A FULL-THROTTLE HISTORY

A MERICAN MUSCLECARS

DARWIN HOLMSTROM PHOTOGRAPHY BY TOM GLATCH



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COBRA JET





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First published in 2016 by Motorbooks, a member of Quarto Publishing Group USA Inc., 400 First Avenue North, Suite 400, Minneapolis, MN 55401 USA. Telephone: (612) 344-8100 • Fax: (612) 344-8692

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10 9 8 7 6 5 4 3 2 1

ISBN: 978-0-7603-5013-3 Digital edition: 978-0-76035-098-0

Library of Congress Cataloging-in-Publication Data

Names: Holmstrom, Darwin, author. Title: American muscle cars : a full-throttle history / by Darwin Holmstrom. Description: Minneapolis, Minnesota : Motorbooks, [2016] Identifiers: LCCN 2015036624 | ISBN 9780760350133 (hc w/jacket) Subjects: LCSH: Muscle cars—United States—History. Classification: LCC TL23 .H664 2016 | DDC 629.2220973—dc23 LC record available at http://lccn.loc.gov/2015036624

Acquiring Editor: Zack Miller Project Manager: Jordan Wiklund Art Director: James Kegley Layout Designer: Wendy Holdman Cover image: Dave Wendt Title page image: Although the Mustang continued to outsell the Camaro, Ford didn't take the new challenger lightly and began mounting increasingly powerful engines in the Mustang, culminating in the 428 Super Cobra Jet. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

Printed in China

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INTRODUCTION A THING THAT SHOULD NOT HAVE BEEN

The fans of a certain American motorcycle brand used to wear T-shirts that read: "If I have to explain, you wouldn't understand." Perhaps, but perhaps if they can't explain it, they don't understand it so well themselves. One could just rationalize the appeal of muscle cars with the same T-shirt soundbite—"If I have to explain, you wouldn't understand"—but that would be selling the muscle car short.

If you look at the muscle car as a technology, then yes, the appeal of the beast makes little sense. But if you look at the muscle car as a technology, you're looking at it through the wrong eyes. A muscle car's appeal has as much to do with what it symbolizes as what it actually is. Symbols are powerful things—people die for them and from them every day—and a muscle car symbolizes possibilities. More precisely, it symbolizes an era when such a monstrous thing as the muscle car was still a possibility.

When John Z. DeLorean and his cadre of enthusiastic miscreants took it upon themselves to bolt Pontiac division's hottest engine into a mid-sized chassis, disobeying orders from the top of General Motors' food chain, they created something that should never have been and will never be again: the muscle car. In hindsight, who can legitimately argue that giving teenage boys lightweight cars stuffed full of big-block V-8 power, crude handling abilities for harnessing that power, and virtually no braking power to bring the festivities to a halt once everything went south, which it did more often than not, was a good idea?

Even though building these cars for kids was unwise, like giving heroin to Keith Richards or a race car to James Dean or Marilyn Monroe to a horny president, the resulting cars were pretty damned cool, and the time was right for anything that symbolized a raised middle finger thrust at conformity. The Rolling Stones were recording their first album, a collection of mostly American blues songs that were rarely heard on American radio unless they were played on the so-called "Negro" radio stations. Ken Kesey made preparations to hit the road in his psychedelic bus *Further* and bring his acid tests, parties in which participants were dosed with LSD-25 and tripped balls, from San Francisco to the entire nation, and Huey Newton and Bobby Seale were laying the foundation for what would become the Black Panther Party. In retrospect, the muscle car seemed relatively tame by comparison.

It was a different time, a time of cheap gasoline and open roads that offered what many still believed to be the postwar American dream: the freedom-or at least the illusion of the freedom—to go just about anywhere and do just about anything. And it was the loss of that perceived freedom that brought the classic muscle car era to an end. In the sour aftermath of the Vietnam War, the first war we clearly did not win, our sense of national omnipotence began to wither. With the loss of faith in our elected officials following the Watergate break-in, we suddenly found ourselves adrift without fixed stars to guide us into the future. After the shocking realization that oil was a finite resource, one that depended on forces beyond our control, we confronted the fact that the tap on our economy's lifeblood could be shut off at any time. The freedom symbolized by the muscle car suddenly seemed fragile and transitory in the face of this terrifying trifecta.

The classic muscle car era began in 1964 with the introduction of Pontiac's GTO. The technology behind the muscle car had existed for years in cars such

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as the Chrysler C-300 and the fuel-injected Chevy Corvette. High-performance cars have been a part of the auto industry as long as there's been an auto industry, but what distinguished the muscle cars of the classic era was the confluence of the cars, the people who drove them, and the times in which the two came together. The people were the baby boomers, the huge generation born in the prosperous years after World War II. The time was the early 1960s, when the young people in the leading edge of the baby boom generation were coming of age, getting driver's licenses, and striking out on their own. The classic muscle car era began when Pontiac marketed a powerful, lightweight car specifically to this new tsunami of auto buyers.

Pontiac unleashed the resulting GTO upon America at a time when the country's potential seemed unlimited. A marvelous system of highways opened up to endless possibilities. The network of two- and four-lane blacktop extending out beyond the horizon seemed as though it could take us anywhere we wanted to go, and the muscle car was the perfect vehicle to take us there. When those first lucky buyers cranked up the 360-horsepower Tri-Power 389 engines of their GTOs and drove off dealer lots, they were heading toward something exciting, toward adventure, romance, success, the future.

The classic muscle car era ended when the last Super Duty 455 Firebird rolled off Pontiac's assembly line in 1974. By the time the last buyer drove the last Super Duty off a dealer's lot, he was more likely running away from something than running toward it. He may have been running from the encroaching nanny state that deemed his choice of transportation socially reprehensible, or he may have been running from the internal demons he brought home from the jungles of Vietnam. Given the tumultuous changes the United States had been through in the 10 short years since the birth of the GTO, he needed every one of those 455 cubic inches to outrun the chaos that seemed to be consuming society.

Before anyone realized what was happening, the muscle car was gone, replaced by baroque Monte Carlos, Cordobas swathed in yards and yards of fine Corinthian leather, and other landau-roofed "personalluxury" cars. The word *performance* disappeared from the glossy brochures printed by auto manufacturers, replaced by words like *crushed velour* and *cruise control* in an attempt to market these ponderous, lumbering cars. *Performance* would not return to the automotive lexicon for a generation.

One would think the muscle car, something that should have never existed in the first place, would have become a forgotten relic of the past, but something strange happened—they became lust objects. Today we have faster, better-handling, more-comfortable, safer cars. We have cars that can run through the guartermile 50 percent guicker than cars of the classic era, that will run circles around a classic muscle car on a road course, and do all this while coddling the driver in all the luxury of a five-star hotel suite. These are wonderful cars, but they're not the same. They don't raise their middle fingers in a rousing salute to authority the way real muscle cars do. Real muscle cars don't have 19 airbags. Real muscle cars don't have traction control. Real muscle cars don't even have power steering or air conditioning. Real muscle cars don't run every driver input through a committee of computers before obliging said driver. Real muscle cars have big engines for people with big enough clackers to use them, and that's about it.

What more do you need?



CHAPTER 1 SURIOUTS AND SACK SEAT SINGO

f it seems like most muscle car books start out by discussing the baby boom generation, there's a reason for that: without the baby boomers, there would never have been a muscle car. The baby boom generation was so huge that it dictated every aspect of American life, from popular culture to cuisine to politics, to transportation. Between the years 1946 and 1964, Americans had approximately 76 million children. As one post-World War II bride explained, "When my husband asked me if I wanted to go to sleep or what, I usually replied, 'Or what.'" The resulting rise in population reshaped society

A Chevy 409 being put to its intended use.



in much the same way forcing a 4-inch piston through a 3-inch cylinder bore will reshape the 3-inch cylinder bore. This "baby boom" generation contained such a massive number of people that it required society to bend around it rather than demanding that baby boomers conform to the mores of society. The prodigious procreation of postwar Americans created a surplus of people that continues to reshape society today and will do so for decades to come.

Baby boomers certainly reshaped the automotive industry. The classic muscle car era—1964 to 1974—was Detroit's direct response to the market created by the indiscriminant genetic replication of the post-World War II generation. The parents of the boomers had already begun the process of transforming the auto industry even before they began the process of procreating the boomers themselves. When young men returned from the European and Pacific theaters of World War II, they came back restless, burning for something that polite society could not provide. They came back with a need for speed. Testosterone-fueled daredevil driving fed a need for excitement in young men who dodged death overseas.

The vets returning from World War II dealt with the same demons that plagued veterans of any other war, whether it was World War I, Korea, Vietnam, the Gulf Wars, or Afghanistan. American society is slowly finding ways to deal with the trauma veterans experience in war, but after World War II, veterans were on their own. They weren't suffering from post-traumatic-stress syndrome; if anything, they

The home-built hot rod was the first distinctly American expression of a performance automobile. *Archives/TEN: The Enthusiast Network Magazines, LLC.* were "shell-shocked," a condition usually attributed to a weak person, so most vets kept their demons to themselves. They didn't get counseling or attend support groups. They sucked it up, and when they couldn't take it anymore, they went out street racing in hopped-up Fords. Frequently that is still how vets deal with the inevitable trauma of war, but today's vets can walk into any auto or motorcycle dealership and satisfy their need for excitement by simply writing a check for a high-performance car or motorcycle.

The situation in 1945 and 1946 differed vastly. At that time, the highest-performing stock motorcycle commonly available was the Harley-Davidson Knucklehead, which cranked out a whopping 40 horsepower, and most passenger cars featured anemic inline sixes or flathead V-8s that produced less horsepower than most 600cc motorcycle engines do today. Mounted in cars that weighed in on the heavy side of two tons, these engines produced less-than-stellar performance.

But returning vets were resourceful. They'd been resourceful enough to dodge the very best that Germany, Japan, and Italy could throw at them, and they were resourceful enough to create fast vehicles from the parts at their disposal. The primary tools in their go-fast kit were bigger pistons and lighter weight.

THE TECHNOLOGY OF MUSCLE

Much of the modern speed technology we use today was developed for military applications during World War II, and in some cases during World War I. Many of the returning vets had flown planes with supercharged and turbocharged engines, but this technology wasn't readily available for civilian applications. Instead, speed demons in the late 1940s resorted to stuffing bigger engines in smaller vehicles. The biggest engine commonly available was a V-8, so that became the performance engine of choice. Chevy's reliable stove-bolt six would do in a pinch, but for serious speed, a hot rodder wanted a Ford flathead V-8.

Not that a flathead's side-valve cylinder head was the valvetrain design of choice. Its pair of valves



"In the year 1931 hot rod builders and drivers in Southern California received letters inviting them to a meeting held for the purpose of organizing their automotive interests. This meeting was held in East Los Angeles in the early Spring of that year. The Gilmore Oil Company, through the efforts of George Riley and others, had consented to sponsor amateur races at the dry lakes *if* hot rodders could come to an agreement about rules and regulations."

Hot Rod magazine, March, 1948



Keeping the Car Out Front by George Riley-Page 10

Hot Rod magazine was the nexus for the car-crazy young people in postwar America, a channel of communication that homogenized the disparate communities scattered across the nation into a single, cohesive culture of speed. Archives/TEN: The Enthusiast Network Magazines, LLC.



feeding and emptying each cylinder resided below the combustion chamber, which sat off to the side of the cylinders, an inefficient design in regards to energy transferal. The side-valve design made sense because it inhibited detonation when burning the low-grade fuels available during the early years of the internalcombustion engine, but when Standard Oil introduced tetraethyl lead as a fuel additive to gasoline, the game changed. Ethyl, as it became known, inhibited detonation in the combustion chamber. Known as "knocking," detonation—caused by the fuel-and-air charge from the carburetor exploding in the combustion chamber instead of burning at a controlled rate—destroyed an engine's internal components and was the limiting factor in the upper limits of compression ratio. With the fuels available before 1923, compression ratios were limited to perhaps 6:1 (at most) before detonation occurred, which limited total power output. The more compression that can be produced in a cylinder head, the more power the engine of a given displacement will put out. This 1954 Hudson Hornet equipped with full Hudson NASCAR racing kit—Twin-H engine and heavyduty suspension and brakes—was discovered in North Carolina near the home of NASCAR legend Herb Thomas and is thought to have been a backup car for Thomas' fabled No. 92 Fabulous Hudson Hornet.



Herb Thomas' Fabulous Hudson Hornet might look familiar to younger readers; it was the inspiration for the character of Doc in the animated film, Cars, voiced by Paul Newman. Because an overhead-valve engine design has a much more compact combustion chamber than a side-valve design, and thus a much more compact squish zone, it is capable of generating much more compression. Prior to the introduction of ethyl, the advantages of overhead-valve combustion chambers were mostly theoretical because the available fuels didn't burn fast enough to prevent detonation. Ethyl made the overhead-valve engine design much more practical because it made the air-fuel charge burn faster, taking advantage of the overhead-valve design. When introduced in 1923, ethyl was sold by gas stations in cans that customers poured into their tanks when they refueled their vehicles. By 1924, Standard stations sold gasoline blended with ethyl straight from the pump.

Once ethyl hit the scene, the side-valve's days were numbered, but at the end of World War II, the flathead Ford was still the king of hot rod engines. Though terribly inefficient from a thermodynamic standpoint—flatheads ran hot, sapping energy from the fuel charge and fatiguing engine components to the point of failure—there weren't a lot of options. Buick produced an inline overhead-valve eight-cylinder engine, but this was heavy, large, and not all that fast. It could be made to go fast, but had a tendency to snap its extraordinarily long crankshafts in half when modified to produce too much power. Beginning in 1949, Cadillac and Oldsmobile began offering modern overhead-valve V-8s. These were the engines to have if you could afford them, but most hot rodders couldn't. Chrysler's and Chevrolet's overhead-valve V-8 engines would not debut until 1951 and 1955, respectively, leaving Ford's flathead V-8 as the most accessible option for postwar hot rodders.



"Valve-in-heads for V-8s have been made and used spasmodically over a course of years, but no high-performance production model has yet been produced that has proved entirely satisfactory. It appears from the general trend, however, that the many designs that are being developed might yet result in a design that incorporates the most important advantages of the valve-inhead engine."

Hot Rod magazine, April, 1949

The other tool in the hot rodder's kit was lighter weight. Young men had been stripping their cars of fenders and anything else deemed unnecessary to the pursuit of speed since before World War I, and they continued to excise as much superfluous sheet metal and equipment as possible in attempts to attain higher speeds.

There were a few modifications to be made to the Ford flathead at that time. A rudimentary aftermarket had sprung up before World War II. Popular speed equipment of the day included multiple-carb intake manifolds, steel-tube exhaust headers, and high-lift camshafts. After the war, a burgeoning speed industry began to flourish in Southern California. While the general population considered hot rodders sociopathic hoodlums, people such as Vic Edelbrock Sr. realized they offered a tremendous business opportunity. Edelbrock, an accomplished racer himself, began producing his Slingshot manifold in 1940 and selling it from his shop in Los Angeles. Before long, a number of companies sprang up to service the hot rodders' need for speed.

The cars that served as platforms for the hot rodders' go-fast projects tended to be the least expensive and most commonly available cars: Fords, Chevrolets, and Plymouths. Being the most plentiful and usually the least expensive, Ford cars became the hot rod starting point of choice. Model Ts and Model As were both plentiful and cheap. Better yet, Fords built after 1932 already had V-8 engines—affordable V-8 engines (as well as stiffer frames to take additional power without twisting into steel pretzels).

By the 1920s hot rodders were racing on the flat, hardpacked surfaces of California's dry lakebeds. For centuries torrential rainfall in the surrounding mountains had flooded into the basins of lakes in the Mojave Desert—El Mirage, Muroc, Harper, and Rosamond. The water filled in imperfections in the sand, polishing the lakebeds smooth. When the water evaporated, it left behind miles and miles of glassy-smooth, hard-packed lakebed, perfect surfaces for running hot rods at high speeds.

Races in the dry lakebeds began as anarchic affairs, groups of hot rodders heading out with cans of gas and coolers full of beer to have some fun, but in 1938 a group of racers formed the Southern California Timing Association (SCTA). This group organized the racing into individual timed runs instead of the multicar free-for-alls that had been run in the past.

Not everyone had the resources to go to the dry lakes to race. Even though entry fees seldom exceeded \$3, not everyone could afford \$3. Nor could everyone make the difficult trip from Los Angeles to places like Muroc. The desert



Chrysler kicked the horsepower race into high-gear when it introduced its overhead-valve V-8 engines with hemispherical combustion chambers. *Archives/ TEN: The Enthusiast Network Magazines, LLC.* presented a brutal environment, and racers often spent race weekends sleeping under tarps, eating cold food, drinking warm beer, and fighting windblown sand. For many people, it was easier to simply find a lightly traveled stretch of public road and race on it.

By the late 1940s street racing had become a serious problem in Southern California. Organization had brought some measure of order and safety to dry lakes racing, so some far-sighted hot rodders made sporadic attempts to organize street racers. In 1949 a group of street racers met at Goleta Air Base near Santa Barbara, California, and competed in the first recorded organized drag race. The track was roughly a quarter-mile long, dictated not by some edict that it must be that length, but rather by the natural terrain. A small ridge in the runway approximately a quarter-mile from the starting line was chosen as the arbitrary ending point.

Organized drag racing got off to a slow start, but as dry lakes racing became increasingly specialized and increasingly expensive, the need for a more accessible form of racing grew. Drag strips sprang up around Southern California and surrounding states during the early 1950s. By 1952 six drag strips were operating in Southern California. The sport had grown to the point where it needed a

CADILLAC CONVERSION

"By the announcement almost one year ago of a new overhead valve V-8, Cadillac stimulated much interest in the minds of the hot rod fraternity. To the author's knowledge, the use of this engine in a competition car has not yet taken place. Perhaps the intelligent adaptation of this new power plant to a suitable chassis will provide some eye-opening performance."

Hot Rod magazine, October, 1949

opposite page, top: Dodge offered this shocking two-tone red-and-black paint for 1956. middle, left: With its single four-barrel carburetor, the 315-cubicinch Red Ram Hemi in the 1956 Dodge D-500 cranked out 260 horsepower. middle, right: Many people consider the 1956 Chryslers to be the bestlooking cars of the Virgil Exner era. bottom, left: Chrysler tried to emulate the cockpits of jet-age fighter planes with its interiors in the 1950s. bottom, right: One might have thought that the tailfin craze had reached its zenith in 1956, but in 1957, they got even taller and gaudier.

sanctioning body. In 1951 *Hot Rod* magazine editor Wally Parks formed the National Hot Rod Association (NHRA) and began organizing drag racing on a small scale. By 1955 the scale had become much larger, with the NHRA sanctioning 68 drag strips in 31 states. The organization had become the dominant force in drag racing, and remains so to this day.

THE MUSCLE CAR AND THE ENTHUSIAST PRESS

The existence of the muscle car owes much to the existence of organized drag racing. While a handful of modified muscle cars have competed successfully on road-racing courses—cars such as the Shelby GT350 and Boss 302 Mustangs, the Z28 Camaro, the AMC Javelin, and the AAR 'Cuda and Challenger T/A twins, for example—drag racing has always been the muscle car's *raison d'etre*. If a muscle car can corner like a kart, that's great, but it's just gravy. If it can't rocket through a quarter-mile strip faster than an ordinary sedan, it's not a muscle car. The requirements of drag racing drove the development of the American muscle car, and every aspect of the final product reflects the needs of the drag racer.

Another critical factor in the development of the muscle car was the creation of the enthusiast press. One magazine in particular—*Hot Rod*—became the Bible for anyone interested in fast cars. Robert E. Petersen and his friend Bob Lindsay cofounded *Hot Rod* magazine in 1947. The pair each coughed up \$200 of their own money and printed 10,000 copies of the first issue. Petersen and Lindsay carried copies to local racetracks and drive-in restaurants around the Los Angeles area and sold them one copy at a time.

The automotive establishment was less than enthusiastic about their daring business venture. The American Automobile Association (AAA) considered Petersen, Lindsay, and anyone associated with the hot rod movement juvenile delinquents, all of whom should be locked away for the good of the country. When the magazine sponsored a car in the Indianapolis 500, officials tried to wipe the offending *Hot Rod* logo off the car.













But fans loved the magazine even more than the automobile establishment hated it. For the first time, car enthusiasts could learn the results from dry lakes and drag races without having to actually attend the events. Better yet, they could learn how to make their own cars faster. *Hot Rod* achieved tremendous regional success in its early years, and when editor Wally Parks formed the NHRA, that regional success translated to national success. The NHRA and *Hot Rod* magazine had a symbiotic relationship; the growth of one fueled the other, and soon both were major forces in the emerging youth culture.

The rise of the enthusiast press put in place another essential prerequisite for the creation of the muscle car. The explosion of media information outlets in the first half of the twentieth century—radio, television, specialty magazines helped to unify the tastes and attitudes of the swell of young people entering society. In addition to its sheer size, one of the defining attributes of the baby boom generation was its national homogeneity. The youth culture of the 1950s, 1960s, and 1970s differed from prewar generations in that it was a national culture and not a regional culture. Kids in Atlanta, Georgia, listened to the same music as kids from Portland, Oregon. Kids in Albuquerque, New Mexico, watched the same television programs as kids in Ithaca, New York. And kids from Pittsburgh, Though the 1956 Pontiac Star Chief still had the old-fashioned chrome strips across its hood—the infamous old-man's suspenders—at least that hood covered a 270-horsepower V-8 engine.





top: Mounting the spare tire on the rear bumper was as trendy as tailfins in 1956. **top, left:** Like most American cars on the market in 1956, Pontiac's Star Chief instrumentation offered only the most rudimentary information to the driver. **middle, left:** For 1956 Pontiac bored out its V-8 engine to 317 cubic inches. When fitted with a pair of Rochester four-barrel carburetors, the engine produced 285 horsepower. **bottom, left:** In 1956 Pontiac was just beginning to shed its image as the car of choice for old geezers. **below**: A closeup look at Pontiac's much-maligned hood suspenders.







