
Lamborghini Gallardo Balboni	11-09	\$255,295	V-10	550 ⁶	398	3210 ⁴	3.5	7.5	11.5@126.7	199	115	200	0.95	72.5	13.0 ⁴

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AUTO SHOW GUIDE

for iPhone®

MAKE & MODEL	ISSUE	PRICE AS TESTED ³	ENGINE TYPE	HORSEPOWER, SAE	TORQUE, LB-FT	CURB WEIGHT, LB	0-60 MPH, SEC	0-100 MPH, SEC	1/4 MILE, SEC @ MPH	TOP SPEED, MPH ⁴	BRAKING 60-0 MPH, FT	BRAKING 80-0 MPH, FT	SKIDPAD, G	SLALOM, MPH	OUR FUEL MILEAGE, MPG
Mercedes-Benz C63 AMG ¹	6-08 ²	\$63,930	V-8	451	443	3920	4.1	9.7	12.5@114.4	155 ⁵	113	201	0.93	69.3	15.1
C350 Sport ¹	9-07	\$44,500	V-6	268	258	3630	5.8	14.8	14.3@98.2	130 ⁵	135	241	0.81	63.8	21.0 ⁴
CL550 4Matic¹	7-11	\$128,315	V-8tt	429	516	4775	4.2	10.3	12.7@111.5	130 ⁵	121	209	0.89	66.6	16.0 ⁴
E63 AMG ¹	6-10 ¹⁰	\$93,075	V-8	518	465	4285	4.1	9.5	12.5@115.1	155 ⁵	119	207	0.92	68.2	15.0 ⁴
E550 ¹	1-11 ²	\$69,625	V-8	382	391	4150	4.6	11.3	13.1@107.9	130 ⁵	120	212	0.86	65.1	17.4
E550 Coupe ¹	9-09	\$67,225	V-8	382	391	3810	4.7	11.1	13.1@108.9	130 ⁵	137	252	0.84	63.2	15.7
SL63 AMG ¹	4-10 ^{10,2}	\$143,460	V-8	518	465	4420	4.0	9.5	12.4@115.3	186 ⁵	120	211	0.89	66.6	10.0
SL65 AMG Black Series ¹	3-09	\$304,350	V-12tt	661	738	4215	3.9	7.9	11.8@126.3	199 ⁵	112	192	0.99	70.3	14.2
SLR McLaren ¹	7-05	\$455,750	V-8s	617	575	3860	3.5	7.5	11.5@126.1	207	107	186	0.97	69.6	18.0 ⁴
SLS AMG ¹	7-10	\$202,150	V-8	563	479	3795	3.6	7.7	11.6@124.3	197 ⁵	112	194	0.96	71.8	10.8
Mini Cooper S	11-07 ²	\$28,850	I-4t	172	177	2665	6.4	17.7	15.0@92.6	139 ⁵	122	214	0.85	67.9	29.8
John Cooper Works	2-09	\$31,450	I-4t	208	192	2655	6.0	14.8	14.4@98.9	147 ⁵	121	210	0.91	71.3	27.0 ⁴
Mitsubishi Eclipse GT	8-07 ²	\$27,694	V-6	263	260	3570	5.9	14.7	14.5@99.3	148	121	217	0.84	63.9	19.6
Lancer Evolution GSR	6-11 ^{2,10}	\$34,755	I-4t	291	300	3600	4.3	11.5	13.0@106.2	162 ⁵	123	210	0.97	70.0	16.5
Lancer Evolution SE	3-11 ^{2,10}	\$36,550	I-4t	291	300	3625	4.5	12.0	13.2@104.3	162 ⁵	119	207	0.97	70.2	15.0 ⁴
Lancer Ralliart	11-08 ²	\$29,915	I-4t	237	253	3540	5.4	15.1	14.1@97.2	130 ⁵	129	227	0.84	66.7	17.3