V-3S-FROM FORD TO FIREPOWER

"The most recent addition to the rapidly increasing group of V8 engines is the Chrysler 'Firepower.' One would think the Chrysler engineering department had a chip on its shoulder when it designed this outstanding powerplant. It hardly seems a coincidence that they should use exactly the same bore and stroke as those in the overhead valve Cadillac engine. The Firepower has a hp rating of 180—quite impressive for an American automotive production engine. Most of this 20 hp gain over the Cadillac's rated 160 is probably attributable to the Firepower's hemispherical combustion chambers and laterally inclined valves."

Hot Rod magazine, July, 1951

Pennsylvania, read the same car magazines as kids in San Diego, California. The styles and trends among young people in one part of the country moved in lock step with those from every other part of the country, and the need for speed became a national rather than local phenomenon.

The younger generation's need for speed did not pass unnoticed by the country's major automakers. Astute members of Chrysler, GM, and Ford management teams picked up on the sea change in the auto-buying public's taste. They didn't quite understand the nature of the change they were witnessing—a coming cultural revolution fueled by a massive growth in the youth population— and they didn't quite understand how to capitalize on those changes . . . yet. For the most part they continued to produce the same family-friendly sedans they had always produced. But they did understand at least one important thing: their customers wanted more power.

Detroit didn't initially produce faster cars as a direct response to the needs of the young men spreading the hot rod gospel around the country. Mounting more powerful engines in postwar cars made practical sense. Cars were growing bigger, a necessary evil if they were to be roomy enough to transport the large number of children that were being cranked out. They were also becoming more luxurious, providing owners with an increasing list of creature comforts like power steering, power brakes, automatic transmissions, and even air conditioning, conveniences that sapped power from already overtaxed engines. Cars needed more powerful engines just to preserve the performance status quo.

The easiest path to more power was to build engines with more cylinders. By the late 1940s the V-8 engine had a long history among US automakers. Cadillac offered the first production V-8 in an American car in 1914. In 1949, Oldsmobile offered its first overhead-valve (OHV) V-8 engine, the Rocket 88 V-8, opposite page, top: The Plymouth Fury debuted as a sporty option package for the Belvedere in 1956. A 1957 example is shown here. bottom: The 1957 Plymouth Fury received extensive changes. The car was longer and wider than its predecessor, but the most notable changes were the soaring tailfins out back.









top: In 1957 Chrysler replaced its coil-spring suspension system with a radical new torsion-bar system that would continue in use for two decades. **middle, left:** Plastic seat covers were popular for protecting the fabric of the seats. Tacky, but popular. **middle, right:** Plymouth was considered the entry-level brand for Chrysler Corporation, but that didn't stop the division's designers from making the Fury's interior fairly luxurious. **bottom, left:** The 318-cubic-inch V-8 B-block engine cranked out 290 horsepower when fitted with dual four-barrel carburetors. **bottom, right:** Although Chrysler had quality-control issues in the late 1950s, the 1957 Fury was still a desirable car, especially in convertible form.

which produced 135 horsepower. By comparison, the 239-cubic-inch flathead V-8 powering 1949 Fords developed just 100 horsepower and the 255-cubic-inch flathead powering the upscale Mercury cars developed 110 horsepower.

In 1951, Chrysler upped the ante. The Chrysler Hemi engine came about as a direct result of World War II, when Chrysler engineers experimented with hemispherical combustion chambers in an attempt to extract greater power from tank and aircraft engines. The hemispherical combustion chamber was not a new idea. In 1904 the Welch passenger car featured a four-cylinder engine with hemispherical heads. Offenhauser race engines used hemi heads, as did Stutz, Duesenberg, and Miller automobiles. Hemispherical—or dome-shaped—combustion chambers provided the most possible volume from a given surface area, leading to a very efficient design. When Chrysler began developing a V-8 engine for its passenger cars in the postwar years, the hemi design was a logical choice.

Chrysler introduced the new V-8 in its top-of-the-line 1951 models: the Saratoga, New Yorker, Imperial, and Crown Imperial. These cars may have looked frumpy and old-fashioned, but with the new 331-cubic-inch V-8 cranking out 180 horsepower—20 more than its nearest competitor, the 160-horsepower Cadillac V-8—Chrysler could lay claim to producing Detroit's hottest engine.

By 1955 a redesigned Chrysler Hemi put out 300 horsepower when fed by a pair of dual four-barrel carburetors. It was time for Chrysler to mount the engine in a car with some style: the legendary C-300. The C-300 was long, low, sleek, and fast; it was a muscle car in spirit, if not in intent. The C-300 lacked one of the most important components of a successful muscle car: an affordable price. In 1955 the C-300 sold for a steep \$4,110. This put it out of reach of all but the most-well-heeled hot rodders. Chrysler had most of the formula for a successful muscle car down already—a powerful engine in a sporty body—but the youth market would have to wait a bit longer for affordable Mopar muscle.

V-3S FOR THE MASSES

For the 1954 model, Ford finally abandoned the antiquated flathead V-8 and introduced its first overhead-valve V-8. Dubbed the Y-block, the new OHV 292-cubic-inch powerplant generated 130 horsepower. This might have been a more significant milestone except for the fact that Chevrolet was about to eclipse its rivals from Dearborn the following year. In the fall of 1954 Chevy unveiled a new line of V-8-powered cars it called the "Motoramic Chevrolets."

Originally Chevrolet downplayed the new engine in its ad copy, touting the car's comfort, convenience, and styling instead of its performance, but anyone who knew anything about hot rodding cars knew that this was an engine with significant performance potential. Called the Turbo-Fire V-8, the new engine's specifications don't seem

DON'T THROW ROCKS AT YOUR ROCKET

"Pete Coltrin was an unhappy fellow when he drove his 1949 Olds 88 Hydra-Matic club sedan into the Miller Brothers Automotive Service for a tune-up. One of that ever-expanding group of individuals who desire 'just a little more oomph' in their automobiles, Pete, who lives in Altadena, Calif., and is a senior at nearby Claremont College, had already milled the heads on his 88 .090 of an inch, installed an Edmunds dual manifold with two stock Carter carburetors, a 3/4cam, Mallory ignition, and dual exhaust pipes with Mitchell 30-inch mufflers. But something was lacking—the car still didn't have the punch Pete wanted."

Hot Rod magazine, May, 1952



Oldsmobile was an early adapter of overhead-valve V-8 engine technology with its Rocket 88 engine. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



especially impressive today—265 cubic inches, a two-barrel carburetor, only 165 horsepower (a little more than half that of Chrysler's top-of-the-line Hemi)—but savvy buyers at the time knew they were looking at something special. They knew that Chevy's overhead-valve design, with its stamped, lightweight rocker arms and no rocker shafts, gave the engine potential to produce many more horses.

Chevrolet engineers immediately began mining the new engine's potential, developing a Power Pack option consisting of a four-barrel carb and a dual-exhaust system that bumped horsepower to 180. With this car, Chevrolet hit the mark. Performance enthusiasts recognized the bang for the buck offered by the new Chevy Super Turbo-Fire V-8s and took the cars straight from the showrooms to the racetracks. The Chevrolets dominated their classes at Daytona Speed Week in 1955. Privately entered Chevrolets (General Motors didn't officially participate in racing at this time) won the top four spots in the acceleration tests measured from a standing mile. Chevys won the top two spots in the under-\$2,500 class, three of the top five spots in the two-way measured mile event, and first place in the 100-mile event on By 1960 Pontiac had shed its suspenders and introduced the Wide Track look by moving the tires out toward the corners of the car.





top: While Pontiac's Bonneville had plenty of muscle, like the Chrysler 300 it was marketed as a high-performance personal luxury car rather than a pure muscle car. **middle, left:** With its lavish chrome grille, the 1960 Bonneville was as stylish as early Pontiacs had been dowdy. **middle, right:** Pontiac advertised the multiple carburetors lurking beneath the hood on its fender badging. **bottom, left:** Those triple two-barrel carburetors looked as good as they ran. **bottom, right:** While a fast car for its time, the 1960 Bonneville didn't skimp on luxury or comfort in the name of going faster.



the short half-mile track. The only car that was consistently faster that week was Chrysler's C-300, which cost almost twice as much as the Chevrolet.

The sales success of the Power Pack option led Chevrolet's brain trust to sensibly conclude that more power would result in even more sales. For 1956 Chevrolet upgraded the Super Turbo-Fire engine to 205 horsepower. The 1956 Chevy with a Power Pack was an inexpensive, stylish car that could barrel through the quarter-mile in 16.6 seconds, making it one of the strongest performing cars a person could buy. By that time, every half-bright gearhead had figured out that there was a lot more potential performance lurking beneath the hood of the "Hot Ones," as the advertising copy called the V-8 Chevrolets. Chevy's own engineers proved this when they released an even-more-super version of the Super Turbo Fire, this one featuring a pair of four-barrel carbs forcing their fuel charge through valves operated by solid lifters. This engine produced 225 horsepower, making it Chevy's strongest mill yet. In 1960, Chevrolet's top engine option was the 348-cubic-inch W-head big-block V-8 that pumped out 350 horsepower when topped off by a trio of two-barrel carburetors. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

FULL-BORE FIREPOWER

"It may be too early to make predictions, but from all present indications the old, reliable flat-head V8 engine has 'had it' in the hot rod field. Although the flat-heads have made history during the last few years, the great strides made recently by engine builders in the nation's automobile capitals have rendered any V8 without overhead valves nearly obsolete."

Hot Rod magazine, December, 1952

But Chevy's whiz-kid engineers weren't about to stop at 225 horsepower. In 1957 they produced the most radical powerplant ever to darken an American auto's engine bay up until that time: a 283-cubic-inch small-block V-8 fed by a Rochester Ramjet fuel-injection unit. Chevrolet had been experimenting with fuel injection since the early 1950s and made the results of its work available to the public for the 1957 model year. The injection unit consisted of a two-piece cast-aluminum manifold incorporating tuned ram tubes running to the intake ports. Air- and fuel-metering equipment mounted on the side of the lower casting measured and injected the charge of fuel and air into the intake plenum just ahead of the intake valves. Though this system proved to be a bit finicky and difficult to start, it pushed power output to true muscle car levels. With hydraulic lifters, the "fuelie" produced 250 horsepower. When solid lifters were fitted, power jumped to 283 horses, achieving a long hoped-for goal of one horsepower per cubic inch in an American production engine.

With the fuel-injected 1957 Chevy, GM had almost perfected the muscle car formula. The car was fast, stylish, and though the fuel-injection option was relatively expensive, the total price of the car was still a bargain when one considered the level of performance. But the fuelie proved to be a case of too much too soon. The fuel-injection system was a bit too complicated for the technology of the day, and people just weren't ready for such complexity. With the exception of the exotic Corvette, Chevrolet stopped offering passenger cars with fuel injection after the 1959 model year.

IT'S FOR THE KIDS

Ford, GM, and Chrysler all made noble attempts to serve the youth market in the 1950s, and to varying degrees all three major US auto manufacturers enjoyed success with their sporty offerings, but the best was still to come. The baby boomers were still preteens when US automakers made their first tentative steps into the performance car market. These companies were just learning the craft of marketing to young people. About the time they would perfect that craft in the



top: This is one of just 10 Super Duty cars that Pontiac built in 1961. The Super Duty parts were shipped in the trunk and installed by the owner, voiding the warranty. **bottom:** This is the actual 1961 Pontiac Ventura Super Duty raced by Arnie "The Farmer" Beswick, a corn farmer from Morrison, Illinois.



top, left: Beswick, who took top honors in class at the 1961 Winternationals in this car, installed snap-on white walls on his racing slicks to make his race cars flashier. top, right: Beswick understood the value of spectacle in promoting his racing career, which is why he chose the Ventura over the less-expensive Catalina model. bottom, left: Beswick proved his skill at extracting maximum power from Pontiac engines many, many times. bottom, right: Today this car is restored to the condition it was in when Beswick raced it.

following decade, there would be a waiting market of young car buyers, the size of which would astound the corporate bean counters of the 1950s.

Chevrolet introduced its small-block V-8 at a time when America needed just the kind of excitement a fast, affordable car could provide. With the end of the Korean War, the country had entered an extended period of peace and prosperity, one with no apparent end in sight. The United States found itself in a cold war with the Soviet Union, a situation that lent an underlying sense of dread to day-to-day life, but it was an abstract dread with little direct effect on the comings and goings of most citizens. For the most part, optimistic exuberance fueled the American psyche, exuberance reflected in the automotive industry. During the late 1950s and early 1960s, Detroit experienced a period of technological explosion, a period in which the automotive industry's best engineers perfected the overhead-valve V-8 engine. During this time, the small-block V-8 gave way to the big-block V-8, another element needed to bring the muscle car to iconic status.

Even though Chevrolet had developed what would become the prototype for the muscle car—a reasonably priced stylish sedan with big V-8 power—the baby boom generation needed to age a few more years before it would become the 8,000-pound gorilla of the car-buying public. As the 1950s gave way to the 1960s, most boomers were still more interested in Schwinn bicycles than Detroit muscle; it was their parents who were buying most of the new cars.

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FORD FORSAKES THE FLATHEADS

"Sure, you could gain by stroking your L-head Ford, but that engine in stock form had asthma and the vacuum spark advance ignored the basic requirements of low-speed full-throttle acceleration. Boring the new engine out is another matter."

Hot Rod magazine, February, 1954

When Ford got serious about its Total Performance program, it provided drag racers with a hot 406-cubic-inch V-8 to power its Galaxie 500 XL. In 1963 the top G-code version of the engine put out 405 horsepower.







top: Even if one doesn't know that a dual four-barrel 406 lurked under the hood, the 1963 Galaxie 500 XL had a menacing stance. **middle, left:** Although the long-hood, short-rear-deck look of European sports cars would soon come to dominate the aesthetic of the American muscle car, performance cars in the early 1960s adhered to traditional sedan proportions. **middle, right:** The big G-code engine, with its monstrous carburetors, was a thing of beauty. **bottom, left:** The long trunk hanging out over the back wheels put a lot of weight on the Ford's Galaxie 500 XL's rear wheels, which was an ideal arrangement for drag racing. **bottom, right:** Although automatics would eventually become the preferred transmissions for drag racing, in the early 1960s a four-speed was the hot ticket.



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But things were changing. Even in this prehistory of marketing and demographic research, carmakers noted the growing number of young buyers entering the market each year. The auto manufacturers recognized the potential sales such buyers represented and began developing cars that met the needs and desires of these young drivers. Apparently they desired power and needed speed, as witnessed by the growing popularity of racing.

The competitive atmosphere of the drag strip held a natural attraction for the burgeoning population of young people coming of age in the late 1950s and early 1960s. After the tumult and chaos of the first half of the twentieth century, with its seemingly endless wars and police actions, most mature adults were ready for a period of relative calm. But the younger generation that came of age during the late 1950s and early 1960s hadn't experienced the first two World Wars and the Great Depression, and this generation was genetically predisposed to racing fast cars. Chevrolet's hot 409-cubic-inch bigblock V-8 ruled drag strips across America in 1963. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



"The Chevrolet Motors Division of the General Motors Corporation has at last leaped aboard the overhead valve V8 powered bandwagon and joined the other two members of the 'Big Three'... The average American buyer is becoming more performance minded. He expects things to happen when he punches the throttle or the brake pedal... The biggest difference between the old and new is in the performance department and stems from a new overhead valve V8 engine. This engine represents the first V8 that Chevrolet has produced in 36 years. Whatever was wrong with the 1917 through 1919 models must have scared the wits out of the engineering and management staffs because they have steadfastly refused to build anything but fours (through 1928) and sixes until this year."

Hot Rod magazine, January, 1955



Early overhead-valve V-8 engines only graced the engine bays of luxury or near-luxury brands like Cadillac, Chrysler, and Oldsmobile. With its light, efficient small-block, Chevrolet brought overhead-valve V-8 technology to the masses. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



"The engine of either model is a 3.63 inch bore, 3.8 inch stroke, 315 cubic inch overhead valve V8 embodying the now-familiar hemispherical combustion chamber with a 91/4 to 1compression ratio. The D-500 is rated at 260 brake horsepower at 4800 rpm and 330 poundsfeet of torgue at 3000 rpm. The data for the D-500-1 has not vet been released, but it's a good bet that with its double four-barrel intake manifold and carburetors, plus a 'wilder' camshaft, the advertised power will be about 285 at 5000 rpm and 310 pounds-feet of torque at 3200 rpm."

> Hot Rod magazine, May, 1956

The human animal appears to be hardwired for adventure and excitement, a feature that made us particularly adept at hunting for mammoth meat and running away from saber-toothed bears. In periods of peace and prosperity we get very little chance to exercise the fight-or-flight instincts that make us suited for such work. It seems that in periods in which life is relatively easy we manufacture the danger and excitement needed to appease those instincts. In such times a large portion of the population creates scenarios that provide excitement and danger; we place ourselves in situations that bring out those instincts. When we no longer needed to kill wild animals for survival, we began killing them for sport. When we are not risking our lives in combat, we risk them on the freeways during our daily commute.

Some people seem to possess a thrill-seeking gene that makes this instinctive response even stronger. These people, often males young enough to lack a sense of their own mortality, take things one step further. They create danger by jumping out of airplanes, diving to the ocean's floor, and racing their cars in organized competition. As the 1950s ended, this population found its numbers increasing exponentially.

The fascination younger customers had with speed and racing did not escape the attention of corporations that wanted to market their products to this affluent new generation. The auto manufacturers took particular interest in stock car racing and drag racing because racers competed in stock-bodied cars in both. Without question a Chevy, Plymouth, or Pontiac winning on a NASCAR (National Association for Stock Car Auto Racing) oval track or an NHRA drag strip inspired some buyers to purchase a similar car from a Chevy, Plymouth, or Pontiac dealership; to varying degrees, manufacturers embraced these forms of racing.

Certain elements within the upper echelon of the auto industry hierarchy felt uncomfortable with such a sordid activity as racing, regardless of its marketing potential. A growing federal government occasionally glanced toward the auto industry when cautious voters complained about speed and accidents. In 1957 the Automobile Manufacturers Association (AMA), at the time the primary lobbying group of American auto manufacturers, instituted a voluntary ban on factory involvement in racing in an effort to turn away government scrutiny. While all manufacturers paid lip service to this ban, most simply made an end run around it and continued to be involved in racing in a more covert fashion. Chevrolet's and Pontiac's clever ways of working around the ban provided the most brazen examples of back-door factory racing support, with factory engineers and technicians even competing themselves on the weekends. Ford, on the other hand, followed the ban almost to the letter.

LIFE'S A DRAG

Drag racing proved to be an exceptionally effective way of building brand image because it was the most accessible form of racing, especially with the 1957 introduction of the NHRA Super Stock class, in which stock-bodied cars competed. The NHRA had experienced phenomenal growth during its first decade. In 1957 the organization held its first national event, called the Nationals, in Great Bend, Kansas. The NHRA held the Nationals at different
drag strips around the country each year before finding a permanent home in Indianapolis. In 1961 the NHRA added a second national event, the Winternationals. Drag strips became a nexus where an entire generation of young motorsports enthusiasts came together to compete against one another. More often than not they raced each other in the same cars they drove to work during the week, running them in the Super Stock class. They'd drive to the track, bolt on a set of Atlas Bucron tires, drop the exhaust pipe, and go racing.

Automakers had a vested interest in seeing their cars winning in this class. A young man was much more likely to plunk his hard-earned money down on a car that won at the drag strip than one that lost. Even if the kids attending the races were too young to buy cars of their own, their influence on the cars their parents purchased was increasing. If Chevrolets were beating Pontiacs at the drag strips, kids were lobbying their parents to buy Chevys instead of Pontiacs. This was a generation of people whose parents seemed to indulge their every whim. Their parents had been cheated of a proper childhood because of economic depression and war; they wanted to make their children's childhood experience a happy one. If the kids wanted their dad to buy a Chevy instead of a Pontiac, there was a good chance he'd buy a Chevy.

Thus if a Chevrolet whipped a Pontiac on the drag strip, it meant that Chevys would whip Pontiacs on the sales charts. It was in each manufacturer's best interest to develop cars that would whip the cars built by the other manufacturers, and with the then-current technology, the surest path to success was excess. The late 1950s saw most auto manufacturers developing big-inch engines with which to pummel their competition into submission.

Since introducing its revolutionary small-block V-8, Chevrolet had perfected the combination of affordability and power, but with its fuel-injected small-block of 1957, Chevy had pushed the outer limits of both. In 1958 the company decided to substitute brute force for high technology and introduced a larger V-8. Dubbed the "W-head," this new engine shared no parts with the small-block V-8. Originally displacing 348 cubic inches, this physically massive engine had the potential to be bored out to a much greater displacement, earning it the nickname "big-block." (The original Chevrolet V-8 then became known as the small-block.)

In stock trim, with a single four-barrel carburetor, the new bigblock cranked out a mere 250 horsepower, but much more power was available. When ordered with three two-barrel carburetors, a high-lift cam with mechanical lifters, and an 11.0:1 compression ratio, the engine produced 315 horsepower. An increase in compression ratio the following year pumped horsepower up to 335.

With this engine, General Motors had created another important ingredient of the muscle car recipe. While there would be many overachieving small-blocks in the muscle car pantheon, the archetype

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THE ARDUN

"When we refer to an Ardun engine, we mean an Ardun kit fitted to a Ford or Mercury flathead V8 engine. This kit consists of a pair of heattreated cast aluminum alloy heads with hemispherical combustion chambers, a centrally located spark plug, radially inclined overhead valves and aluminum-bronze valve guides and valve seats, both of which are replaceable."

Hot Rod magazine, July, 1956



Records indicate that Pontiac built approximately 14 "Swiss-cheese" Catalinas in 1963. The cars earned their nicknames because they had weight-saving holes drilled in their frames.





top: Through extensive use of aluminum parts, the Swiss-cheese Catalinas weighed in at just 3,300 pounds. Arnie "The Farmer" Beswick raced this example. middle, left: While that might look like a stock Catalina front clip, the fenders, hood, inner fender wells, core support, bumpers, and bumper brackets are all aluminum. middle, right: By 1963 the 421-cubic-inch Super Duty engine featured two four-barrel carburetors rather than the three two-barrels used previously.
bottom, left: Even the high-beam headlights were removed in the interest of saving weight. bottom, right: Moving the battery to the trunk put even more weight on the rear tires, helping to give better grip off the starting line.

CHIRYSLER 300

"In a stoplight and drag strip competition, it was very obvious that for a big chug, the 300-B could move, and fastly, too. It can, in fact, put down all stock competition of comparable size and weight and a considerable number of smaller ones as well and it can do so in the first 100 feet."

Hot Rod magazine, September, 1956

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for American muscle has always been a two-door sedan powered by a monster big-block engine—the bigger and more monstrous, the better. The big-block engine is the reason a perfectly nice Challenger convertible powered by a 318-cubic-inch engine will never be worth more than a fraction of the value of an original Hemi 'Cuda, even though the small-block engine makes much more sense in a street car that will never see the business end of a drag strip.

Intracorporate rivalry between Chevrolet and Pontiac meant that Chevy could count on Pontiac to respond to its new big-block engine, but the enthusiasts running Pontiac weren't content to simply ape Chevrolet's "bigger-is-better" philosophy. Pontiac didn't need to develop a new big-block engine, since the V-8 its division introduced in 1955 was more than up to the task. In fact, that engine block formed the basis of every Pontiac V-8 of the classic muscle car era.

When introduced in 1955, the engine displaced just 287 cubic inches, but engineers had left plenty of room to punch out increasingly bigger holes, which they proceeded to do each year. In 1956 they bored it to 316 cubic inches. In 1957 they took it to 347 cubic inches, and in 1958 to 370 cubic inches. The following year they punched it out to 389 cubic inches, a capacity that would soon prove to be significant. That year they also introduced a monstrous 421-cubic-inch version of the engine. By not developing separate small-block and big-block engines, but rather developing a single versatile engine design, Pontiac engineers had created a highly adaptable platform. This adaptability would be advantageous once the muscle car era began in earnest.

Pontiac also found the most creative ways to circumvent the AMA ban on factory racing involvement. A band of mavericks ran the Pontiac division: General Manager Semon E. "Bunkie" Knudsen and Chief Engineer Pete Estes, along with the man would later succeed both of them, John Z. DeLorean. These men understood the relationship between racing success and brand image better than any other people in the auto industry, probably because they were all racing enthusiasts themselves.

In 1959 Pontiac began offering its Super Duty line of highperformance components. Even though the AMA banned factory involvement in racing, a buyer could transform his Pontiac into a full-blown factory drag racer by ordering Super Duty parts. Pontiac had been supplying high-performance parts to buyers for years, but the parts had come from other suppliers, not Pontiac. Bunkie Knudsen wanted the parts designed and built in-house to keep the profits generated within the Pontiac division, so he created a special group within Pontiac's engineering department: the Super Duty Group. The Super Duty Group developed a package of engine parts that would withstand the stress of racing. Every Super Duty-equipped Pontiac had the parts to do that, starting with a stout engine block with fourbolt main bearing caps. Forged crankshafts, connecting rods, and highcompression pistons meant that an owner could expect many reliable trips through the quarter-mile traps between engine rebuilds. Tri-Power carburetors (Pontiac's branding of its triple two-barrel setup) pumped a huge fuel charge through a high-flow aluminum intake manifold and into special big-valve heads, and the spent fuel charge exited the combustion chamber via high-flow header-type exhaust manifolds.

This was serious equipment, clearly intended for racing competition and not for street use. (Super Duty parts carried no factory warranty.) The radical profiles of the cam lobes meant that at low rpm the solid lifters would pound the finish right off the surface of the cams, not a desirable trait in a vehicle that has to idle at a traffic light. Driving Super Dutyequipped cars as intended also led to problems; after cleaning the tires and blasting down the drag strip, the engines produced enough heat to melt the aluminum intake manifolds, necessitating a cool-down period before driving back to the pits. When Pontiac specified Super Duty parts "for racing purposes only," it wasn't joking.

BIGGER BIG-BLOCKS

By the early 1960s, Chevrolet's 348-cubic-inch big-block didn't look so big any more. Even Ford, a company that embraced the AMA ban on factory racing involvement, offered a 390-cubic-inch big-block engine that saw success on drag strips and stock car oval tracks around the country. Chevrolet needed to respond, and respond it did, in the form of a W-head engine punched out to 409 cubic inches. Introduced late in the 1961 model year, this stroked-and-bored engine provided inspirational performance.

In base four-barrel form, the new 409 produced 360 horsepower and a massive 409 lb-ft of torque. Mounted in the engine bay of a stunning new Super Sport Impala Sport Coupe, a base 409 with proper gearing could run through the quarter-mile traps in under 15 seconds. With a little tuning, the right tires, and some proper performance parts, the new engine was capable of much better times than that. The new 409 quickly became a dominant force in NHRA drag racing, and Don Nicholson won the Stock Eliminator class at the 1961 NHRA Winternationals.

The basic design of the car helped transfer the engine's prodigious torque into the tarmac. Like their Pontiac cousins, Chevy's coupes featured long rear overhangs, placing a large portion of the cars' weight directly over the rear wheels. This helped the tires hook up during quartermile runs and led to improved trap times.

Chevrolet's success on the nation's drag strips led to sales success, just as it had done for Pontiac. With the performance-equals-sales equation proven to be mathematically sound, the logical conclusion was that if a lot



"Performance-minded people are sure to regard Chevrolet's new Rochester fuel injector as the ultimate. To be sure, the injection system is not only the first to appear on an American production car; it is a definite (but costly) improvement over the conventional carburetor. Throttle response is almost instantaneous and the engine is extremely sensitive to changes in throttle position, no matter how slight."

> Hot Rod magazine, December, 1956

CHEVROLET BIG-BLOCK

"Now to get to the part a lot of you have been waiting for, Chevy's new 348 cubic inch V8 engine. This is not just a bored and stroked version of the 283 V8 although lots of pieces from the two engines resemble each other. It is entirely new and about 1½ inches longer, about 1½ inches wider, about the same in height and a little over 100 pounds heavier. Both versions have 9.5:1 compression but one has a single four-barrel carburetor and is rated at 250 horsepower at 4400 with 355 lbs/ft of torque at 2800 rpm. The other uses three two-barrel Rochester carburetors and is rated at 280 hp at 4800 with 355 lbs/ft of torque at 3200 rpm. Both are available with hydraulic lifters only, no high performance cam."

Hot Rod magazine, December, 1957

of power equaled strong sales, then even more power would equal more sales, so for 1962 the 409 received a performance makeover. Power output of the base four-barrel version jumped to 380 horsepower, thanks to redesigned cylinder heads with larger valves, redesigned pistons and combustion chambers, and a redesigned intake manifold. The hot version of the engine received a pair of four-barrel carburetors—the famous "dual-quads" in the Beach Boys' song "409." So-equipped, the "four-speed, dual-quad, Posi-Traction 409" cranked out 409 horsepower—again a Chevy engine generated one pony per cubic inch—and could run the quarter-mile in the high 12-second range with very little tweaking.

When Chevy introduced its new big-block in 1958, it shocked the other auto manufacturers into action. In short order most US automakers were promoting the performance potential of their cars. Chrysler, which had long prided itself on building the ultimate performance V-8 engines with its omnipotent Hemis, found the fact that humble Chevrolet now offered one of the most powerful automobiles on the market especially galling. Chrysler engineers had taken the aging Hemi engine about as far as they could by this point, and in 1958 they countered Chevy's big-block with a new big-block engine of their own: the wedge B-block engine. Because development money was too tight to develop different engines for each of its brands-Chrysler, Dodge, Plymouth, DeSoto-the company used this new engine across its entire product line. To disguise the fact that the same mill that powered a mighty Chrysler 300 also motivated a lowly Plymouth, each brand offered the new V-8 with slightly different displacements ranging up to 361 cubic inches.

The new B engine would prove to be one of Chrysler's best and longest-lived engine designs. Distinguished by its deep-skirted block and frontmounted distributor, the powerplant earned the nickname "wedge" because its combustion chambers were wedge-shaped rather than hemispherical (dome-shaped) or polyspherical (double-dome shaped), as were earlier Chrysler V-8 engines. Wedge technology more closely adhered to the orthodox thinking of the day.

Topped off by a pair of four-barrel carburetors, the 361-cubic-inch wedge cranked out 320 horsepower,

five more than Chevrolet's hottest big-block. Chrysler offered an even more powerful version, one fed by a Bendix electronic fuel-injection system, producing 333 horsepower, but that system was an unmitigated disaster. While Chevrolet's Rochester mechanical fuel injection was difficult and finicky, the Chrysler electric system, which used delicate vacuum tubes that proved incapable of withstanding the brutal conditions inside an engine bay, was impossible and few remained in operation for very long, rendering the dual four-barrel-equipped version of the B-block the top performer.

Chrysler engineers knew Chevrolet would increase the power output of its new big-block, so for 1959 they punched out the cylinder bore of their new wedge engine, mounting the most powerful version in the company's premiere performance car, the 300. When equipped with a pair of Carter AFB carburetors feeding the combustion chambers through a pair of 30-inch manifolds, the 413-cubic-inch version of this engine produced 400 horsepower, 100 more horsepower than the Hemi engine that powered the original Chrysler C-300 of 1955.

Chrysler marketing folks saw the results Chevrolet and Pontiac were achieving at drag strips around the country. More importantly, they saw the effects Chevrolet and Pontiac sales success was having on Chrysler's corporate bottom line—people who bought Chevrolets and Pontiacs weren't buying Dodges and Plymouths. The company needed to sell more cars to earn more money, and to sell more cars it would have to go racing. The problem was its luxurious 300s and Furys and Polaras were too big and too heavy to make good drag racing platforms. The company needed a radical solution to this problem, and the solution it devised was radical by any definition of the word. In 1962 Chrysler mounted its B-block engine in its new, smaller-sized B-body cars. These were still full-sized cars and not intermediates, but because they featured unit-construction bodies and chassis from 1960 and on, they were smaller and lighter than the cars offered by GM and especially Ford.

Chrysler engineers didn't mount garden-variety B-block engines in these lighter cars; they used high-performance engines designed strictly for drag racing. This engine, officially called the Ramcharger when mounted in the Dodge chassis and the Golden Commando when mounted in the Plymouth, but unofficially called the Max Wedge, featured radical solid-lifter camshafts, large-port heads, and dual Carter AFB carburetors mounted atop short ram intake manifolds. In its most powerful form, this engine package produced 420 horsepower, making the new lightweight Chrysler products the belles of the drag strip ball. Pontiac had dominated drag racing in 1960. In 1961, Chevy's hot 409 had been the car to beat. In 1962, Mopars became the force to be reckoned with, and would remain so for a very long time.

Even though Ford had been building modern overhead-valve V-8 engines since the mid-1950s, it had never managed to recapture the performance image it had earned with its flathead V-8 engines. Robert McNamara, who had joined Ford as manager of planning in 1946 and had worked his way up through the ranks to (briefly) become the first president of the company not named Ford, lacked any passion for performance cars. He believed cars should be used for transportation rather than something as frivolous as having fun, and he embraced the AMA ban on factory racing involvement. To create his ideal vision of pure proletarian transportation, McNamara oversaw the creation of the Ford Falcon econocar.

In January 1961, less than five weeks after assuming the presidency of Ford Motor Company, McNamara took his "no-fun" philosophy to Washington, DC, where he would orchestrate US military affairs as John F. Kennedy's, and later Lyndon B. Johnson's, secretary of defense. McNamara's prosecution of the war in Vietnam would prove disastrous for the United States (and also to the muscle car market), but his departure worked to Ford's advantage. McNamara's midlife career change put Ford back in the business of building cars that were fun.

Ford had the basics to build a solid performance car. Like Chevrolet, Ford had developed a big-block V-8 engine, the FE series, introduced in 1958. With a top displacement of 352 cubic inches and a peak output of 300 horsepower, the FE big-block didn't set the drag racing world on fire. In 1961, the year of McNamara's departure, Ford engineers took a boring bar to the block and punched out the engine displacement to 390 cubic inches. With three two-barrel carburetors, solid lifters, and a dual-point distributor, the engine produced a respectable 401 horsepower. Another overbore in 1962 raised the power output of the new 406-cubic-inch engine to 405 ponies.

This put Ford's big-block engine in the hunt and Ford-powered cars had some drag racing success, but the cars from GM and Chrysler still dominated the sport. The main problem with Ford's offering was the weight of Ford's full-sized sedan, the Galaxie. The Galaxie, especially the Galaxie fastback, was a handsomely styled and comfortable car, but even the special lightweight version developed for the drag strip weighed 100 to 150 pounds more than its competition from GM and Chrysler. Combined with a horsepower rating that was probably optimistic (if anything, the GM and Chrysler engines put out more power than advertised), this excess weight relegated Ford to also-ran status in the drag racing wars of the early 1960s.

TURN LEFT, REPEAT

The drag strip might have been the primary venue in which manufacturers could showcase the performance of their automobiles, but stock car racing also provided a high-profile stage upon which to promote performance cars. The premier stock car racing organization, then as now, was NASCAR. Formed in 1948 at a time when there were very few new cars on the road—civilian production was still ramping up following the end of World War II—NASCAR originally consisted of races between highly modified cars that bore little resemblance to those sold to consumers. In 1949 NASCAR president Bill France Sr. decided that fans would prefer to watch races between cars based on the same ones they drove on the street—actual stock cars—and he was right. Once NASCAR began featuring the same Oldsmobiles, Pontiacs, Hudsons, and Plymouths that transported fans to the races, its popularity began to grow.

Not only did the switch to stock cars make NASCAR more popular with fans, it made the sport more popular with auto manufacturers. Detroit began producing increasingly powerful engines to propel their cars to NASCAR winner's circles. In many ways, NASCAR racing drove V-8 engine development even more than did drag racing.

By the late 1950s, Pontiacs performed extremely well in NASCAR racing, thanks to Division Manager Bunkie Knudsen's blatant disregard for the 1957 AMA ban on racing. Pontiac's Super Duty line of performance parts meant that a racer could purchase anything he needed to build a competitive stock car from the same dealership that sold him the car. A buyer couldn't order a car straight from the factory equipped with Super Duty parts; he had to buy the parts separately from the parts department and install them himself, instantly voiding the car's warranty. This policy helped to appease the AMA and deflect government scrutiny. Knudsen and others regularly commented to reporters and legislators that they could not stop their customers from buying parts and modifying the cars they had purchased.

Super Duty Pontiacs ruled NASCAR tracks by the early 1960s, winning 30 Grand National races and the manufacturer's championship in 1961. To keep one brand from dominating the sport, NASCAR instituted a rule that would have a significant impact on the classic muscle car era—it required manufacturers to sell passenger cars with the same engines it raced. This meant that the over-the-counter Super Duty parts Pontiac sold would no longer be eligible for NASCAR competition, so in 1962 Pontiac made its 421-cubic-inch Super Duty engine available as an option in its Catalina and Grand Prix models. For the first time, a buyer could buy a Super Duty Pontiac without having to assemble it himself. In 1962, Pontiac won its second manufacturer's championship.

Chevrolet didn't fare as well in NASCAR racing. While its 409 dominated the nation's drag strips, the W-head big-block engine used an antiquated combustion chamber design in which the combustion chamber was down in a recessed pocket in the piston rather than in a dome within the cylinder head. This design exhibited poor high-rpm combustion characteristics that made it poorly suited for the extended high-speed running required of a successful NASCAR racer. Not that the Chevys performed poorly in NASCAR-Chevrolets won 14 Grand National races in 1962 and placed second in the manufacturer's championship behind Pontiacbut the sell-on-Monday part of the win-on-Sunday equation only worked if a car won; the second-place winner was just the first loser.

WHAT MAKES PONTIAC RUN?

"In the period of just a few short years, Pontiac General Manager Semon E. (Bunky) Knudsen has directed a transformation that is the talk of the automotive world. He stepped into the top spot of a plodding automobile company that had a reputation for building a solid, dependable, not too exciting car for people of the same description. Being of the live-wire variety himself, Mr. Knudsen decided the reason Pontiacs were not selling too well was the fact that they were not appealing to either the young in years or the young in heart. So he made changes . . . Pontiac and performance became synonymous . . . He convinced car buyers that Pontiac was no longer just for the old folks; it was a hot car for the young set too."

Hot Rod magazine, March, 1961



Pontiac's Super Duty engines made the brand a formidable competitor at drag strips and NASCAR ovals. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

409: BIGGEST CHEVY YET

"The 409 is, in hot rod terminology, a bored and stroked version of the 348 . . . It will take some time to see how the engine runs when placed in the hands of the drag strip enthusiasts but we guess that it will do alright for itself . . . The 409 looks just like the muscle man to take over where the 348 leaves off."

Hot Rod magazine, April, 1961

Although the basic design of its heads limited the potential of Chevrolet's first big-block engine, for a short while the 409-cubicinch version dominated American drag strips. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



Chevrolet was not content to be the first loser. For 1963 it introduced a new big-block V-8: the Mark II. With a more modern combustion-chamber-in-head design, the new engine featured all the hot rod tricks of the day: lightweight valvetrain, header-style exhaust manifolds, and dual-plane aluminum high-rise intake manifolds. Chevrolet's new big-block displaced 427 cubic inches, placing it right at the displacement limit allowed by NASCAR. Racing journalists and other racers referred to the new powerplant as the "mystery engine," because Chevrolet erected security barriers around the garages at Daytona to prevent anyone from seeing it up close.

The mystery surrounding the engine did not lead to racing success for Chevrolet, but not because of any technical details of the engine. Chevrolet, as well as Pontiac and the other GM divisions, faltered in NASCAR racing because in 1963 General Motors instituted a total ban on factory racing involvement. Ed Cole, the father of Chevrolet's OHV V-8 engine and by that time a vice president at General Motors corporate headquarters, decided to halt all corporate racing activities, both direct and indirect. A former manager of GM's Chevrolet division, and its chief engineer before that, Cole knew all the tricks people like Bunkie Knudsen used to circumvent the AMA racing ban of 1957 and he was determined to stop them. In late 1962, GM announced that the company would cease all support of racing for 1963.

TOO MUCH SUCCESS?

Cole had a reason for this madness. Unlike McNamara, Cole didn't feel it was his personal duty to end all forms of automotive fun, and he wasn't hell-bent on promoting a nanny state in which government and the corporate world contrived to protect automotive enthusiasts from themselves. In fact, Cole instituted the total racing ban in an attempt to ward off the intrusive arm of the nanny state; by the early 1960s, GM had the federal government breathing down its corporate neck. The Justice Department had determined that GM was getting too large a share of the US car market. GM was in danger of getting between 57 and 60 percent of the new car market. General Motors had come dangerously close to breaking the Sherman Antitrust Act of 1890, the federal antitrust law designed to prevent one company from monopolizing an entire industry. The Justice Department was threatening to break up the company as it had done it before with Standard Oil decades earlier. General Motors had no need to race on Sunday to sell cars on Monday because it was on the verge of selling too many cars without the extra promotion.

Eternally the number three American automaker, Chrysler found itself in no danger of being on the stinky end of the federal government's trust-busting stick. The company wanted as large a market share as it could get, and if racing success equaled increased market share, then Chrysler Corporation would do everything in its power to ensure racing success—even if it meant bringing an elephant to a cockfight. That elephant took the form of a reborn Hemi.

It's not that Chrysler vehicles had been under-armed in the performance wars prior to the rebirth of the Hemi. The company's Max Wedge engine used every hot-rodding trick to dominate America's drag strips. The Max Wedge had been bored out to 426 cubic inches for 1963, just slipping under NHRA's limit of 427.2 cubic inches for Super Stock engines. Its parts list summarized the state of pushrod V-8 engineering art: double-row timing chain, one-piece short-ram aluminum intake manifold topped by a pair of four-barrel carburetors, header-type exhaust manifold, high-capacity fuel pump, dual-point distributor, forged-aluminum pistons, Magnafluxed connecting rods, high-strength valve spring retainers, smaller crankshaft pulley to limit belt speeds, and heavy-duty clutch with an aluminum clutch housing. It even had a deep-sump oil pan that was baffled to prevent oil from sloshing away from the sump when the car inevitably wheelied off the starting line. No one accused Chrysler's Max Wedge of being underpowered. With an optional 13.5:1 compression ratio, the engine produced 425 horsepower.

Like Chevy's 409 before it, Chrysler's Max Wedge ruled American drag strips but didn't fare as well on NASCAR oval tracks. Chrysler president Lynn Townsend had two sons who were performance-car enthusiasts, so he knew how important racing success was to his company's image. Townsend knew that to compete in an increasingly youth-oriented market, Chrysler would have to succeed in NASCAR as well as in drag racing. Townsend asked Bob Hoover, head of Chrysler's race engine group, what it would take for Chrysler to win Grand National races. Hoover's response? Adopt hemispherical heads to the Max Wedge engine. The conversion proved no simple task. Chrysler engineers needed to design stronger connecting rods to support the massive Hemi pistons and the entire head had to be rotated inward toward the engine to provide clearance for the exhaust pushrods to clear the head gaskets.

Chrysler's 426 Hemi engine revolutionized motorsports in America. Although rated at the same 425 horsepower as its Max Wedge predecessor, true output topped 500 ponies, and when mounted in lightweight drag racing specials, the new powerplant dominated the drag strip. The basic design continues to win races in the Top Fuel and Funny Car classes well into the twenty-first century.

More importantly, the engine decimated the competition on NASCAR's superspeedways. Debuting at the 1964 Daytona 500, Hemi-powered Mopars took all three spots on that year's Daytona podium. Richard Petty, who stood atop the Daytona 500 podium that year, went on to win the 1964 Grand National championship.

THE SE/X FACTOR

Two racing rule changes would have dramatic aftershocks in the consumer car market. The first was NASCAR's homologation rule requiring NASCAR race cars to use only engines available in passenger cars sold to the public. The other was the NHRA's creation of the F/X (Factory Experimental) class, in which highly modified cars powered by special low-production engines would compete.

In part, this new class represented an attempt by the NHRA to keep the factories from dominating drag racing. The average drag racer could not hope to compete against the low-volume drag racing specials coming out of Detroit. Built with exotic lightweight materials like aluminum and fiberglass, these cars included the legendary Z-11 Impala, Super Duty Pontiacs, lightweight Galaxies, and Super Stock Dodges. Detroit produced these cars in such low volume

that they were all but unattainable for the average drag racer. For example, Chevrolet built just 57 Z-11s and Ford built just 11 of the lightweight Galaxies.