Nissan GT-R	5-11 ¹⁰	\$89,950	V-6tt	530	448	3965	2.9	7.1	11.1@124.3	197	114	189	1.00	75.4	17.4 ⁴
Juke SV	12-10 ¹⁰	\$21,810	I-4t	188	177	2925	7.1	18.6	15.6@91.4	125 ^{4,5}	133	238	0.84	67.3	25.0 ⁴
Leaf SL-E ¹	2-11 ²	\$35,430	Elec	107	207	3415	9.4	na	17.2@79.0	92 ⁵	130	231	0.81	65.5	118.0 ⁴
Maxima 3.5 SV ¹	9-08	\$34,940	V-6	290	261	3610	6.1	15.4	14.6@97.7	149 ⁵	121	219	0.86	65.4	18.8
Nismo 370Z	9-09 ¹⁰	\$39,540	V-6	350	276	3300	5.0	12.0	13.5@106.6	155 ⁵	123	214	0.93	69.9	19.0 ⁴
370Z Touring	6-11 ^{2,10}	\$41,895	V-6	332	270	3425	4.9	11.9	13.4@106.8	155 ⁵	118	201	0.99	72.0	18.6
Porsche Boxster Spyder	3-10	\$79,210	F-6	320	273	2940	4.4	10.4	12.8@109.6	166 ⁵	112	202	1.02	74.6	19.0 ⁴
Carrera GT	6-04	\$460,400	V-10	605	435	3530 ⁴	3.6	7.0	11.3@131.6	205	124	199	0.99	71.1	11.0 ⁴
Cayenne S ¹	6-11 ¹⁰	\$78,895	V-8	400	369	4555	5.6	14.1	14.1@100.1	160 ⁵	116	200	0.89	66.2	15.0 ⁴
Cayman S	9-10 ²	\$70,915	F-6	320	273	3100	4.6	10.6	12.9@108.8	172 ⁵	117	204	1.00	72.6	20.9
Panamera ¹	2-11 ¹⁰	\$101,669	V-6	300	295	4105	5.4	13.6	14.0@101.4	160 ⁵	113	196	0.96	71.2	19.0 ⁴
Panamera Turbo	12-09	\$153,615	V-8tt	500	516	4635	3.4	8.4	11.7@118.0	188	116	204	0.96	69.1	16.3
911 Carrera GTS	3-11 ¹⁰	\$113,605	F-6	408	310	3380	3.8	9.0	12.1@115.4	188	109	192	0.95	72.6	21.9
911 GT2	12-08	\$198,875	F-6tt	530	501	3265	3.4	7.7	11.5@123.9	204	108	187	1.03	75.9	15.0 ⁴
911 GT3 RS	3-11 ¹⁰	\$151,980	F-6	450	317	3190	3.7	8.0	11.8@122.6	193	108	187	1.04	77.5	16.6
911 Speedster	3-11 ¹⁰	\$204,950	F-6	408	310	3520	3.9	9.2	12.2@114.6	190	111	192	0.97	73.4	19.4
911 Turbo	6-10 ²	\$149,370	F-6tt	500	480	3535	3.5	7.9	11.7@121.8	194	112	195	1.01	73.0	16.0
911 Turbo S	1-11 ²	\$162,460	F-6tt	530	516	3590	2.6	6.3	10.7@128.9	195	107	185	1.02	73.3	15.1
Rolls-Royce Ghost ¹	8-10 ²	\$308,350	V-12tt	563	575	5495	4.7	10.2	12.9@114.3	155 ⁵	119	209	0.85	60.1	16.5
Phantom ¹	8-06 ¹⁰	\$346,650	V-12	453	531	5810	5.9	15.3	14.5@97.4	149 ⁵	123	219	0.77	57.9	11.7