General Motors' ban on factory racing involvement proved another factor driving the creation of the F/X class. General Motors announced the ban late in 1962, after Pontiac had already delivered a number of 1963-model Super Duty drag racing cars to customers. Because these cars would not be offered as production cars in 1963, they didn't qualify for the Super Stock class. By creating the F/X class, the NHRA created a venue in which the owners of these cars could compete.

NASCAR's homologation rules meant that manufacturers would have to mount their sophisticated new V-8 engines in passenger cars if they hoped to campaign them on America's superspeedways. Chrysler would have to build street-going cars equipped with the firm's all-conquering Hemi. Chevy would have to offer customers cars powered by the new Mark II big-block engine, and Ford would have to mount the radical new versions of its FE-based racing engines in the bays of cars meant for public roads. If manufacturers wanted to campaign cars in the highly competitive Super Stock class, they would have to build wickedly fast street cars. In 1964, a horsepower war was about to erupt onto America's streets and highways, a war that would be fought with machines that exceeded all expectations of even the most demented car enthusiast.

The creation of Chrysler's 426 Hemi marked the end of a period of intense engine development and the beginning of a period of intense marketing. With the Hemi, the pushrod overhead-valve V-8 engine reached a technological pinnacle. In just 15 years the OHV V-8 design had evolved from Oldsmobile's 135-horsepower Rocket 88 into a fire-breathing 500-horsepower monster. If development had continued at that pace, today's small-block Chevy engine would generate more than

FORD'S SUPER SUPER STOCK?

"There are two intake systems for the 406, single fourbarrel Holley and triple two-barrel Holleys . . . The 406 test car we had at our disposal was equipped with the 405 horsepower engine with triple carburetion. We noted that on fast stops, the engine stalled and was sometimes difficult to restart. The reason for this is the three Holley two-barrel carburetors are mounted backwards on the manifold so that the float bowls slosh fuel into the manifold on sudden stops."

Hot Rod magazine, April, 1962



Ford had hung its corporate hat on safety and practicality in the 1950s. That all changed in the 1960s when Ford switched directions and dove headlong into its Total Performance program. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



10,000 horsepower, and in the early 1960s it looked as if development might just continue at that pace indefinitely.

In reality, the pushrod V-8 engine had been taken just about as far as was possible by 1964. The basic mechanical architecture had been developed almost to perfection; future developments would focus on electronic controls, first with electronic ignition and later with space-age engine management computers. Using 1964 technology, which meant using imprecise points-based ignition timing, an engine could be tuned to go fast but little else, or it could be tuned to be tractable in everyday use, but at the expense of losing peak horsepower. When an engine was tuned for high-speed running, the spark plugs would load up with carbon during low-speed running and the ignition didn't have enough strength to shoot spark through the carbon buildup. To build an engine that was both fast on-track and also drivable in traffic on public roads would require manufacturers to develop functional electronic ignition systems.

Solutions to ignition problems would come, but in 1964, the simplest solution was to drive a high-performance car as if it had been stolen. Gas was cheap, so if low-speed running causes problems, run at high speeds. A more immediate challenge for Detroit's auto manufacturers was developing a car to sell to the baby boom generation, who had finally begun buying cars in numbers commensurate with the size of their population. By 1964, the leading edge of the vast swell of Arnie "The Farmer" Beswick might have preferred flashy cars, but most drag racers wanted the lightest, plainest, most-rigid body they could get. When it came to Chevrolets, nothing was more basic or lighter than a Biscayne two-door post in 1964.









top: One has to admire the purposeful nature of the 1964 Biscayne. **middle, left:** If the fender callouts had weighed more than an ounce or two, they would have been stripped off with the rest of the ornamentation. **middle, right:** The Spartan nature of the drag-racing version of the Biscayne carried over to the interior, where everything that could be deleted was. **bottom, left:** In 1964 the hottest version of Chevrolet's 409 cranked out 425 horsepower when equipped with a pair of four-barrel carbs. children born in the years after World War II were graduating from high school and entering the work force. They had money to spend and they liked to spend it on new cars. This new breed of auto buyer wanted power, but they wanted more than just power. They wanted style. They wanted cars that turned heads when they cruised down the Main Streets of America's towns and cities. They wanted cars that did not look like their parents' cars, the cars in which Detroit manufacturers mounted their powerful V-8 engines. They wanted smaller, sportier cars. More often than not, they were young men who wanted cars that would impress the opposite sex.

Sex appeal played a key role in marketing cars to boomers. In the youthoriented culture that was emerging in the early 1960s, the automobile became a critical component in quantifying its owner's sex appeal. This generation had a different set of standards than their parents, and chaperones were as *passé* as tail fins. To put it indelicately, the driver of a cool car was more likely to score after a Friday-night football game than the driver of a nerdy car.

This new generation, itself the result of rampant sexual activity, scored more often than did any previous generation since the fall of the Roman Empire, thanks in large part to a new technology: the birth-control pill. On May 9, 1960, the Food and Drug Administration approved the first oral contraceptive for legal use in the United States. The pill revolutionized sexual activity. As long as human animals have roamed the earth, young people have found themselves in a hormonal pressure cooker, balancing intense sexual urges with fear of unwanted pregnancies. The pill effectively blew the lid off that pressure cooker. By the time the classic muscle car era began, American youngsters had begun to exercise their newfound sexual freedom. While society had not quite entered the era of free love, recreational sex had been heavily discounted by 1964.

Sex was becoming a national obsession, and smaller, sportier cars were tools that young people used to help satisfy that obsession. Detroit offered smaller cars, though the small autos American automakers first marketed to boomers were far from sporty. In the 1950s, American Motors Corporation had stayed afloat on the profits of its Rambler, one of the first compact American cars. Since the Rambler didn't offer a V-8 engine, a design that General Motors and Chrysler relied on to market their cars, AMC marketed the fuel economy of the Rambler's inline six-cylinder engine. To boomers, the fuel-efficient Rambler was as exciting as Grandma's broken-English stories about pickling fish in the old country and as sexy as the garters holding up her support hose. To reach the younger generation, manufacturers needed to build cars that were smaller *and* sexy.

In typical Robert McNamara fashion, Ford grasped the *smaller* part but couldn't get its corporate head around the *sexy* part. On October 8, 1959, Ford introduced the decidedly unsexy Falcon. Basically a shrunken version of its larger sedans, the Falcon sold extremely well and earned a profit for Ford, but it failed to ignite the passion of younger buyers. A few years later Lee lacocca would reshape the Falcon into one of the sexiest small cars on the market, creating a machine that would ignite the automotive lust of nearly every member of the baby boom generation and in the process create an entirely new market niche: the pony car. But that was in the future; in 1960 the Falcon was simply a diminutive portion of the same-old same-old from Ford.

Ford broke little new ground with its new small car. However, Chevrolet not only broke new ground, it pulverized it into fine dust. The division's Corvair, introduced for the 1960 model year, used technology never before seen on an American-made automobile. Standing only 51.3 inches tall and measuring just 66.9 inches wide, the Corvair took up less garage space than any other car rolling out of Detroit at that time. The Corvair was the smallest American-made car of its day and it was easily the most peculiar. Its engine, an air-cooled opposed six-cylinder, sat in the rear of the car where it drove the rear wheels through a transaxle transmission.

The Corvair's drivetrain layout may have looked odd when compared to the other cars Detroit offered, but when compared to the cars being imported from Europe, it seemed less so. Historically, imported cars had comprised a miniscule portion of the US auto market, but as the US auto industry entered the 1960s, that situation had begun to change. Imported car sales doubled between 1958 and 1959, a fact that didn't escape General Motors. The most popular import, the Germanbuilt Volkswagen, used the same technology as the Corvair: a rear-mounted, air-cooled engine driving the rear wheels through a transaxle transmission. In 1960, Volkswagen sold nearly 160,000 of its peculiar little sedans. The Corvair sold well enough in its first year to avoid being considered a dismal failure-250,000 units-but just barely. Ford sold nearly half a million Falcons in 1960, indicating that while buyers wanted a small car, they feared peculiar.

410 HIP Short Ram For Dodge-Plymouth

"Scheduled for the production line shortly before May 1st, 413 cubic inch V8s are going to make the boys driving other brands in the hot stock classes wonder just what hit them. One engine has 11:1 compression, 410 hp at 5400 rpm and 460 lbs/ft of torque at 4400 rpm. The other has 13.5:1 compression, 420 hp at 5400 and 470 lbs/ft torque."

Hot Rod magazine, May, 1962



In his final years at Chrysler, Virgil Exner designed some genuinely strange-looking cars, but when those homely critters were being motivated down quarter-mile drag strips by Max Wedge engines, they looked like winners. *Archives/ TEN: The Enthusiast Network Magazines, LLC.*



CHAPTER 2 BOOMER BUCKS

n the early 1960s America's automakers knew they had to design cars that appealed to the massive baby boom generation, and for the most part, they had the needed ingredients. They had hot engines and they were working on developing cars with sex appeal. Both Ford and Chrysler were capitalizing on the publicity generated by racing success. Chrysler had its all-conquering Max Wedge and Hemi engines and Ford had initiated its Total Performance program (more about that in the next chapter). But things were grim at General Motors because GM's internal racing ban meant that GM divisions would have to find creative new ways to market cars to performance-crazed young buyers.

By 1962, the second year of production, the original Pontiac Tempest had earned such a bad reputation that even with dramatic improvements, it was too late to salvage the car and it was completely redesigned for the 1964 model year. *Archives/TEN: The Enthusiast Network Magazines, LLC*.









top: Pontiac kicked off the classic muscle car era by introducing the 1964 GTO. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **middle, left:** The GTO featured styling cues like fake hood scoops designed to tickle the buy lobes in the brains of the intended market—the baby boom generation. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **middle, right:** If borrowing the name "GTO" from Ferrari didn't let a buyer know that Pontiac intended this to be a new kind of American car, listing displacement in liters instead of cubic inches should have. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **bottom, left:** Prior to the introduction of the GTO, American manufacturers offered sporty cars like the Nova SS, but nothing with serious power under the hood. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

The first part was getting the cars right. Chevrolet's designers realized that they had ventured too far outside the comfort zone of most American auto buyers with the Corvair. To cash in on the emerging market for small cars, they would have to create a smaller version of the large sedans Americans were comfortable buying. That's exactly what Chevrolet introduced in September of 1961. The Chevy II was as conventional as the Corvair was peculiar. The only unconventional technology that Chevrolet used on the Chevy II was unitized-body construction. This advanced method of building cars used an integrated frame and body instead of placing a separate body on top of a ladder-type frame, the method that had been in use since the birth of the horse-drawn wagon.

The sportiest, sexiest model in the Chevy II lineup was the Nova 400, powered by a 194-cubic-inch inline six producing 120 horsepower. This was enough to give the sub-2,600-pound coupe adequate acceleration, but not enough to impress buyers lusting after 409 Impalas. The Chevy II sold better than the Corvair—Chevy dealers moved 325,000 units for 1962—but not well enough to outsell the Falcon.

To attract the growing number of young buyers, the Chevy II needed V-8 power. Ford understood this, and in 1963 it produced a V-8-powered version of the Falcon: the Futura Sprint. Chevrolet responded with a sporty SS package for the Chevy II, which featured special trim, bucket seats, and enhanced instrumentation, but still no V-8. The Nova SS retained Chevy's unsporting inline six.

In 1964 the Chevy II finally got a proper V-8. Although not a fire-breather like the 427-cubicinch Mark II big-block race motor, the two-barrel 283-cubic-inch small-block V-8 in the Chevy II produced 195 horsepower, enough to propel the diminutive Chevrolet through the quarter-mile traps in 18 seconds.

While the new V-8 was enough to push the Chevy II through the quarter-mile in a respectable time, it wasn't enough to push it ahead of the competition in the marketplace. Chevy II sales fell by 48 percent in 1964. While this may have been due in part to a lack of power and speed, a greater factor in the slow sales of the 1964 Chevy II was

PLYMOUTH 426 SUPER STOCK

"Our test car was a stripped model with no unnecessary extras to add weight and cut speed. Except for the fact that it didn't have a radio or a heater, the car would have been quite pleasant to drive to work every day . . . There are two ways to improve acceleration or reduce weight. Therefore, one of the most important performance features about the Plymouth is its light weight . . . Our test car weighed exactly 3400 pounds with a half tank of fuel. This is 680 pounds less than a '61 Plymouth we tested a couple of years ago . . . Our first run, with engine oil warm but radiator cool, was a good one: 12.69 seconds elapsed time and 111.97 mph."

Hot Rod magazine, January, 1963



Plymouth's 426 Super Stock had all the ingredients of a muscle car—light body, big engine, and nothing to add weight or rob power—but it wasn't considered the first muscle car because it was marketed to racers rather than specifically to the baby boom generation. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



the stiff competition the car faced for baby boomer dollars. Even Chevrolet had developed a sportier car for the youth market, the Chevelle, a car that undoubtedly cannibalized quite a few Chevy II sales in Chevrolet dealerships around the country.

After scaring customers away with the peculiar Corvair and then failing to capture a large portion of the emerging youth market with the Chevy II, Chevrolet designers wanted to avoid a third strike. The division needed to build something small, sporty, and sexy if it wanted to secure its position as the world's number one auto manufacturer for the foreseeable future. It had to avoid a potentially risky technological revolution, as with the Corvair, but it also needed to avoid creating a car that was too conservative, like the Chevy II. The safest path to success was to split the difference between the two: create a car that used technology the market would accept, yet one that was also sexy enough to attract young buyers.

The quickest way to get on this safest path was to build a car using an existing design. General Motors had the perfect design in its corporate parts bin with the A-body, the platform under development for Buick's Special and Oldsmobile's F-85. In physical mass, this platform fell midway between the little Chevy II and Chevrolet's full-sized models. In GM-speak this made the platform an "intermediate" car. Pontiac was using the A-body platform to replace its troublesome "rope-drive" Tempest and it proved the ideal design to propel Chevrolet into the consciousness of the baby boomers. The car Chevy designers created, the Chevelle, was everything the division needed: small, sporty, and, most importantly, sexy.

In late August of 1963, Bunkie Knudsen, who was promoted out of Pontiac and now headed up General Motors' Chevrolet division, unveiled the new Chevelle to Oldsmobile wasted little time getting its own muscle car on the market. *Archives/TEN: The Enthusiast Network Magazines, LLC.* Buick was also quick to jump on the muscle car bandwagon with its Gran Sport. *Archives/TEN: The Enthusiast Network Magazines, LLC.* the automotive press to much applause. They certainly weren't applauding the car's technology—with its small-block V-8 engine and conventional body-on-frame construction, the car was basically a slightly smaller version of the Chevrolet sedans that had first carried the company's Turbo-Fire V-8 engines in 1955. What they were applauding was the new Chevelle's style. With its sleek lines and sporty proportions, the car looked right for the market. It looked sexy.

The sexiest version of the new Chevelle, the Malibu SS, featured all the same parts as the Chevy II's new variant, the Nova SS—special trim, bucket seats, enhanced instrumentation—but it featured the critical component the 1963 Nova SS lacked: V-8 power, and quite a lot of it when all the right option boxes were checked. Initially, the hottest engine was the L77, a 220-horse 283-cubic-inch V-8 featuring a Rochester four-barrel carburetor, a 9.25:1 compression ratio, and dual exhaust. When mated to an optional Muncie M20 four-speed transmission and a 3.36:1 Posi-Traction rear differential, the Malibu SS traveled through the quarter-mile a full second quicker than its smaller Chevy II brethren. Later in





"There is one particular Tempest model for '64 which attracted our eye on a recent trip to the GM proving grounds and, unless we miss our guess, this might be the '64 model dealers will sell faster than Pontiac can build. It's called the LeMans GTO. The initials stand for Grand Turissimo [sic] Omologato, and in case you don't understand Italian, the English translation would be Grand Touring Homologated. In European sports car circles, grand touring classification stands for an enclosed coupe and the homologation terminology means that the model is a regular production model, not just a limited-production option designed for racing or rallys [sic]."

Hot Rod magazine, December, 1963



Pontiac's GTO earned the distinction of being the first muscle car because while it was nowhere near as fast as a Plymouth 426 Super Stock, its goal was to capture the youth market. *Archives/TEN: The Enthusiast Network Magazines, LLC.* the year Chevrolet offered the optional L74 V-8, a hotter 327-cubic-inch engine that generated 300 horsepower. Had the marketplace status quo from previous years remained unchanged, this L74 package might have been *the* car to buy in 1964.

Like Ford and General Motors. Chrysler introduced a small car for the 1960 model year: the Valiant. Like the Falcon, the Valiant featured thoroughly conventional technology, but the car's styling, from its trapezoidal grille to the spare tire shape embossed into the trunk lid, pushed into unconventional territory. The engine, another pushrod, inline six, used no cutting-edge technology, but it was oriented in a creative way. Chrysler engineers rotated this new powerplant 30 degrees to the right, earning it the nickname "slant six." Designers rotated the engine to make room for a lower hood, a prerequisite for the sporty, sexy look young buyers seemed to crave. In stock form the engine produced 101 horsepower, but if a buyer installed the Hyper-Pak kit they could purchase from their Chrysler dealer's parts man, the little 171-cubic-inch engine produced 148 horsepower. The Hyper-Pak contained enough good stuff to put oak in any true hot-rodder's timber: longrunner intake manifold and bigger carburetor, highcompression pistons, long duration camshaft.

Originally not branded as either a Dodge or a Plymouth, the Valiant had been sold at both dealerships. In 1961, Chrysler branded the Valiant as a Plymouth and Dodge introduced its own version, the Lancer. Chrysler's engineers tweaked their new slantsix to produce 145 horsepower in stock form and 195 horses when equipped with a Power Pak. These were respectable numbers, but the engine was still a sixcylinder trying to compete in a V-8 world. Chrysler redesigned the car for 1963 and sales increased, but the lack of a V-8 engine still hampered the car's reception in the marketplace.

At the time, Chrysler's small-block engine, the A-block, had been in production since 1956, almost an eternity given the fast pace of engine development at that time. For 1964, Chrysler engineers redesigned the A-block, creating the compact, high-revving LA series of engines. The main technological change in the transformation from A-block to LA series involved the method used to cast the engine block. Chrysler's new thin-wall



Chevrolet was more cautious about testing the muscle car waters, building just 201 Malibu SS Z16 models for the 1965 model year. Archives/TEN: The Enthusiast Network Magazines, LLC. casting technique resulted in a more-compact, lighter powerplant that easily fit in the engine bay of a small car like the Valiant. Switching from the old polyspherical head design to a more-modern wedge design also helped make the new smallblock engine more contemporary. Originally displacing 273 cubic inches and producing 180 horsepower, this new small-block engine would become one of the most beloved powerplants of the classic muscle car era, powering such iconic cars as the Challenger T/A and AAR 'Cuda, but it wasn't terribly successful when introduced.

Not that there was anything wrong with the engine, nor with the Barracuda, a sporty, fastback version of the Valiant in which Chrysler mounted the mill. Chrysler designers created the fastback look by grafting a large wrap-around rear window onto the basic Valiant. The car received a sporty interior with bucket seats clad in "glamorous gold, rich blue or black, or bright red" vinyl, according to a period sales brochure. Other than that, only a revised grille distinguished the Barracuda from a garden-variety Valiant. Budget constraints kept Chrysler's designers from deviating any further from the base car.

Perhaps the Barracuda retained a bit too much of the donor Valiant's proletarian styling for young buyers, which may have hurt its reception in the youth market, but more likely Plymouth's new sporty coupe suffered from the same problem as Chevrolet's V-8-powered Chevy II and Chevelle: stiff competition. Had the V-8-powered Barracuda been unleashed upon the American public two or three years earlier, it might have become the stuff of legends. Unfortunately for Chrysler and Chevrolet, Pontiac had beaten them to the punch.

THE FIRST MUSCLE CAR

Like other American automakers, Pontiac had marketed a small car in the early 1960s. A year after Chevrolet unleashed its high-tech Corvair on the American public, Pontiac introduced its Tempest. Developed jointly with Buick and Oldsmobile as part of GM's X-body program, the Tempest started life as a front-engined derivative of Chevrolet's peculiar rear-engined Corvair. The X-bodies shared the Corvair's basic unibody chassis, stretched four inches to attain a stature more fitting for upscale nameplates like such as Pontiac, Buick, or Oldsmobile. The engines would be mounted in the front instead of the rear, and the Pontiac, Buick, and Oldsmobile cars would not use Chevrolet's opposed, air-cooled, six-cylinder engines, necessitating a taller front hood. Because of this, the profiles of GM's other X-bodies would bear little resemblance to the Corvair.

Bunkie Knudsen, still heading Pontiac at that time, did not want to produce a cookie-cutter version of the small cars being introduced by sister divisions Oldsmobile and Buick, so he had his engineers develop innovative technology to distinguish his division's version of the X-body platform. Pontiac engineers created a new four-cylinder engine by splitting the automaker's 389-cubic-inch V-8 in half. Displacing 195 cubic inches, huge for a four-cylinder, the engine produced ample horsepower and torque; unfortunately, it also produced excessive vibration. Modern large-displacement four-cylinder engines can resort to technology like balance shafts to quell engine vibration, but such technology wasn't available to Pontiac designers at that time. Instead, they resorted to an innovative system

The Z16 version of the 1965 Malibu SS featured a potent 396-cubic-inch engine. Archives/ TEN: The Enthusiast Network Magazines, LLC,



DRAGGIINI' THUNDERBOLT

"Thunderbolt is a Fairlane two-door sedan, Ford's unit construction medium-size car, equipped with the 427inch high-performance engine rated 425 horsepower. Reports we've had from qualified persons indicate that the 425 hp rating is actually about 75 horsepower short so this Fairlane is really endowed with approximately 500 horsepower . . . The 427 engine is the top of the line with 13:1 compression, long duration camshaft, high rpm valve springs, and dual four-barrel carburetion . . . The best times recorded by this particular car were 11.61 seconds elapsed time and 124.88 mph top speed."

Hot Rod magazine, February, 1964

nicknamed the rope drive because it used a flexible driveshaft woven from strands of high-tensile steel like a rope. This flexible driveshaft, which connected the rear engine housing to a transaxle transmission between the rear wheels, absorbed the engine's thunderous vibration remarkably well, keeping it from intruding on the passenger compartment.

With the high-tech Tempest, the reach of Pontiac's engineers exceeded their technological grasp. Even though the passengers were isolated from the vibration, it was still there, pounding the duck butter out of the engine and drivetrain. Engine vibration hammered the nylon timing gears back into raw petroleum. Worse yet, the rear-mounted transaxle wasn't strong enough to handle the power put out by the oversized four-banger engine. Fragile transmissions and timing-gear wear caused by the engine vibration doomed the high-tech Pontiac in the marketplace.

For 1964, Pontiac planned to replace the Tempest with a car based on GM's upcoming A-body platform. With this car, Pontiac's marketing team faced a two-fold challenge. Not only did the team need to overcome the negative publicity generated by the failure of the rope-drive Tempest, but it also needed to discover an entirely new method for reaching the youth market, since the tool the division had relied on since the 1950s—racing—was no longer an option.

General Motors' total ban on racing involvement hurt Pontiac more than any other GM division. Pontiac's advertising had been built around racing success, and that advertising was finally starting to pay off when GM announced the racing ban for 1963. Automobile enthusiasts were just beginning to view Pontiac as GM's performance division. The corporate racing ban seemed like a death sentence for Pontiac, but Pontiac's Chief Engineer John DeLorean and his staff were hardly surrender monkeys. One spring day in 1963, at a Saturday-morning brainstorming session with Pontiac engineers Bill Collins and Russ Gee, DeLorean came up with an inspired way to keep Pontiac cars in the performance limelight. While examining a prototype 1964 Tempest Coupe equipped with a 326-cubic-inch V-8 engine on a lift, Collins casually mentioned that Pontiac's high-performance 389 would bolt right into the engine bay because it used the same engine mounts as the 326.



DeLorean didn't need any arm twisting—he approved the experiment and within a week they had a Tempest coupe with a 389 bolted in the engine bay.

That Saturday morning in Michigan marked the exact moment the muscle car era kicked off. It took one drive in the prototype DeLorean, Collins, and Gee had created to realize that this was the car that would meet the needs of the new baby boom market: a sporty, intermediate-sized car with big V-8 power. DeLorean named the car GTO, which stood for "Gran Turismo Omologato," Italian for "Grand Touring Homologated."

Conceiving, naming, and developing the GTO proved to be the easy part. The hard part was getting the car approved by the fun police at General Motors, who were more concerned with staying under the Justice Department's radar than creating the perfect car for the baby boom generation. In addition to banning corporate involvement in racing, upper management had instituted a policy limiting GM cars to 10 pounds per cubic inch. According to that formula, the largest powerplant DeLorean could mount in his 3,500-pound GTO's engine bay would displace 350 cubic inches.

Pete Estes, by that time Pontiac's division manager, and his band of mavericks needed to find a creative loophole to save General Motors from itself. They learned that the committee that oversaw such minutia as displacement-to-weight ratios only scrutinized new models and didn't inspect option packages, so Pontiac made the GTO an option package for the two-door LeMans, which was to be Pontiac's counterpart to Chevrolet's Malibu. To further ensure that the GTO would pass GM's corporate muster, Estes and DeLorean presold 5,000 units before GM management found out about the car's existence. This made it all but impossible for GM management to kill the GTO without looking like the world's biggest collection of incompetents in front of its dealer network. Although Chrysler intended the Hemi to be used primarily in racing, it could on occasion grace the engine bay of a pedestrian transportation unit. *Archives/ TEN: The Enthusiast Network Magazines, LLC.* A convertible Coronet seemed an odd choice to house a Hemi engine. *Archives/TEN: The Enthusiast Network Magazines, LLC.* Pontiac rolled out the GTO in late 1963 with minimal fanfare. Pete Estes' outlaw division had slipped the car past GM's corporate fun police, but just barely. They wanted to avoid poking angered GM management with a stick and further upsetting them. The corporation had let the rogues at Pontiac have their way, and they were happy to sell an additional 5,000 LeMans coupes, but they made it clear that this would be a one-time exemption. Pontiac limited initial advertising to black-and-white inserts in enthusiast magazines.

While sexy enough to appeal to the newly important youth market, the revolutionary nature of the car wasn't immediately obvious. A casual glance at a 1964 GTO revealed a car that looked like an upscale version of Chevrolet's sporty Malibu. Popping open the hood, however, made it clear to even the most obtuse observer that the revolution had indeed begun. Generating 325 horsepower, the standard 389-cubic-inch GTO engine was the most massive V-8 yet seen in a car of its size. A Carter four-barrel carburetor pumped its fuel charge through a dual-plane













top: With the Charger, Chrysler at last had a purpose-built muscle car. Archives/TEN: The Enthusiast Network Magazines, LLC. middle, left: The Charger featured vacuum-operated doors that hid the headlights. This was a popular feature during the period but one that fell by the wayside because of problems keeping the doors operational. Archives/TEN: The Enthusiast Network Magazines, LLC. middle, right: While a purposebuilt muscle car, the fold-down rear seats of the Charger made the car surprisingly useful. Archives/TEN: The Enthusiast Network Magazines, LLC. bottom, left: The Charger's giant rear hatch opened up to reveal a vast amount of cargo space. Archives/TEN: The Enthusiast Network Magazines, LLC. bottom, right: The original Charger's exterior was polarizing, but the interior appealed to everyone. Archives/TEN: The Enthusiast Network Magazines, LLC.

intake manifold into heads pilfered from the division's mighty 421-cubic-inch HO (High Output) engine. That fuel charge needed to be of the high-octane variety to placate the 10.75:1 compression ratio without inducing detonation. Specially hardened cast Arma-Steel rods connected the flat-top aluminum pistons to the cast pearlitic malleable iron crankshaft. Serious speed freaks ordered the optional M21 closeratio four-speed transmission connected to a stout 3.90:1 gearset residing in the 10-bolt rear differential housing. Stump-pulling ratios of 4.11:1 and 4.33:1 were available as dealer-installed options. By December 1963, Pontiac had made available the Tri-Power engine option, which added a trio of Rochester twobarrel carburetors and bumped power output to 348 ponies.

With this setup, the performance of the GTO was so strong that fans invented a new nickname for the GTO: "the GreaT One." Everything worked perfectly, with the exception of the tires, especially on cars equipped with the M21 transmission option. They were just too skinny to handle all the torque the drivetrain produced.

Because of the almost complete lack of publicity, initial sales didn't look as though they would break through the 5,000-unit limit GM management had specified, but the GTO was simply too good a car to remain inconspicuous. Word-of-mouth proved to be enough to generate strong sales for a car that so perfectly captured the qualities the baby boom market desired, at a price they could live with. With a base price of \$2,776, almost anyone could afford a new GTO. By the time 1964 rolled around, sales had begun to pick up.

THE RINGER

A test that appeared in the March 1964 issue of *Car and Driver* magazine pitted a Pontiac GTO against a Ferrari GTO, one of the most exclusive and exotic automobiles in the world. The cars didn't actually compete head to head, except in an oil painting commissioned for the magazine's cover, and performance numbers weren't exactly fair, since Jim Wangers, Pontiac's point person at its ad agency Campbell Ewald, later admitted he secretly replaced the test car's stock 389-cubic-inch

MODERN HEMIIFROM CHRYSLER

"Don't get too excited, fellows, but the day you've been waiting for has finally arrived! Chrysler has revived the 'hemi' engine! That's right, the all-time champion on the drag strips—the engine that holds countless records at Bonneville—the *must* powerplant for hot boats—it's been brought back to life in a modern version. The first public appearance was at Daytona's Speedweeks."

Hot Rod magazine, April, 1964



A half decade after the demise of the original Hemi, Chrysler's hemispherical-head V-8 had attained legendary status. Chrysler capitalized on that by releasing a modern Hemi engine just in time for the birth of the muscle car. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



engine with a tweaked 421-cubic-inch HO motor. Wangers, who attended the test, also knew the flawed quarter-mile testing procedure the magazine used was producing numbers bordering on fantasy, but he had no interest in correcting them. Quarter-mile times of 13.1 seconds in the spec box and photos of Pontiac's baby boom car sitting on the test track next to a mighty Ferrari gave the Pontiac instant credibility. Recognizing that this story compared apples to oranges, the writer asked if, in Pontiac's case, the GTO initials hadn't stood for "Going Too far Overboard?" No matter. GTO sales exploded upon publication of the article.

GTO sales for the 1964 model year totaled 32,450 units. This was on top of sales of the base Tempest and LeMans models, and thus represented an unbudgeted financial windfall for General Motors. While a car like the GTO infuriated GM's fun police, ultimately General Motors was a corporation, and the goal of any corporation is to earn a profit. The GTO option most certainly earned a profit for the Pontiac division.

The success of Pontiac's GTO lit a fire under other US auto manufacturers. Suddenly everyone wanted to jump into the muscle car game and get as many baby boom dollars as possible. The GTO might have been a cash cow for Pontiac, but it also became a target at which every other automaker in the United States By 1965 Chrysler was well on its way to phasing out the 426-cubic-inch Max Wedge and replacing it with the Street Hemi. This Coronet 500 convertible was one of the last Mopars to leave the factory equipped with the 426 Wedge; the following year it would be replaced by the 440-cubic-inch RB engine.



top: When Chrysler brought the 426-cubic-inch Hemi online as its top performance engine, its engineers retuned the Max Wedge engine to make it more livable on the street and renamed it the Street Wedge. **bottom, left:** Nothing stirred the passions of a baby boomer like a badge proclaiming one's ride to be a Coronet 500. Chrysler hadn't quite cracked the muscle car nut just yet. **bottom, right:** That console-mounted tachometer probably wasn't very useful in a drag race.

BUICK GRAN SPORT

"Possessing a bit of the sporting blood ourselves, we looked over the situation carefully and then divined that the smaller Skylark, equipped with 325 hp, 401 cubic inch powerplant formerly found in every Wildcat, would probably hold the edge on performance as well as appeal for the nation's 'hot set', so a test was arranged for a thorough on-and-off-the-road evaluation."

Hot Rod magazine, May, 1965



Buick's Gran Sport wasn't the fastest muscle car on the market, but it earned praise for being one of the most luxurious. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

was about to take aim. In particular, Pontiac's sister divisions Oldsmobile, Buick, and Chevrolet chafed at being outsmarted by Pontiac. These divisions had a distinct advantage over Ford and Chrysler—they had their own A-body cars that were, for all practical purposes, versions of the GTO. However, GM's other divisions' earlier decisions to pursue separate small-block and big-block engine families meant that dropping larger engines in the bays of their A-body cars would take a lot longer than the 20 minutes it took Bill Collins and Russ Gee to create the first GTO.

Oldsmobile wasted little time creating a GTO competitor. The division had little time to waste. It needed all the help it could get when trying to develop a car for the youth market. The company that had earned a reputation as General Motors' performance division when it introduced the Rocket 88 V-8 in 1949 had become GM's aging spinster, selling stodgy conservative sedans that held little appeal for the baby boomers. Olds had attempted to gain a foothold in the emerging youth market with its F-85 version of the GM X-body platform, but that attempt was less than successful. Even though the F-85 had the prerequisite V-8 engine from the very beginning—the aluminum-block Rockette—the F-85 was one of the industry's slowest-selling small cars. Even the lowly Studebaker Lark outsold Oldsmobile's smallest model.

With the GTO, Pontiac had shown Oldsmobile the path to performance redemption. In the middle of the 1964 model year, Oldsmobile introduced a muscle car option package for its F-85 Cutlass with big V-8 power, or at least as big as Oldsmobile could offer without extensively redesigning its version of the A-body chassis. Dubbed the 4-4-2 (which stood for four-speed, four-barrel, dual-exhaust), Oldsmobile initially gave its car a souped-up version of the division's 330-cubic-inch V-8 engine. While this engine produced 290 horsepower, putting it on par with the 300-horsepower Chevy Malibu SS, neither version of GM's A-body could compete with the 348-horsepower Tri-Power GTO. More importantly, neither car could touch the massive 428 lb-ft of torque the bigger Pontiac engine produced.

For the 1965 model year, General Motors' accountants, having tallied the contribution the GTO had made to the corporate bottom line, twisted the arms of GM's corporate fun police and made them relent on the 10-pounds-per-cubic-inch rule. GM raised the displacement limit of its intermediate cars to 400 cubic inches. This allowed the good corporate soldiers at Oldsmobile to stuff a proper big-block engine in the bay of the 4-4-2, a version of the 425-cubic-inch engine Oldsmobile used in its larger sedans with the bore reduced just enough to skirt under the new corporate displacement limit. With the bigger engine in place, the 4-4-2 (the initial 4 now standing for 400 cubic inches, since Oldsmobile offered an optional automatic transmission in addition to a four-speed-manual for the 1965 model year) produced 345 horsepower, making it a match for Pontiac's great one.

Like Oldsmobile, Chevrolet initially followed the corporate displacement regulations and opted for a stronger small-block engine to compete with the big-cube GTO. In 1964, Chevrolet borrowed the 350-horsepower 327-cubic-inch V-8—one of the strongest small-blocks in its stable—from the Corvette. Regular Production Option (RPO) L79 (as the engine was known when mounted in a Chevelle) used a Holley four-barrel carburetor, big-valve heads, 11.0:1 compression, and, surprisingly, hydraulic lifters to produce a whopping 360 lb-ft of torque. When

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top: Plymouth's answer to the Dodge Charger was
the GTX package for the 1967 Belvedere. middle, left:
Like the Charger, the GTX featured lush appointments.
middle, right: The only thing in the interior that belied
the GTX's performance potential was that giant stick
shifter on the floor attached to a four-speed transmission.
left: Chrysler was ahead of the curve in mounting its most
potent engines in its muscle cars. It would take Ford and
GM a few years to catch up.








top, left: Hood ornaments might have been the height of fashion on a family sedan, but were extremely uncool on a muscle car. top, right: While the Charger was a designed-from-scratch muscle car, cosmetically the GTX package, sporty though it was, consisted of little more than muscle car-esque ornamentation for its basic sedan.
left: The Belvedere badge on the fender probably didn't impress muscle car buyers nearly as much as the potent 440-cubic-inch V-8 under the hood. above: To create the GTX, Plymouth added racy trim like chrome fuel filler caps. The dual exhaust was purely functional.





top: The fact that this 1967 Mercury Comet 202 R-code sedan uses the two-door post body style instead of the lessrigid two-door hardtop body style tells you that its intended purpose was drag racing. **bottom, left:** Yes, that is the same 427 side oiler engine that dominated NASCAR racing in the mid-1960s. While rated at 425 horsepower in R-code form, actual output was probably closer to 500 horsepower. **bottom, right:** The steel-wheel-dog-dish-hubcap setup was a trademark look for drag racers, but it was a case of form following function; the torquey engines used in drag racing produced so much twisting force that the strength of steel wheels was a necessity. The engines would have twisted lightweight aluminum rims to ribbons.

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the power was transmitted through a 3.70:1 rear end, the tires proved the limiting factor in getting good quarter-mile times.

Chevelles equipped with RPO L79 made great street racers, but Pontiac's GTO had created the archetype for the muscle car: a big engine in a midsized car. Once the buying public developed a craving for such a beast, nothing less would satisfy that craving. To compete, Chevrolet needed a bigger powerplant, something Chevy designers had been toying with for some time. As early as 1963, Vince Piggins, who headed up the development of Chevrolet's performance products, had begun working on a Chevelle with a version of the Mark II racing engine that had effectively been killed when GM banned corporate involvement in racing. When GM raised the displacement limit for the A-body cars to 400 cubic inches, Piggins' team had its design ready, and in February 1965, Chevrolet unveiled a version of the Chevelle that was a true muscle car.

The car, the Malibu SS 396, equipped with what Chevrolet coded the Z16 package, contained everything needed to make baby boomers salivate. Designed as a luxury-performance car, the Z16 Malibus featured every creature comfort on Chevrolet's option list: clock, tachometer, 160-miles-per-hour speedometer, four-speaker AM/FM stereo. But the feature that really triggered the Pavlovian responses of younger buyers lurked under the hood: a street-going version of the infamous big-block Mark II mystery motor. The 396-cubic-inch engine, which pumped out a class-leading 375 horsepower, retained all the best high-performance bits of the race-only engine, right down to the high-tech porcupine heads, so named because of the staggered arrangement of the valves.

Unfortunately, the Z16 version of the Malibu SS 396 was expensive—the price topped \$4,100—and exclusive. Chevrolet built just 201 examples, making the model one of the rarest muscle cars of the era. Volume production of Chevelles equipped with 396-cubic-inch big-block engines would not commence until a restyled version of the car debuted for the 1966 model year.

In 1964, Pontiac owned its title as GM's performance division, having wrestled it from Oldsmobile. But prior to Oldsmobile's usurping of that title on the strength of the division's Rocket 88 OHV V-8, Buick had held it for decades. Buick's Fireball Eight, an inline eight-cylinder—a design known as the straight eight—had powered performance cars like the Century since the 1930s. Throughout the intervening years, Buick had always kept sporty performance cars in its lineup and the division jumped at the opportunity to battle Pontiac in the intra-corporate muscle car wars that raged within General Motors after the introduction of the GTO.

When GM relaxed the ban on larger displacement engines in the corporate A-body chassis for 1965, Buick followed the lead of Chevrolet and Oldsmobile and mounted a 401-cubic-inch engine in its Gran Sport, which was a GTO-like option package for the division's A-body car, the Skylark. Although the engine's 325 horsepower put it at the bottom rung of the A-body performance ladder, the engine made up for its relative lack of peak power with a prodigious torque output of 445 pounds. This made the Gran Sport a real tire shredder when taking off from a stoplight. Smokey burnouts impressed the

GTO

"Some amazing things occur when you get this 115-inch wheelbase animal on the road, not the least of which is the admiring glances passed out, especially from the young people. It's plain enough from the strategically placed insignia that the car is a GTO. but that cool hood scoop marks it as the three-carb charger. On twisty, short-radius-turn roads, where driving as the average person would, the car handled beautifully; tracks well and goes where it's pointed without complaint. Increase the speed from 40 to 55 or 60 mph in an identical situation and that big hunk of cast iron under the bonnet begins to exert Newtonian influences, causing noticeable understeer."

> Hot Rod magazine, May, 1965

neighborhood kids a lot more than did esoteric dyno charts. Besides, if an owner wanted to do some serious drag racing with his Gran Sport, he could purchase a dual carburetor manifold and a pair of four-barrel carbs from his Buick parts man.

THE STREET HEMI

General Motors' other divisions weren't the only competition the GTO faced. Chrysler also saw an opportunity to fatten its corporate coffers by marketing extreme performance to the budding baby boom generation. Extreme performance was something Chrysler Corporation had in abundance. In addition to the small-block and big-block wedge engines, it had the all-conquering Hemi.

Chrysler's decision to build a production street car with the 426 Hemi came about as a result of NASCAR's rules. For the Hemi to be eligible to run on NASCAR's superspeedways, it would have to grace the engine bay of a specific number of road-going cars to be sold to the general public. Hemi-powered cars had dominated NASCAR racing in 1964. In all, Hemi-powered Plymouths won 12 Grand National races that year and Hemi-powered Dodges won 14. The Hemi so overwhelmed the competition that the situation bordered on ludicrous. To keep the Grand National series from turning into the Chrysler Cup races, NASCAR banned the Hemi from competition for 1965 on the grounds that it was not a regular production engine.

And it was not. Chrysler had equipped a handful of pedestrian Plymouths and Dodge street cars with Hemi engines in 1964, the exact number of which is unknown, but the number was so low that few people at the time ever saw one outside of the confines of a drag strip. And calling them "street cars" was a stretch. The cars were not created on a factory assembly line, but rather were shipped to Automotive Conversions, a company that manufactured ambulances and limousines, where they were converted to stock-looking drag racing cars. The only visual clues as to what madness lurked beneath the hoods of these cars were shovel-shaped hood scoops that funneled huge amounts of fresh air to the hungry pair of four-barrel carburetors feeding the engines.

Chrysler manufactured more Hemi-powered "street cars" in 1965, but these were even further removed from the cars the company manufactured for actual street use. By this time the F/X class had superseded the Super Stock class as the premiere drag racing class. (The F/X class would eventually morph into the Funny Car classes.) The Hemi-powered cars Chrysler built in 1965 featured the altered wheelbases and lightweight materials allowed in the F/X class. More of these cars found their way to private enthusiasts, but Hemi sightings in the wild were still extremely rare, and every Hemi Chrysler built was intended as a tool for racing. Chrysler had yet to follow Pontiac's lead and design a muscle car specifically for marketing to baby boomers.

Hemis were about to become less rare. NASCAR's banishment of the Hemi from its super speedways so angered Chrysler that it pulled all factory NASCAR-racing support for the 1965 season. In its attempt to avoid turning the Grand National series into the Chrysler Cup, NASCAR had inadvertently turned it into the Ford Cup, since Ford was the only factory still actively competing in the series. But Chrysler still wanted to race in the Grand National series, and the only way that



above: There was nothing fancy about the interior of a car intended solely for blasting down drag strips a quarter of a mile at a time, given that the ride would only last a few seconds. **right:** The proper number of pedals for a muscle car.





would happen would be for the company to offer a version of its insane Hemi race engine in its passenger cars on a wider basis.

By late 1965, Hemi-powered Mopars finally roamed free on American streets; the Hemi had become a regular production option on Chrysler's new B-body cars for the 1966 model year. One new B-body model in particular was aimed squarely at the emerging muscle car market: the Dodge Charger. While the other B-body cars featured styling that wouldn't scare anyone's grandmother, the Charger had the sleek, sexy look a car needed to go up against the likes of the GTO and Malibu SS, thanks to its sculpted fastback roofline. The Charger had other styling touches that set it apart from the crowd besides the roofline, like headlights hidden behind doors in the grille and bucket seats not only in the front, but in the back as well. The same budget constraints that kept much of the Valiant's sheet metal on the 1964 Barracuda also kept much of the Coronet's sheet metal on the Charger, but no one would confuse the two. Visually the Charger had enough unique content to distinguish it from Grandma's grocery getter.