Rosion Q1	1-10	\$108,151	V-6tt	450	390	2675	3.2	7.8	11.6@121.6	185	130	217	1.06	73.0	18.0 ⁴
Saleen S7 Twin Turbo	9-06 ¹⁰	\$602,442	V-8tt	750	700	2900 ⁴	3.3	6.0	10.6@139.8	250	119	210	1.03	69.9	13.0 ⁴
Shelby GT350	5-11 ²	\$82,658	V-8s	624	540	3950 ⁴	4.2	9.2	12.4@116.7	155 ⁵	117	207	0.99	69.2	14.0 ⁴
GT500 Super Snake	12-07	\$70,670	V-8s	605	590	3915	4.4	9.1	12.5@119.9	150 ⁵	118	204	0.93	68.4	15.6
Smart For Two passion coupe	3-08	\$15,625	I-3	70	68	1825	13.3	na	19.2@70.5	90 ⁵	130	230	0.72	57.6	32.0 ⁴
Spyker C8 Spyder	3-07	\$296,785	V-8	400	354	2985	4.4	10.3	12.7@112.0	160	120	204	0.92	67.1	18.0
Subaru Impreza WRX	11-08 ²	\$28,660	F-4t	265	244	3230	5.1	13.5	13.8@101.0	140 ⁵	124	221	0.87	67.0	22.2
Impreza WRX STI Limited	3-11 ^{2,10}	\$39,870	F-4t	305	290	3455	4.9	13.3	13.4@100.6	155	119	211	0.91	70.9	16.0 ⁴
Legacy 2.5GT Limited	5-10 ¹⁰	\$34,146	F-4t	265	258	3500	5.8	15.2	14.3@97.2	150 ⁵	116	222	0.84	67.2	19.0
Legacy 3.6R Limited ¹	12-09 ¹⁰	\$32,383	F-6	256	247	3555	6.5	16.7	14.9@95.6	149 ⁵	129	232	0.81	63.8	19.2
Tesla Roadster	2-09	\$118,400	Elec	248	276	2750	4.0	11.1	12.7@105.3	121	119	210	0.92	68.6	132/119 ⁴
Roadster Sport	5-10 ¹⁰	\$159,145	Elec	288	295	2790	3.7	10.9	12.6@104.9	125 ⁵	123	210	0.96	70.3	160/119 ⁴
Volkswagen CC3.6L 4Motion ¹	7-09 ²	\$42,630	V-6	280	265	3855	6.1	15.5	14.5@97.0	130 ⁵	127	225	0.91	66.5	19.2
Golf TDI	4-10 ¹⁰	\$27,090	I-4td	140	236	3120	8.8	24.5	16.6@83.9	125 ⁵	132	233	0.84	64.4	38.9
Golf GTI 3-dr	8-10 ¹⁰	\$31,900	I-4t	200	207	3370	6.1	15.8	14.6@96.9	130 ⁵	143	247	0.86	66.2	25.0 ⁴
R32	12-07 ¹⁰	\$35,430	V-6	250	236	3720	6.0	16.3	14.6@95.0	130 ⁵	134	237	0.85	65.9	18.2
Volvo C30 Version 2.0	11-07 ²	\$27,700	I-5t	227	236	3200	6.5	16.3	14.9@95.8	149 ⁵	122	218	0.85	66.3	22.8
S60 T6 AWD ¹	2-11	\$46,200	I-6t	300	325	3950	5.5	13.9	14.1@100.6	130 ⁵	118	210	0.87	69.5	20.2
S80 V8 AWD ¹	6-07	\$56,025	V-8	311	325	4080	5.6	14.3	14.2@99.4	155 ⁵	123	210	0.85	64.6	16.3
V70 ¹	5-08 ¹⁰	\$34,410	I-6	235	236	3530	7.3	18.6	15.6@92.3	130 ⁵	131	230	0.82	63.0	21.5 ⁴