The Charger was a true muscle car, a sporty intermediate-sized car with big V-8 power. Pedestrian Chargers featured V-8s ranging up to a 383-cubic-inch version

Plymouth took everyone by surprise with its hugely popular Road Runner in 1968, especially its competitors at Ford and General Motors. *Archives/TEN: The Enthusiast Network Magazines, LLC.* of the big-block wedge. If a buyer was rich enough and brave enough to spend the extra \$1,105 needed to check the Hemi box on the option sheet, the Charger had the biggest V-8 power available. Given that Chrysler engineers only made minor changes in the transition from race engine to street engine, the street Hemi's horsepower rating, which remained the same as the race engine at 425 ponies, was still a conservative estimate by any measure. The 1966 street Hemi so closely mirrored the specifications of the earlier racing versions that Chrysler used the street version in the 110 cars it built for Super Stock drag racing in 1967, testifying to the performance potential of the design.

While the Charger sold well for Dodge, the vast majority of buyers opted for one of the wedge engines rather than the almighty Hemi. For most people the Hemi was simply too much engine and cost too much money. Even those people who could afford the steep asking price seldom had the skill to handle what was without question the single most powerful regular production engine of the muscle car era. The few people who did check the Hemi box on the option sheet ended up with one of the biggest, baddest powerplants ever offered for public consumption. Any discussion about who had the fastest car in town ended the instant someone said, "I've got a Hemi ... " The street Hemi might not have been the most popular choice for Charger power, but its very existence escalated the



Pontiac went further upscale with its redesigned GTO in 1968, but the top engine option was still only a 400-cubic-inch Ram Air IV—potent, to be sure, but a bit small in the face of 428-cubic-inch Fords and 440-cubic-inch Mopars. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

DODGE CHARGER

"Attention! Beat the troops to station. One if by land, two if by sea, and all that. In case you didn't know it, there is a rebellion underway in our country, aimed at attracting supporters from all factions, left and right. At least that's what the Dodge boys hope will be the effect of their advertising to allow further flanking movements on the competition in the medium-price field. Hottest secret weapon in their stratagem bag is a sporty, new, full-sized fastback dubbed the Charger from an earlier machine of the same name that was shown around the country last year. It takes about a season longer to bring out a new design this way, exhibiting an advance prototype, but it allows the distinct advantage of accurately pre-gauging public acceptance. The fact of the matter is that some critics assayed the original one-off Charger as being a bit too bulbous in a few spots. Evidently word got back to the farm because the finished car that we previewed at Riverside International Raceway early in October appeared to be a happier blend and anything but bulbous."

Hot Rod magazine, January, 1966

Dodge had been building cars to the muscle car formula since it introduced the 300-C in 1955, but the 1966 Charger was the first car the brand developed specifically to capture the youth market. *Archives/TEN: The Enthusiast Network Magazines, LLC.*





When GM restyled its A-body muscle cars for 1968, the lineup still included convertibles like this Chevelle. Because the GM A-body was the only muscle car of the era to use a traditional body-on-frame design, as opposed to unit construction (or partial unit construction in some cases), it made a more rigid platform for chop tops than did most of the muscle cars built by the competition. *Archives/TEN: The Enthusiast Network Magazines, LLC.* muscle car performance war to a level no one could have imagined when Pontiac bolted together the first GTO.

The year 1964 saw the birth of the muscle car, a vehicle that was more of a recombination of existing parts designed for and marketed to the largest, most affluent generation in American history than it was a technological innovation. While it may have been more of a marketing triumph than an engineering triumph, without a doubt the GTO changed automotive history. It also touched off a performance war the likes of which the US auto market had never seen before and has not seen since.

That year also saw an escalation of US involvement in Southeast Asia. On August 2, North Vietnamese patrol boats attacked the American destroyer USS *Maddox* in the Gulf of Tonkin, 10 miles off the coast of North Vietnam. They fired three torpedoes, but only a single machine-gun round actually struck the *Maddox*, resulting in no causalities. This began a series of events that ultimately led to Secretary of Defense Robert McNamara lobbying congress to give President Johnson a free hand in dealing with the Vietnamese situation. The resulting Gulf of Tonkin Resolution gave Johnson unprecedented powers to wage war in Vietnam. During his 1964 reelection campaign Johnson vowed not to get the US military involved in a war 10,000 miles away from the US mainland. But even before the election, he and his advisors planned an escalation of US involvement in Vietnam. By the end of the year, 23,000 US "military advisors" fought alongside the South Vietnamese against the North Vietnamese Army and the Viet Cong guerrilla fighters.





top: Oldsmobile's redesigned 1968 4-4-2 was much cleaner and more purposeful-looking than the car it replaced. **left:** Perhaps the least flattering angle of the 1968 4-4-2 was its face. While the car was genuinely beautiful from most angles, its wide-set headlights made it look a bit like Garrison Keillor from the front. **right:** While "4-4-2" no longer stood for "four-speed, four-barrel, dual-exhaust," the 1968 car still sported dual exhaust. Most Americans were more concerned with the horsepower ratings of the new crop of muscle cars than they were with political turmoil in a part of the world many of them had never even heard of. Few people imagined that tens of thousands of American youths would die in that part of the world by the end of the decade, decimating the generation of people for which the muscle cars had been designed. Fewer still could have foreseen that the political backlash against this war would stack the federal government with people as opposed to highperformance cars as they were to the Vietnam War.

TOTAL PERFORMANCE

For the time being, American auto enthusiasts enjoyed the bumper crop of high-performance muscle cars resulting from the performance war between Chrysler and the various divisions of General Motors. Chrysler in particular had escalated the conflict with the introduction of its street Hemi, the muscle car equivalent of a tactical nuclear weapon.

Ford produced some cars with respectable performance during this period, but most of them were homologation specials built in ultralow volumes to qualify cars and engines for racing programs. In the muscle car war raging in Detroit, Ford appeared to be neutral, an automotive Switzerland watching the battles from the sidelines.

But Ford wasn't absent from the performance war. The company might not have been competing in the battle between the classic muscle cars—intermediate-sized cars powered by big cubic-inch engines—but it was competing in different battles. Ford let other manufacturers define the muscle car in part because the company's designers were busy creating an entirely new breed of performance car: the pony car.

"Did we sit out the muscle car era? Well, in a sense we did," Ford's former product planning manager Don Frey said. While it's true that Ford never really pursued the classic muscle car formula as dictated by Pontiac's GTO—big V-8 engine in an intermediate-sized coupe—that doesn't mean Ford Motor ignored the needs and desires of the emerging baby boom market. A casual observer might have thought the company was asleep at the wheel, but people inside Ford clearly understood what this huge new market wanted.

Lido "Lee" lacocca was one such person. lacocca had pondered the sales potential of an attractively styled Falcon since the car's introduction, but questioning anything about the Falcon was not a popular stance to take within the company. The two most influential people at Ford—Henry Ford II, or "the Deuce," as he was known, and Robert McNamara—had micromanaged the styling of the Falcon. First-year Falcon sales of 417,174 cars,

WHAT IS A MUSCLE CAR?

"Just what is a Muscle Car? Exactly what the name implies. It is a product of the American car industry adhering to the hot rodder's philosophy of taking a small car and putting a BIG engine in it. To balance this out, handling, braking and related essentials are modified to result in a performance machine for the streets. They tack racy names to the car: GTA, GTO, GTX, or just plain GT, R/T, SST, SS, GS or, for the lack of better initials, 4-4-2. They doll the car up with fancy trimmings and put it up for sale. And it sells like crazy. It is part and parcel of America's unending quest for youthfulness. It is a sexy car. in the Detroit sense of the word. though some of the cars lean toward the Rubenesque rather the Hefnerian. But, most of all, the Muscle Car is Charles Atlas kicking the sand in the face of the 98 HP weakling. It is the American man's answer to Susan B. Anthony, Wally Cox and Don Knotts reign supreme and Woody Allen can go home again."

Road Test magazine, June, 1967

PONTIAC GTO

"Performance has been the byword with Pontiac for several years. The Pontiac line-up of powerplants includes four versions of the same 400 cubic inch engine. Horsepower ratings start at 335 and go to 360 'advertised horsepower.' We point out advertised because the hottest engine, the Ram Air 400, has been conservatively dynoed at over 400 HP, but there's a GM edict of not advertising more than 10 lbs. of horsepower ratings, which prevents them from claiming any more than the conservative 360 horses. The Ram Air is designed to meet the large Chrysler performers on common ground, though, at this writing, they have yet to lock horns.

"The standard engine for the performance enthusiast is the one we have had the most experience with: the Quadra-Power 400 with 4-barrel carburetor. It puts out 360 HP at 5,100 RPM and is torque rated at 438 ft/lbs at 3,600 RPM. It is a very docile engine, well behaved yet ample to meet any task. It is probably the best engine of the recent GTO series."

Road Test magazine, June, 1967



Pontiac's GTO achieved its peak popularity with the 1966-1967 body style, which was far more curvaceous and sensual than the boxy original. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

a record number of units, indicated that their vision had been spot on for the market. It would have remained the right car for the market, had the market not changed around the car.

But, as always happens, the market did change. Chevrolet took its Corvair in a more sporting direction in its sophomore year, creating the Corvair Monza, which featured bucket seats and a four-speed transmission as standard equipment. Falcon sales rose during the car's second year on the market, but not at the rate Corvair sales rose. Falcons still outsold Corvairs nearly two-to-one, but the peculiar little Chevy had closed the gap at a rapid pace in just one year.

By that time McNamara had left for Washington, DC, lacocca had been promoted to vice president and general manager of Ford Division and was now in a position to pursue his idea of a betterlooking Falcon.

lacocca not only questioned the direction his predecessor had taken with Falcon styling; he questioned the direction in which McNamara had taken the entire company. McNamara's pursuit of utilitarian transportation had been so single-minded and dogged that some within the company secretly wondered if he yearned for the days of cars painted only in black. lacocca formed what became known as the Fairlane Committee, a team assigned to brainstorm ideas for Ford's future direction, a team that included Don Frey. One of the issues concerning the committee was the increasing share of the small car market that Chevrolet's Corvair was eating up since the introduction of the Monza.

The committee agreed that Ford needed to develop a sporty car to help shed the stodgy image McNamara had cultivated, coining the phrase "The Lively Ones" to encompass the company's new performanceoriented philosophy. In February of 1962, the committee's philosophy first took the form of a car made available to the public: the





top: Buick's Gran Sport wasn't the fastest muscle car in 1968, but it was one of the most luxurious and made an ideal car for relaxed topless cruising. middle, left: The 400-cubic-inch V-8 in Buick's Gran Sport put out just 340 horsepower in base form. middle, right: Buick's angular dash design didn't allow for gauges such as a functional tachometer.
bottom, left: With red highlights everywhere, the Gran Sport was more about form than function. bottom, right: Though it had a sufficiently angry front end to be a muscle car, the rest of the design was decidedly friendly.







left: While the big-block engine of the SS396 was plenty stout, it seemed a bit puny compared to the engines coming from GM's competitors and enthusiasts clamored for more power. right: The year 1969 would be the last one in which General Motors muscle cars were hampered by corporate limitations on engine sizes. In 1970 the GM divisions would be freed to unleash their full fury.

(opposite page) top: The 1969 Chevelle SS396 was a decidedly handsome car. but it was underpowered compared to the competition. middle, left: The interior of the Chevelle was a bit less opulent than GM's other A-body muscle cars and it was frequently denigrated in the enthusiast press for its lack of creature comforts. For its lack of comfort in general, really. middle, right: In the early-to-mid-1960s, the SS badge often meant the fastest car in town. By 1969 cars from Ford and Chrysler were handing Chevrolet its bow-tied bottom. bottom: In 1969 Chevrolet's top muscle car was the Chevelle SS396.



Falcon Futura. Like the Corvair Monza, the Futura featured bucket seats and a fourspeed transmission, prerequisites for a sporty car. Unfortunately the public was developing another prerequisite for a sporty car: a V-8 engine. The Futura featured a tarted-up 170-cubic-inch inline six that generated 101 horsepower, quite a few more than the standard 144-cubic-inch engine, but it was still a six. The following year, Ford unveiled the Sprint version of the Falcon Futura. The Sprint featured Ford's newly developed small-block V-8 that used advanced thin-wall casting techniques, resulting in a lightweight powerplant perfectly suited for installation in a compact car like the Falcon.

The Futura Sprint proved to be one of the pivotal cars of the era, not because it was the most exciting vehicle on the market—it was far from that—but because it represented a dramatic change in Ford's corporate philosophy. A philosophy of conservatism had been championed not only by Robert McNamara, but also by Ford's young chairman, Henry Ford II. The Deuce directed his company's resources toward promoting an image of safety rather than performance.

But by 1962 even the chairman realized his philosophy needed changing. Chevrolet and Pontiac dominated NASCAR's superspeedways and Chrysler's new Max Wedge controlled NHRA drag strips. Ford had become practically invisible to the car-crazy baby boomers. Lee lacocca convinced Ford that he needed to act decisively or risk losing the emerging youth market to the competition. The Deuce contacted his counterparts at General Motors and complained about the blatant violations of the AMA racing ban that were taking place at GM's Pontiac and Chevrolet divisions. The top GM brass responded that the violations had been the result of actions by rogue division managers and corporate headquarters had no way of reining in these outlaws. Ford responded with a letter stating that Ford Motor would no longer be part of the voluntary ban on factory involvement in motorsports.

By this time the Fairlane Committee's "Lively Ones" concept had evolved into "Total Performance," and the Deuce's letter, which effectively told the AMA to stuff

RTMOMATA GTX

"Dodge and Plymouth provide the same engine, a 440 cubic inch monster. Dodge calls theirs the Magnum V8 while Plymouth uses Super Commando. The only other engine in the Chrysler stable that will outperform it is the 426 Hemi. This engine is the performance winner of the cars featured in this study. The 440 Super Commando (nee Magnum) develops 375 HP at 4,600 RPM, with a torque rating of 480 ft/lbs at 3,200 RPM. This is the largest displacement high performance engine in the country, but it is not as 'rough' as the Chevy engine. It is extremely docile in town, quiet and smooth. Only when you unleash all that power does the engine show its competition heritage and performance potential. The engine powered the GTX to fastest speed and lowest ET on the Irwindale quarter mile drag strip. In the Dodge, it powered the car into the number one handling rating around the Willow Springs road course. We attribute the fast Plymouth times on the strip to lighter weight overall. The Dodge is no slouch at the strip, but the heavier weight makes it a far superior handling car. But both cars benefit from this very fine engine."

Road Test magazine, June, 1967

its ban, meant that the committee could pursue total performance at the highest levels of motor racing. The team wasted no time planning Ford's return to NASCAR stock car racing and NHRA drag racing, but team members didn't stop there. They also planned to build an engine to run in the Indianapolis 500 as well as getting involved in international racing series like Formula 1 and the World Rally championship. They even planned to beat prestigious automakers like Ferrari at the 24 Hours of Le Mans.

The committee also began working on a car that would bring the concept of total performance to the masses. The V-8-powered Falcon Futura Sprint represented the first tentative efforts to making such a car a reality, but the committee had a much more exciting car in the wings. Lee lacocca wanted his Ford division to produce a consumer car that truly embodied the concept of total performance and encouraged his designers to develop a sporty fourseat car. The assignment eventually fell to Frey and his assistant Hal Sperlich. Frey and Sperlich were charged with creating a special Falcon, a sporty 2+2-seat car (a car with minimal rear seats) based on the Falcon chassis. The car was to cost no more than \$2,500 and weigh no more than 2,500 pounds.

The Deuce did not share lacocca's enthusiasm for such a car. The Falcon Futura Sprint had not sold in huge numbers and he saw no reason why the project Frey was working on would fare any better. This meant that Frey did not receive a lot of support from Ford's top brass. Where the Deuce went, so did most of the rest of corporate management.

"Nobody wanted the car," Frey recalled. "The car came before the executive committee five times, and each time it got shot down. Everyone was afraid of the Edsel." The Edsel debacle still loomed large in everyone's consciousness at Ford in the early 1960s. An utter marketing and sales failure, the disastrous Edsel line of cars had drained Ford Motor coffers of more than \$350 million in the two short years the car had been on the market. The company was only starting to recover from the fiasco by the time Frey tried to sell his new car to the executive committee.

"Each time I proposed it," Frey continued, referring to his new sporty car design, "Mr. Ford said no. Then, finally, the afternoon after the fifth meeting, we were in the design studio looking at some new proposals. Mr. Ford walked up behind me and whispered in my ear—I'm going to use, exactly, the same language he did—'Frey,' he said, 'I'm tired of your fucking car. I'm going to approve it this afternoon, and it's your ass if it doesn't sell.' Of course it did sell. It sold and sold."

Frey did not exaggerate. The car of which he speaks—the Mustang did sell and sell. Ford introduced the Mustang as a 1964 1/2 model on April 17, 1964. By the end of that day Ford had sold more than 22,000 copies. By year's end it had sold 263,434 units, and by the end of the Mustang's first full year on the market, Ford had sold 418,812 of the sporty 2+2 machines, an all-time sales record for the company.

In its most basic form, the Mustang represented little more than a Falcon with pretty sheet metal. In addition to its chassis, it shared its standard 170-cubic-inch, 101-horsepower inline six with the donor Falcon, but with its short trunk, long hood, and aggressive stance, it shared none of the Falcon's meek economy-car demeanor. When outfitted with one of the optional V-8 engines, it had the berries to back up its good looks. The penny-pinching speed freak could opt for the F-code 260-cubic-inch V-8 engine from the Futura Sprint. In the Mustang, this mill was tuned to produce 164 horsepower, an acceptable output for the lightweight coupe, but the serious power junky opted for the 210-horsepower, 289-cubic-inch D-code engine, which made Frey's Mustang one quick car.

With the Mustang, Ford Motor had not just developed the perfect automobile for the emerging baby boom market; it had developed the perfect automotive genre: the pony car. In its original form the pony car represented a fun, fast, sporty alternative to the hairy-chested muscle car typified by cars like Pontiac's GTO. Still, lacocca and company knew there was a market for hairy-chested muscle cars, and for 1965 they offered a couple of optional 289-cubic-inch engines that made the Mustang a bit hairier: the 225-horsepower A-code and the 271-horsepower K-code

The K-code engine in particular had the Mustang nipping at the heels of the muscle car crowd. Its solid lifters, which needed periodic valve-lash adjustments, meant that an owner best be comfortable with grease-stained fingernails, but if a speed freak wanted a Mustang that would run with thenew muscle cars coming from various GM divisions, the K-code was the only way to go.

When crunching the pony car formula, the math worked. The Mustang's success took just about everyone in the auto industry by surprise, including Henry Ford II. Before the Mustang had been on the market two full years, sales topped the one-million-unit mark. Compare that number to the fewer than 30,000 Sprints sold over roughly the same span of time and the answer to Lee lacocca's rhetorical question—would the Falcon sell better if it looked better? was clearly yes. lacocca had been correct, the Deuce was wrong, and Frey's ass was safe.

DODGE R/T

"First choice when it comes right down to the hardpan is the Dodge. It has as much muscle, for practical purposes as the Plymouth, it is more docile at slow speeds and has a slight edge in handling. But, mainly, your best chance of getting a good one off the floor are at your Dodge dealer's. We cannot praise the Chrysler quick-ratio power steering too highly. It is by far the best of all. As to a comparison between these cars and the imported sports sedans, it's like rock and roll vs. jazz. You can't really compare them."

Road Test magazine, June, 1967



CHAPTER 3 MUSSELE UITE

nitially, Chevrolet responded to the Mustang by doing what had worked in 1961—building a sportier version of the Corvair. The restyled 1965 Corvair was sportier, and by this time its flat-six could be ordered with a space-age turbocharger, giving it impressive acceleration for a six, but it was still a six. Some people within the company understood that this car would not be enough to attract the growing number of young buyers and had been working on a concept similar to the Mustang since around the same time that lacocca commissioned the Fairlane Committee.

While the 1970 Boss 429 was a handsome car, the lack of development of its racing engine for street use strangled performance of the car in stock form.





top: In mid-model-year 1964 Ford introduced its revolutionary Mustang. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

left: The Mustang broke no new technological ground, but its European-like styling changed the way Americans looked at automobiles. *Archives/TEN: The Enthusiast Network Magazines, LLC.* Chevrolet's Design Vice President Bill Mitchell and Chief Designer Irv Rybicki began secretly working on their own pony car in 1962. Like the Mustang, the car used the underpinnings of an economy car as a starting point, in this case Chevrolet's Chevy II, and like the Mustang, the car featured a short rear deck and a long hood. The resulting clay mockup bore a remarkable resemblance to Ford's upcoming Mustang, though Mitchell and his team had no idea what their rivals in Dearborn were doing.

Division Manager Bunkie Knudsen liked their concept car but worried that it would dilute a line of cars that was already being stretched thin. Chevrolet offered the Corvette sports car, the Corvair and Chevy II compacts, the full-sized Impala, and for 1964 was planning to introduce its version of the intermediate A-body chassis, the Chevelle. Add to that the bewildering array of sub models in production or development, like Monza, Nova, Malibu, Bel Air, and Caprice, and it's easy to see why Knudsen worried about adding another model to the mix.

Late the following year Hank Haga, chief of Chevrolet's Number Two Studio, developed a similar concept: the Super Nova. Mitchell and retired design vice president Harley Earl liked the car enough to develop a running prototype for the show car circuit. The public reacted well to the new car when it debuted at the World's Fair held in New York in early 1964, but GM's upper management was less enthusiastic. Members of management wanted to maximize return on the money they had invested developing the Corvair and rightly feared that a car like Haga's would cannibalize Corvair sales. If the automotive status quo that existed at the time the Super Nova made its debut had remained the same, this decision might

Of course the Mustang was available as a convertible. *Archives/ TEN: The Enthusiast Network Magazines, LLC.*



COMPARING THE CORVAIR, FALCON, AND VALIANT

"All three cars tested had their good and bad points . . . Corvair's fuel economy, although not bad, is not as good as Falcon's, premium fuel is required and the fuel tank is just about half as large as it should be. The seats are much too low for comfortable driving and hard to get in and out of. Interior finish and quality is only fair, the floor-mounted shift lever is awkward, the car handles badly on tight corners, has rear wheel 'steer' on rough roads at high speeds and has poor luggage space without the optional cost folding seat . . . The Falcon will deliver the best fuel economy, has comfortable seats, has the best interior finish, is easy to get in and out of, has convenient shift lever, handles good on smooth roads and has ample luggage space . . . Valiant's economy is nothing to brag about . . . In ride and handling, the Valiant is the best of the three on all types of roads . . . Lugging power is much better than Corvair or Falcon and the optional three-speed automatic transmission has a solid edge over the two-speed units offered by the others."

Hot Rod magazine, February, 1960

have been wise. But just a few short weeks after GM displayed the Super Nova, lacocca and Frey dropped an atomic bomb on the automotive status quo in the form of the new Mustang.

GM management was slow to accept the dramatically changing times. When the Mustang hit the market, most managers at General Motors were underwhelmed and didn't expect the new car to sell well. Some found the boxy styling and flat body panels old fashioned and unappealing, but more astute managers like Pete Estes knew the car would cause problems for General Motors.

It was easy for GM's top executives to ignore the Mustang at first, because they existed in such rarified isolation that they genuinely didn't know that Ford was selling Mustangs faster than it could build them. They had been misinformed that the Mustang wasn't selling well, so when they learned that Ford had sold more than 100,000 Mustangs in two months, it shook the hidebound corporation to its very core.

Even the most obtuse, self-absorbed corporate suit could no longer ignore the Mustang's sales numbers. The new pony car market Ford had created was just too lucrative for General Motors to remain on the sidelines; GM would have to swallow its corporate pride and admit that the Corvair could never be a player in the pony car game. In August 1964, GM management finally gave Bunkie Knudsen official approval to develop Chevy's answer to the Mustang.

Given that the Mustang would have more than two years to develop a market and a reputation on the street, the new Chevy would have to be more than another good car; it would have to be better than the Mustang in every measure. It would have to be sportier, more comfortable, better looking, and, most importantly, better performing. It would have to be quicker in a quarter-mile, have a faster top-end speed, and handle better than the Ford.

Given that the new car would be based on the lowly Chevy II platform, this would be a tall order for Chevy's engineers and designers. To improve on the Chevy II's less-than-stellar handling and noise and vibration isolation,



While the Mustang looked sporting, its on-track performance was far from sporty. *Archives/TEN: The Enthusiast Network Magazines, LLC.* Chevy engineers redesigned the unit-body chassis, focusing their efforts on the connection between the front subframe and the main body. They also modified the suspension extensively.

Internally, Chevrolet coded the car the F-body, perhaps a nod to the obvious fact that it had come into existence as a direct response to competitor Ford's pony car. The new Chevy needed to be in dealer showrooms as soon as possible to capture some of the Mustang's record-breaking sales, so Chevrolet engineers put in a lot of overtime to achieve all their design objectives in as short a time as possible.

In March 1966, just 18 months after official development began and before an official name had been chosen for the car, Chevrolet presented a fleet of 20 cars to the press. The press and public had already taken to calling the upcoming Chevrolet the Panther, though internally it was still called the F-body. This fleet of cars was the beginning of an unprecedented public relations blitz that led up to the official unveiling of Chevy's new pony car on September 12 of that year. The blitz worked, and the press and public were in a frothy lather by the time the car that Chevy called—after much internal debate—the Camaro hit the streets. Technologically, the Camaro broke little new ground, but neither had the Mustang before it, and the lack of technical innovation hadn't hampered Mustang sales. For the most part, engine choices came from Chevrolet's existing stable of powerplants, ranging from a 230-cubic-inch inline six that generated 140 horsepower to a 275-horsepower 327-cubic-inch V-8. Only one engine—the 350-cubic-inch small-block V-8—was unique to the Camaro.

General Motors Group Vice President Ed Cole, who had overseen the development of original Chevy small-block V-8 when he had been the general manager of Chevrolet a decade earlier, personally ordered engineer Don McPherson to bore out the 327 and create a 350-cubic-inch version of the venerable powerplant. Unfortunately, the basic architecture of the block precluded such overboring and McPherson had to resort to increasing piston stroke, which created a number of additional challenges for McPherson's team of engineers. A longer stroke leads to higher peak piston speeds at a given rpm. A piston traveling up and down along a 3.48-inch stroke 3,000 times each minute is moving a lot faster than a piston traveling along a 3.25-inch stroke during that same amount of time. Increased piston speeds lead to all kinds of engineering challenges, challenges McPherson and his team worked long hours to overcome.

The planned introduction of the top-of-the-line Camaro SS 350, which would feature a high-output 295-horse version of the new engine, made McPherson's assignment even more challenging, but there seemed to be no choice but to develop a stronger engine. By 1965, as Camaro development was running at top speed, US auto buyers had developed what seemed like an insatiable appetite for

It took Chevrolet over two years to field a Mustang challenger, which took the form of the 1967 Camaro.









top: Camaro buyers could order the RS appearance package that featured vacuum-operated sliding doors that hid the headlights when not in use. **left:** The 1967 Camaro could be had as a Sport Coupe with a 327 engine. It wasn't the fastest car around, but it certainly wasn't a slouch. **above:** The 327-powered Camaro Sport Coupe was a performance bargain in 1967.



more and more power. A Camaro with a Nova-like SS trim package that was still powered by the same engines found in the pedestrian versions of the car would no longer cut it.

The Camaro debuted to a generally positive response, but sales started off a bit slow. Overall reviewers liked the new car, though most agreed that it was no improvement over the Mustang. The SS version in particular was well received, even though the 350 engine suffered some early teething problems, but the Camaro was not the home run General Motors had hoped for. The primary reason was that in the Mustang, Chevy had taken a shot at a moving target. In most respects the Camaro represented an improvement, however slight, over the 1964 ½ Mustang. If the Camaro had debuted at the same time as Ford's Mustang 2½ years earlier, it may have been the defining automobile of the baby boom generation. But the Camaro was not competing against that earlier Mustang; it was competing against a redesigned 1967 Mustang. The new Mustang had more contemporary styling, more features, and most importantly, a new engine: the big-block 390.

While Ford's advanced thin-wall casting technique had resulted in a lightweight V-8 engine that fit within the tight confines of the Falcon engine bay, its bigblock engines were still large and heavy and needed a lot of space in any engine bay in which they might reside. Fitting one of the beasts in a 1964 1/2 to 1966 Mustang was out of the question, so for the 1967 model year Ford designers widened the Mustang by more than 2.5 inches, opening up just enough space in the engine bay to drop in a big-block V-8. And, of course, this is exactly what The Camaro had everything needed to compete with the Mustang, including optional drop tops. they did. For an additional \$232 a buyer could order a 320-horsepower 390-cubic-inch big-block and transform his pony car into a genuine muscle car. While the new mill only generated 25 more horsepower than the Camaro's small-block 350, it pumped out excessive torque, the twisting force that made exiting a drive-in a much more impressive event than did peak horsepower.

excess as the Path to success

Clearly excessive power and torque sold cars. In 1967, Chevrolet sold 220,906 Camaros, enough to make the car profitable for the division but well short of the projected 300,000 unit sales. Meanwhile, Ford sold more than two Mustangs for every Camaro sold by Chevrolet. Making the Mustang bigger and badder had been a good move. By this time America had entered an era of excess. Excess defined every aspect of life in the United States, both public and private. Americans had excessive appetites and excessive income with which to feed those appetites. The biggest bulge of the baby boom-what sociologists call the pig in the python-was in their late teens and early twenties, a time of life when hormones play a much larger role in decision making than restraint and common sense. By 1967 they had formed the most indulgent society since the heyday of ancient Rome. They indulged in excessive artistic expression, excessive sexual activity, and excessive abuse of mood-altering substances. Their love of excessive cars with excessive engines capable of attaining excessive speeds fit in perfectly with their fast-paced sex-drugs-and-rock-and-roll lifestyles.

If the Camaro was to compete in this atmosphere of excess, it too would have to feature an excessively large engine. A couple of months after unveiling the car, Chevrolet engineers gave the Camaro exactly that. Like the Chevelle before it, the Camaro received the division's Mark IV engine, a 396-cubic-inch, 325-horsepower street-going version of Chevrolet's awe-inspiring 427-cubic-inch Mark II racing motor, as a \$263.30 option. If an owner was willing to deal with the hassle of mechanical lifters instead of hydraulic lifters and had the financial means to shell out an additional \$237, he could get the 375-horsepower



"... This new Mustang, introduced quite late in the model year, will be known as a '65 and will continue unchanged stylewise all through the upcoming model year. During this 16-month period, Ford has geared Mustang production to more than 100,000 units, so it's obvious they have intentions of selling a lot of wild ponies ... Unless we miss our guess, the exploding youth market will have the assembly lines working nights and weekends trying to keep up."

Hot Rod magazine, May, 1964



The long hood was crucial in giving the Mustang its sporting looks. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

L78 version of the engine. Like the 390-cubic-inch rendition of the Mustang, the 396-cubic-inch version of the Camaro pushed Chevy's pony car squarely into the muscle car ranks.

If the Mustang was the undisputed champion of the pony car market and the Camaro its up-and-coming challenger, then Plymouth's Barracuda was its sad clown. From the timing of the car's introduction, just two weeks before Ford dropped its atomic-bomb Mustang into the market, things had not rolled the Barracuda's way. Unlike the Mustang and later Camaro, the Barracuda's humble economy-car origins were clearly evident in the car's sheet metal and shape. Though the optional small-block V-8 engine held huge potential, its initial output of 180 horsepower put its performance more in the league of the Falcon Futura Sprint than the 271-horsepower K-code Mustang. Its massive glass fastback design gave it a class-leading 23.7 cubic feet of cargo capacity when the rear seatback was folded down, but this feature failed to stir the average baby boomer's automotive libido.

The one area where Plymouth's new fish outshone the competition was handling. Chrysler's unique torsion-bar front suspension helped give the compact To tame the Camaro chassis when the top was removed, GM engineers added oil-filled weights at all four corners of the car.











top: The top of the Camaro line in 1967 was the SS396, though that was introduced several months after the original launch. **above, left:** Initially the top engine offering was a 350-cubic-inch unit in the SS350 version of the Camaro. **above, right:** Dropping in the 396-cubic-inch V-8 turned the Camaro into a genuine muscle car. **left:** The new Camaro was as stylish inside as out.



PLYMOUTH BARRACUDA

"One thing stressed by Plymouth's management was that the Barracuda was not designed to be a sports car. Styling fits the theme for performance but it is strictly on the conservative side. Even with the V8 engine, the Barracuda does not have the blazing acceleration that performance enthusiasts might expect."

Hot Rod magazine, July, 1964



Plymouth's Barracuda earned a reputation for its relatively good handling, both on and off the track. *Archives/TEN: The Enthusiast* Network Magazines, LLC.



By the time the Camaro hit the streets, Ford had already launched its second-generation Mustang, so Chevrolet was shooting at a moving target. *Archives/TEN: The Enthusiast Network Magazines, LLC.* Barracuda excellent ride and handling characteristics. These skills would be put to good use on the racetrack in coming years. Chrysler engineer Scott Harvey was an accomplished amateur road and rally racer, and his experience and expertise showed in the Barracuda's chassis design.

In 1965, Plymouth tried to make the Barracuda more competitive with the Mustang and introduced a sportier Formula S version of its little fish. The Formula S capitalized on the Barracuda's strength—handling—and improved its weaknesses. Harvey used his racing Barracuda as a test bed for developing performance-enhancing features like quicker-geared steering, improved transmission ratios, better shocks and springs, and most importantly the Commando 273 version of the small-block V-8. With its four-barrel carburetor, dual exhaust, dual-point distributor, high-lift camshaft, and 10.5:1 compression ratio, the little engine's power output rose from 180 to 235 horsepower. This put the Barracuda slightly above the A-code version of Ford's 289-cubic-inch Mustang.

While the Barracuda's performance was on par with the Mustang, its looks weren't. The members of the sex-drugs-and-rock-and-roll generation were in no mood to compromise. They were more interested in the Mustang's flash than the Barracuda's virtues. With the help of the sporty Formula S, Plymouth sold 65,596 Barracudas for 1965, making it the top-selling model in Plymouth's lineup that year. But for the 1965 model year, Ford sold 559,451 Mustangs. In an attempt to capture some of the Mustang's sales, Plymouth revamped the Barracuda for 1966, giving it a restyled interior, a new instrument panel with a 150-mile-per-hour speedometer, and optional front disc brakes. But by this time the car's Valiant-based styling was looking even more dated than in previous years and sales plummeted 42 percent, to 38,029 cars. Meanwhile Ford sold an astonishing 607,568 Mustangs for the 1966 model year.



top: Even in convertible form, the new Camaro outperformed the original Mustang. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **middle, left:** When equipped with a 396 V-8, the Camaro could outrun the fastest Mustang in 1967. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **middle, right:** The new Camaro was easily the most exciting car of 1967. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **bottom, left:** Because it had been designed as a sporting car from the outset, the Camaro wasn't hampered with a pedestrian dash lifted from a sedan. *Archives/TEN: The Enthusiast Network TEN: The Enthusiast Network Magazines, LLC.* **bottom, left:** Because it had been designed as a sporting car from the outset, the Camaro wasn't hampered with a pedestrian dash lifted from a sedan. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **bottom, Chevrolet** had a hit on its hands. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



Although the Mustang continued to outsell the Camaro, Ford didn't take the new challenger lightly and began mounting increasingly powerful engines in the Mustang, culminating in the 428 Super Cobra Jet. Archives/TEN: The Enthusiast Network Magazines, LLC. At this point, Chrysler made the decision to develop a distinct pony car, internally coded the E-body. While this program would eventually yield the most outrageous pony cars of all time—the Plymouth 'Cuda and Dodge Challenger—it would be several years before these cars hit the market. In the meantime, Plymouth would have to have an interim car to compete with the Mustang and the upcoming General Motors F-cars.

In November 1966, Plymouth introduced a dramatically redesigned Barracuda, available as a coupe, a fastback, or a convertible-the same body configurations as the rival Mustang. With its curvaceous bodywork, the Barracuda finally broke away from its economy-car roots. Mechanically, the new car was even further removed from its Valiant ancestor. Both versions of the 273 engine returned for 1967—the 180-horsepower standard version and the 235-horsepower Commando version—but the big news was the inclusion of a big-block V-8 engine option. With some clever packaging that included the mandatory deletion of air conditioning, power steering, and power brakes, Chrysler's engineers had managed to stuff a 383 B-block engine between the front wheels of the Formula S version of the little Barracuda. Restrictive exhaust headers necessitated by the lack of space in the engine compartment limited total horsepower output to 280. Peak horsepower may have been less than its big-block competition, but a massive 400 lb-ft of torque made the 383-equipped Formula S a burnout champion. When the 383 option was checked on the order sheet, front disc brakes were automatically included as part of the option. The 10-inch drum brakes found on the pedestrian

versions of the Barracuda would not suffice for a car with the performance potential of the Formula S.

For 1968, Chrysler's engineers upped the power output of the 383-cubic-inch engine to an even 300, but the real news was a new small-block, the 340. While this engine shared the same basic engineering as the smaller members of the LA series of motors, the 340 featured more efficient cylinder heads with better flow characteristics and huge 2.02-inch valves. While only rated at 275 horsepower, the high-revving, overachieving small-block cranked out an impressive 340 lb-ft of torque. This made 340-equipped cars some of the most entertaining vehicles of the muscle car era, easily capable of running with the big-block competition.

The weight the big-block engine placed over the front tires had not done much to help the Formula S maintain the handling reputation developed by earlier Barracudas. Mounting the lightweight 340 small-block in the engine bay helped bring balanced handling back to the Barracuda nameplate.

Though it was one of the most balanced and best performing cars of the era, the original Barracuda never made much of a mark in the automotive world. It suffered from being the rear-guard camp follower of the early pony car era, a day late and a dollar short of marketing trends of the time. This would not change until Chrysler introduced the E-body series for 1970.

PONTIAC'S RELUCTANT PONY CAR

Midway through development of its upcoming F-car, GM management decided Pontiac should build its own version of the platform. John DeLorean, who had succeeded Pete Estes as manager of Pontiac Division, had been trying to get a European-style, lightweight, two-seat sports car approved for several years. DeLorean pursued this project with his trademark relentlessness, which ultimately led to a falling out between him and GM's executive Vice President Ed Cole.

While no longer the new kid on the block, the GTO ruled the sales charts through the mid-1960s. Archives/TEN: The Enthusiast Network Magazines, LLC.



Because he knew it would gall DeLorean to develop a cookie-cutter version of a Chevrolet, Cole got his revenge on him by ordering Pontiac to release a version of the F-car in the fall of 1966, at the same time as Chevrolet released the Camaro. This would not be possible unless Pontiac simply rebadged a version of the Chevy. DeLorean insisted that his division's F-car be uniquely Pontiac and not simply a rehashed Chevrolet. He arranged for a six-month delay in the introduction of Pontiac's interpretation of the F-car.

Chevrolet had already released a small fleet of preproduction cars to select members of the press by the time Pontiac engineers even began working on the car, so the basic design was finalized for all practical purposes. The Pontiac division didn't have a lot of options for making its version of the F-car unique, given the advanced state of development of the Camaro and the short amount of time available, even with a six-month extension. Reshaping sheet metal was out of the question, so Pontiac designers were relegated to reshaping the nose and tail sections of the car.

DeLorean thought the Camaro looked too tall and ungainly, so he had the Pontiac F-car lowered by an inch and insisted that all Pontiac F-cars roll on Firestone's new 70-series Wide-Oval tires. This gave the Pontiac a harsher ride than the Camaro, but it also gave the new pony car a much more aggressive stance.

Pontiac used most of the limited time available in an attempt to improve the Camaro's suspension. Pontiac engineers did not believe that the Camaro's handling was up to Pontiac standards. The rear suspension received the bulk of Pontiac engineers' attention. Chevrolet had used a pair of single-leaf tapered springs to suspend the rear axle. This reduced manufacturing costs dramatically but reduced the ability to tune the rear suspension in equal measure. Pontiac developed a more-expensive multileaf spring that allowed variable spring ratios in its F-car, but these weren't ready in time for the car's debut in early 1967. The more advanced multileaf springs didn't appear until the advent of the 1968 model.

Pontiac's chassis engineers made a number of other suspension changes to address the ferocious wheel hop the Camaro experienced under

DRIVING FORD'S HOTTEST MUSTANG

"Few cars in history have made their entrance with more heraldry, or have been ushered in under more ideal circumstances, than Ford's new Mustang. It's timing couldn't have been more perfect, nor could the overall concept, which includes a basic plan around which can be built a multitude of performance options keyed strictly to the buyer's whim—from mild to wild."

Hot Rod magazine, June, 1964



While the Mustang looked sporting, in base form it was anything but. Ordering the hot K-code 289-cubic-inch V-8 engine helped wonders with straight-line performance, though not so much with the handling. *Archives/TEN: The Enthusiast Network Magazines, LLC.*





top: Chrysler was selling as many B-body muscle cars as it could build in the late 1960s, but it wasn't ignoring the pony car market. By the end of the decade, the Barracuda had evolved into a very nice car. **middle, left:** In 1969 the 'Cuda was still based on the compact A-body platform, making it a light, balanced car. **middle, right** Although the 'Cuda could be had with bigger engines in 1969, the high-revving 340-cubic-inch V-8 was the hot ticket. **bottom, left:** Chrysler was ahead of its competition in creating sporty interiors for its cars. **bottom, right:** Although Chrysler's A-body cars have aged well, in the 1960s the design was considered a bit old-fashioned.
acceleration, and to a lesser degree under braking. By the time the Pontiac F-car went on sale, division engineers had installed an adjustable radius rod on all but the base model (Pontiac used a pair of rods on the high-performance models). This helped tame the rear end somewhat, but Pontiac had a more effective cure under development. Using a staggered-shock arrangement, with the passenger-side shock ahead of the rear axle and the driver-side shock behind it, prevented the axle from rotating, largely eliminating the tendency of the axle to hop under stress. Like the multileaf springs, this design would not be ready in time for the initial car's debut but would appear on the 1968 model. Except for the addition of radius rods, 1967 Pontiac F-cars had to make due with the Camaro's econo-car rear suspension design.

In addition to handling better, DeLorean wanted the Pontiac F-car, which would ultimately be named Firebird, to feature a selection of engines unique to the Pontiac. These ranged from an advanced inline six-cylinder to the big GTO engine, which by that time had grown to 400 cubic inches.

Technologically, the economical six-cylinder powerplant, which featured an advanced overhead cam (OHC) design, was the most interesting of the group. The engine had first appeared in the 1966 Tempest, but Pontiac had developed it as a potential engine for its hoped-for two-seat sports car. High-revving OHC six-cylinders were the powerplants of choice for lightweight European sports cars such as those built by Jaguar and Triumph, the Pontiac's intended competition, and Pontiac's advanced design had the potential to compete with the best of them. The version of the 230-cubic-inch engine mounted in the basic Firebird coupe used a one-barrel Rochester carburetor to develop a respectable 165 horsepower, as much as the small-block V-8s of just a few years earlier. If a buyer wanted to fork over an extra \$105.60, he or she could upgrade to a Sprint model of the Firebird, which featured a high-output version of the high-revving engine. This engine used all the standard hot rodder tricks—four-barrel carburetor, higher compression, hotter cams, larger valves, freer breathing intake and exhaust systems-to develop 215 horsepower. When mated to a Muncie four-speed transmission, this hyper

PLYMOUTH BARRACUDA FORMULA S

"A hefty chrome shank of a Hurst shift lever protruded from the aluminum pattern floor plate and arched slightly rearward to a spot where the ball was ideally aligned with the driver's palm . . . The Commando V8 came all dressed up in its Sunday suit of tastefully chromed air cleaner, and an aluminum ribbed section on the top of each black, crackle-finish valve cover. Filling station attendants never failed to comment on this . . . "

Hot Rod magazine, February, 1965



Initially Plymouth didn't market the Barracuda as a performance car, but when Pontiac unleashed the GTO and then Ford introduced the Mustang, Plymouth's options were to either introduce a sportier version of the car or step aside and let Ford and General Motors have the youth market. *Archives/TEN: The Enthusiast Network Magazines, LLC.*





above: The Z28's popularity continued with a mild redesign in 1968. *Archives/TEN: The Enthusiast Network Magazines, LLC.* **left:** Not wanting to produce a Camaro clone, Pontiac took extra time to design its version of GM's F-body platform. *Archives/TEN: The Enthusiast Network Magazines, LLC.* high-performance package provided enough power to push the 3,300-pound coupe through the quarter-mile in the low-17second bracket.