R&T Classics

The following cars are chosen from thousands in our Road Test archives. Some have relevance to stories in this issue; others are here purely to pique your curiosity.

BMW 333i Alpina	11-78	na	I-6	220	228	2790	7.0	17.5	15.7@95.5	129	154	253	0.84	61.2	20.0
BMW Z4 Roadster 3.0i SMG	5-04 ²	\$50,670	I-6	225	214	3070	5.6	14.5	14.2@99.1	155 ⁵	108	191	0.93	70.3	21.3
Cadillac Allante ¹	7-88 ²	\$56,632	V-8	170	230	3495	9.2	na	17.2@81.0	119	148	257	0.77	61.0	17.1
Porsche 550 Spyder	2-57	\$6800	F-4	137	95.5	1510	8.2	25.2	16.1@83.0	122	na	na	na	na	na
Toyota Corolla GT-S	9-84	\$11,615	I-4	112	97	2450	10.5	36.0	18.6@79.5	115	147	256	na	60.8	25.0

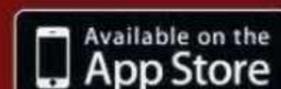


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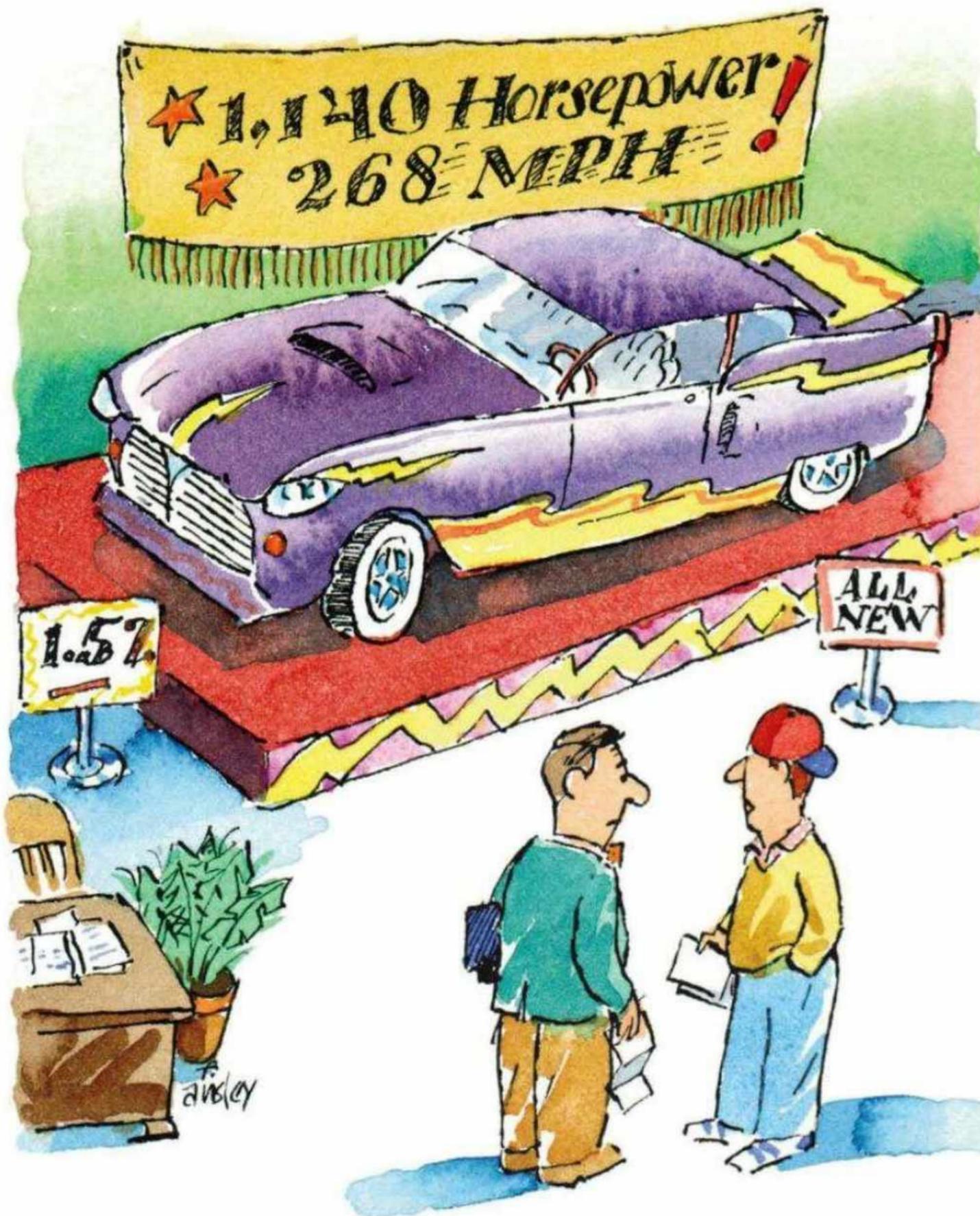
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