With the Firebird Sprint, Pontiac had produced a world-class sporty car, but the model failed to strike a chord with the buying public. Pontiac was trying to provide a balanced car to a youth market drunk on excess. To such buyers, balance was another word for compromise, and the baby boomers chose excess and extremes over balance and compromise every time.

For the unwashed masses, Pontiac offered a number of engines to satiate buyers' hedonistic cravings for excess power. Beginning with a two-barrel version of the division's 326-cubicinch engine, which generated 250 horsepower and 333 lb-ft of torque, buyers could move up to a series of increasingly potent V-8s. The HO version of the 326 used dual-exhaust, a four-barrel carburetor, and higher compression to achieve 285 horsepower and 359 lb-ft of torque, but for a public that preferred extremes, the engine of choice was the 400. For this engine Pontiac developed a high-end package worthy of the powerplant: the Firebird 400.

The Firebird 400 made the suits at GM headquarters nervous. They had given up trying to enforce the old 10-pounds-percubic-inch rule, but the thought of mounting the powerful GTO engine in such a small car made them go moist with fear. Strong GTO sales had forced General Motors to back away from the old 10-pounds-per-cubic-inch rule. In an attempt to reassert its misguided authority, GM management changed the rule to limit cars to 1 horsepower for every 10 pounds. GM also banned the use of multiple carburetors on passenger cars at this time. As a result of this futile, unilateral attempt to quash the horsepower wars raging in Detroit, the corporate mother ship ordered Pontiac to detune the 400-cubic-inch engine for use in the Firebird.

Pontiac rated both the standard 400 and the version equipped with the optional ram air functional hood scoop at 325 horsepower. In part, this relatively low rating was the result of a half-hearted attempt to detune the engine, a token act that consisted of such easily disabled pieces as a tab on the carburetor linkage that prevented the throttle from opening fully. Simply breaking off the tab unleashed an additional 25 horsepower. But there was more to this low rating than a token attempt to placate corporate safetycrats. In part, the 325-horsepower rating was fictitious. Pontiac purposely underrated the 400-cubic-inch powerplant to avoid frightening the timid souls running General Motors and their equally mousy counterparts in the insurance industry, and also to avoid pissing off GTO drivers. These folks preferred to think of their muscle cars as superior to the new breed of pony cars, and a Firebird

SUPER STREET CHEVELLE

"Chevrolet hs been kind of out of it for the last couple of years, as far as having their own hottest hot dog, but . . . it's apparent that guys still remember when she was real fine, that 409, and how Dyno Don Nicholson and Frank Sanders put 'em back on their heels at the drags in '61 with their first demonstrations of what a stocker could do . . . Of all the things the SS 396 should be, it is competitive at the drags . . . All the time we drove the SS 396 it drew a great deal of attention from the younger set, who seemed to dig everything about it—especially the simulated hood scoops."

Hot Rod magazine, February, 1966



Chevrolet initially thought it could compete in the youth market with its weird Corvair, with its rear-mounted air-cooled engine. It thought wrong and went from being the Hot One to being almost forgotten. The Chevelle SS396 reminded everyone that the Bowtie brand wasn't dead yet. *Archives/ TEN: The Enthusiast Network Magazines, LLC.*





with a horsepower rating identical to that of a GTO would make it difficult for the GTO drivers to maintain that illusion.

Underrated or not, the new Firebird 400 hauled ass.

A bone stock Firebird 400 could slip below the 15-second bracket at the drag strip and a mildly tweaked example could easily break into the 12-second bracket. Even if buyers had no intention of racing their Firebird 400s, they could impress their friends with big, smoky burnouts. The engine's 410 lb-ft of torque meant that such antics were merely a mashing of the accelerator away. **top:** Pontiac introduced the Trans Am version of its Firebird for the 1969 model year.

bottom: The 1969 Trans Am was the top version of Pontiac's F-car for that year and would soon eclipse the mighty GTO in popularity.









top: Not wanting to produce a Camaro clone, Pontiac took extra time to design its version of GM's F-body platform. **middle, left:** The bird-shaped side marker light was a clever touch on the 1969 Trans Am. **middle, right:** Pontiac continued the elegant exterior styling of the 1969 Trans Am in the interior. **left:** The rear spoiler of the 1969 Trans Am looked stylish, but it didn't provide much useful downforce.



"It's all a game, this 'youth market' high-performance stuff. First it was the GTO . . . and it was followed by a bunch of others . . . Then carrottopped Charlie Gray, the taskmaster of Ford Performance Division, whose firm handshake lets you know he's 110 percent committed to total performance, calls up and says they're about to spring a 427 Fairlane 'street package' on the world and would we like a crack at it. Would somebody dying of thirst like a drink?"

Hot Rod magazine, July, 1966



Though Ford's Fairlane is not the first name that pops up when the conversation turns to muscle cars, when equipped with the fierce 427-cubic-inch NASCAR engine, it was one of the fastest cars on the market. *Archives/TEN: The Enthusiast Network Magazines, LLC.* Pontiac came late to the pony car party, but it had done its homework. It had learned from the mistakes of its predecessors and had made the car as right as possible from the start. Within a few months, the division would excise most of the Camaro's ill handling with the introduction of an improved rear suspension, but even without such improvements, the Firebird 400 was a true muscle car straight out of the box. First-year sales of more than 80,000 units—an impressive number given the car's February 1967 introduction—indicated that the Firebird was just the car the baby boom market wanted. Used to being a distant third to Chevrolet and Ford, Pontiac found itself nipping at the heels of its more prolific competitors in the pony car market.

REBEL YELP

The new pony car market proved so lucrative that it even attracted the attention of American Motors Corporation. The redheaded stepchild of the American auto industry, AMC had stayed in business primarily on the success of its economical Rambler line of cars while other small US automakers like Studebaker and Packard went teats up. AMC had unwittingly almost invented the pony car a decade earlier when it had dropped its then-new 327-cubic-inc OHV V-8 into a Rambler and called it a Rebel. This 255-horsepower engine made the lightweight Rambler Rebel the second-fastest car built in America, bested only by Chevrolet's potent fuel-injected Corvette. Had the Rambler been blessed with one iota of the style of Chevy's 'Vette, the car may well have changed automotive history. Unfortunately for AMC, the car looked like the same toady Rambler your weird bachelor uncle drove to the Elks club every Tuesday night. It was not the stuff of which legends are made, and after a limited production run of 1,500 units, the sad-looking little car motored off into the sunset.

American Motors limped into the 1960s selling economical Ramblers to the Vicks-VapoRub-and-hemorrhoid-pillow crowd, but in marketing surveys the emerging youth market was most likely to respond to a question about the Rambler with: "Do they still make those?" Homely economy might have been enough to keep the company alive in the past, but by the time Ford introduced its Mustang, AMC cars were under serious pressure from the competition. Not only had the domestic competition gotten into the small car act with cars like the Falcon, Chevy II, Corvair, and Valiant, but automakers from Germany and Japan were importing increasingly popular cars. American Motors found itself in a position where it had to evolve, and evolve quickly, or face extinction. By 1965, AMC was losing money and in serious danger of going out of business. In the spring of 1966, about the same time as Cole told DeLorean to stuff his two-seat concept car and build a Pontiac



top: In 1967 Ford's top engine for
its Mustang was the aging (and
heavy) 390. Shelby, however, saw
fit to offer a potent 428 engine
in its top Mustang, the GT500.
right: The sleek Shelby GT500 cut
a sinister profile.







top: The trick taillights of the 1967 Shelby GT500 were borrowed from the Ford Thunderbird. **middle, left:** As the base Mustang became more performance-oriented, Shelby had to make fewer functional changes to the interior to turn the car into a performance vehicle. **middle, right:** The inboard headlights of the 1967 Shelbys violated some states' motor-vehicle codes and were abandoned mid-year. **bottom, left:** The base 428-cubic-inch engine of the Shelby GT500 was the biggest game in the pony car town in 1967. **bottom, right:** Shelby considered the GT500 more of a grand-touring car than a muscle car and the well-appointed interior reflected this mission.

version of the Camaro, AMC finally approved the development of a car that would become the 1968 Javelin.

Designing a car for the youth market would be a Herculean task for AMC designers. They had the talent to craft a car that had the sporty looks the baby boomers craved, but providing sporty performance would be difficult using the engines AMC had in its stable. The only V-8 engine the company built at the time had been designed in the mid-1950s, and its antiquated technology made it an implausible choice for performance tuning. Any serious attempt to turn around AMC's fortunes would require a modern V-8 engine, so a team headed by engineer Dave Potter began working on a lightweight V-8 that used state-of-the-art thin wall casting technology.

The engine design Potter and his team developed had serious performance potential. When introduced halfway through 1966, it displaced 290 cubic inches and generated 225 horsepower when equipped with a four-barrel carburetor, but the smoothrunning lightweight powerplant had the potential to produce much more than that. The engine debuted in the AMC Rogue, a sporty version of the Rambler American compact. Because the venerable Rambler name had negative connotations for the youth market, this sporty version of the American was not called a Rambler. Had the Rogue debuted five years earlier, it might have been able to compete against the likes of the Chevy II Nova SS and the Falcon Futura Sprint, but by the summer of 1966 it was competing against the established Mustang and the soon-to-be-released Chevrolet Camaro. Sales amounted to about a quarter of the sales of Plymouth's slow-selling Barracuda and less than two-tenths of 1 percent of Mustang sales.

While cars like the Rogue and the 1967 Super American did not make enough of an impression on the market to remind baby boomers that AMC was still in business, they did serve as test beds for developing the new V-8 engine. By the time the 1968 cars were made available to the public, the engine had grown into a 390-cubic-inch torque monster. While the engine only generated 315 peak horsepower, it produced a class-leading 425 lb-ft of torque. The torque-heavy nature of the engine may



"'If they'd only put the 383 in it,' the auto editors chorused back in July when we first saw the car. 'It would fit, too; the body's 2 inches wider than in '66. But they probably won't. You know Chrysler.' Well, apparently we didn't know Chrysler too well, because that's exactly what they went and did—dropped in their 280 hp 383-incher. You're talking about a 3200-pound car, son, with almost 400 inches and 425 pounds-feet of torque. Why, that's C/Stock."

Hot Rod magazine, December, 1966



Plymouth realized it needed to go big or go home if it was to compete in the pony car market that Ford had created with its phenomenally successful Mustang, so it dropped a 383-cubic-inch engine into its Barracuda. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



have been due to the fact that AMC management, which still harbored prejudice toward performance cars and the youth market in general, originally intended to offer the engine only in its large Ambassador sedan as part of an optional towing package.

Ultimately, greed overcame management's prejudices and the engine was made available in AMC's new-for-1968 pony car, the Javelin. The new car, introduced on September 26, 1967, shared a few basic drivetrain and suspension bits with the lowly Rambler American, but the unit-body structure was much stiffer, to better handle the 390's prodigious torque, though that optional engine was not available when the car was first introduced. Initially, the top engine offered was a 280-horsepower 343-cubic-inch V-8 with a four-barrel carburetor and dual exhaust. To appeal to the youth market, AMC offered a sportier trim package, the SST. The SST consisted of additional pieces of trim and high-back bucket seats; there was nothing in the package to contribute to the car's performance. For that, a potential owner would have to order the Go package. In addition to the high-output 343 V-8, this package included power front disc brakes, wide-profile tires, front anti-sway bar, heavy-duty springs and shocks, and, of course, a sporty racing stripe. American Motors got in the muscle car game for real in 1968 with its new Javelin pony car. Archives/ TEN: The Enthusiast Network Magazines, LLC. Had it been properly developed, Ford's 1969 Boss 429 Mustang might have been the all-time king of the muscle cars; in reality it was just thrown together to homologate the 429 engine for NASCAR racing. *Archives/ TEN: The Entertainment Network Magazine, LLC.* In February 1968, AMC finally made the 390-cubic-inch version of the engine available as an option for the Javelin. The addition of this engine elevated the Javelin to the status of muscle car. When equipped with a four-speed transmission, a stock 390 Javelin could break the 15-second barrier in the quarter-mile, making it one of the fastest cars on the market. Like Pontiac with its Super Duty program, AMC offered a wide assortment of performance parts from its parts catalog. Unlike Pontiac, which had instituted its Super Duty program in part due to corporate pride, AMC offered its Group 19 parts (named after the section of the AMC parts catalog in which they appeared) due to necessity. Because the V-8 engine was such a new design and because AMC's market share was so low, the aftermarket hadn't developed a lot of performance parts for AMC cars. AMC had no option other than to develop its own line of performance parts if it wanted to sell cars to the hot rod market.

The Javelin earned a profit for AMC, but the company had hoped to sell more than the 56,462 units it sold for the 1968 model year. American Motors needed a car that would do more than turn a profit. In 1966, the company lost \$12.6 million





Right off the bat we expected that the 400 Firebird ought to be a shorter-fused GTO and then some. After all, our test Camaro went into the high-14s with only a 350-inch powerplant and those 4.3 inches of length that Pontiac Styling added on front couldn't make that much difference. Well, it wasn't just the extra sheet metal, it was a little bit of this and a little bit of that and the bright red prototype convertible we snagged came in at 3855 pounds . . . That it ran as quick as 15.4 and as fast as 92 mph is remarkable."

Hot Rod magazine, February, 1967



Magazine testers expected the Firebird 400 to be a faster version of the GTO. It wasn't. Archives/ TEN: The Enthusiast Network Magazines, LLC.



dollars and its sales declined 12 percent. The company's earlier attempt at building a car for the vouth market-the Rambler Marlin introduced for the 1965 model year-had tanked. The profits the Javelin generated were appreciated, but they barely were enough to keep the company afloat.

TRANS-AM

It didn't take the Total Performance folks at Ford long to realize that their newly invented pony car had racing potential, and not just at NHRA drag strips and NASCAR oval tracks. The new Mustang had the hidden potential to go road racing as well.

But early testing indicated that any road racing potential might be hidden a bit too well. When Ford Engineer Joe Mulholland first decided to take the Mustang racing in the summer of 1964, he, Ford product planner Joe Onken, and Australian racer Allan Moffat took a couple of production notchbacks to a tight (13 turns in 1.5 miles) road course for some testing. As Onken recalls it, the two cars went off the road everywhere. By the end of the day, both cars were completely spent.

If the Mustang was to be anything but a joke on a racetrack, it needed serious help. Onken went to Don Frey and outlined the problems he faced. Frey proposed an inspired solution: bring in Carroll Shelby on the project. Shelby had already been building his Cobras, small English sports cars powered by Ford engines. These cars were sold through select Ford dealerships, and even though they didn't sell in huge numbers, dealers liked having Cobras on their showroom floors because they generated excitement and brought in customers. This endeared Shelby to Ford boss Lee lacocca, and Frey thought he would be the best choice for converting a Mustang into a race car. Besides, Shelby owed Ford a favor. The company had been selling him Cobra engines at a loss and Frey thought it might be time for the ex-racer from Texas to give something back to the company.

Shelby and Phil Remington, Shelby's head development mechanic, scoured Ford's special parts catalog, finding items for police cars and NASCAR racers that would turn Ford's wallowing "secretary's car," as Shelby called the Mustang, into a competitive racer. Shelby's engineering team tightened up the



Ford built 857 Boss 429 Mustangs in 1969, but in 1970 production fell to 499 units. front suspension to prevent the front tires from rolling under the car in hard cornering. In the back they installed different springs and drag-type traction bars that required cutting slots through the floorpan so the long bars could be mounted inside the cab. This required removing the rear seats, but the seats had to be removed anyway for the car to comply with SCCA (Sports Car Club of America) racing regulations. Shelby commandeered heavy-duty brakes and a heavy-duty rear axle from Ford's station-wagon towing package. Shelby's team decided to give the Mustang an alphanumeric name. According to a story Shelby often told, when the team was unable to settle on a name, Shelby asked Remington how far it was from the company's race shop to its production shop. Remington said it was about 350 feet, so that's what Shelby named the car. Whether true or not, it was a good story and Carroll Shelby loved a good story.

On the competition R Model version of the GT350, Shelby's team gutted the interior, removing everything possible to save weight. Toward that same end, they removed the rear bumper and replaced the steel front bumper with a fiberglass piece. They also replaced the glass rear window with a Plexiglas unit. Shelby constructed two prototypes for the R Model, and then built an additional 34 customer cars as well as four versions specially modified for drag racing. The R Model GT350s featured K-code motors tweaked to produce 306 horsepower. The Sports Car Club of America (SCCA) rules for B/Production class allowed Shelby to modify either the engine or the chassis, but not both. Shelby chose to focus on the chassis and left the engine basically stock. He chose right; the R Models dominated







top: Ford didn't produce the Boss 429 itself; instead, it sent the cars to Kar Kraft facility where the racing engines were installed.
bottom, left: The Boss 429's engine featured semi-hemispherical heads, similar to those used by a certain rival automaker. bottom, right: The interior of the Boss 429 was stock Mustang, which, by 1970, meant it was relatively lavish.

opposite page: While the actual performance didn't live up to the image, the Boss 429 had image in spades.

B/Production and Shelby driver Jerry Titus took the national championship in the class.

In 1966, the SCCA began running a road-racing series that would prove the ideal arena in which muscle cars could compete. This series featured sedans with four permanent seats competing in two classes: an amateur class and a professional class. A series of regional races comprised the amateur class, culminating with the top three finishers from six separate regions competing in the American Road Race of Champions (ARRC). The professional races consisted of longer events, called the Trans-American Sedan Championship, or Trans-Am races.

This series would have a tremendous effect on the development of production cars, because in addition to awarding a championship to the winning driver at the end of a season, it awarded a championship to the winning manufacturer. This made competing in the series an attractive marketing proposition for US automakers trying to sell cars to baby boomers, and in 1966 every manufacturer was either selling or developing such a car. The SCCA enforced strict rules in the Trans-Am series, rules intended to keep the cars on the tracks as close as possible to the cars manufactured for street use. This made the series extremely popular



with fans across the United States right from the initial series of seven races, and the popularity of the series increased throughout the 1960s.

The predictable result was that every manufacturer produced a model or option package designed to homologate the car for Trans-Am racing. Plymouth developed the Formula S version of its Barracuda into a competitive Trans-Am racer and even struggling American Motors got into the act with its Javelin. Before Chevy's pony car entrant even hit the market, the Bowtie Division had begun developing a Trans-Am homologation package for its Camaro.

At Chevrolet, Vince Piggins managed a department called product promotion. This was really code for "racing department," a deception necessitated by the fact that General Motors had not followed Ford's lead and told the AMA to selffornicate with its racing ban, with much success. By 1966, GM was losing market share to Ford, thanks in large part to the phenomenal sales success of the Mustang. General Motors corporate management had began to unbunch its undies a bit regarding its racing ban, but Pete Estes and his Chevrolet division still felt it wise to keep its racing activities as clandestine as possible. But those activities had to take place. Given the fierce competition the upcoming Camaro would be facing from the Ford Mustang, the Chevy needed all the promotion it could get, so in August 1966, Piggins convinced Estes to develop a racing version of the Camaro for the new Trans-Am series.

Piggins faced a major engineering challenge in finding a suitable engine for the Camaro. The smallest V-8 available in the car—the 327-cubic-inch version—was too large to comply with SCCA's displacement limit of five liters, or roughly 305 cubic inches. Piggins answer was to put a crankshaft from the 283-cubic-inch small-block V-8 into a modified 327-cubic-inch block, leading to a 302-cubic-inch engine with a bore of four inches and a stroke of three inches. This massively over-square design meant the engine would have relatively lower piston speeds at any given rpm, allowing the engine to have a higher redline.

Like the Boss 429, the 1969 Boss 302 was created to homologate the Mustang for racing, in this case for the SCCA's Trans-Am series. Unlike the Boss 429, the Boss 302 was one of the finest muscle cars of the era right out of the box, and it was possibly the best handling muscle car of the period. *Archives/ TEN: The Enthusiast Network Magazines, LLC.*

Z/29: WIDE-AWAKE SLEEPER

"Chevy's Z/28 runs a tight race, on a dollar-for-dollar basis, with Plymouth's 'Cuda 340 for first place in performance machinery. By performance, we're talking about low 13s with open headers and sticky tires. Or high 13s with street tires and closed headers. This includes some pretty conventional tuning methods too, not 'untouched' show-room stock . . . The Z/28 is . . . probably the biggest sleeper ever to hit a new-car showroom."

Hot Rod magazine, February, 1967



Although it had a relatively tiny engine (302 cubic inches), the quick-revving Z/28 proved to be one of the fastest cars on the market. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

MUSCLE LITE 123











top: People who really knew how to manipulate Chevrolet's COPO program could get the ultimate Camaro: the 1969 ZL1. middle, left: Outwardly very little distinguished the ZL1 Camaro. middle, right: In fact, because they were intended solely for racing, the ZL1 Camaros were, with a notable exception or two, extremely plainlooking cars. **bottom, left:** Under the hood was a different story. The all-aluminum 427-cubic-inch ZL1 engine was a high-tech racing powerplant. bottom, right: The Camaro ZL1's interior reflected its drag-racing intent.



When the Camaro was redesigned for 1970, the Z28 received a hot 350-cubic-inch engine. A good suspension meant even more to the Camaro's racing success than did a fast engine. Piggins' team started with the best suspension available for the Camaro—the F41—and improved it. The racing version received stiffer rear springs, a thicker front anti-roll bar, and a radius rod similar to the one Pontiac was developing for its upcoming Firebird. Quicker steering gears and a stronger rear axle that allowed the use of disc brakes in the back as well as the front rounded out the suspension changes.

This engine and suspension package would appear on a street car designed to homologate the Camaro for racing, and Chevrolet planned to build enough to qualify the car for SCCA's Trans-Am series. Cars intended for actual track use received further modifications, like heavy-duty spindles, axles, and shafts, along with special bushings and a 37-gallon fuel cell, a requirement if the car was to be competitive in the long-distance Trans-Am events.

Chevrolet's selection of a name wasn't quite as arbitrary as Carroll Shelby's selection of a name for his SCCA racer; Pete Estes didn't have Vince Higgins pace off the distance between the Chevrolet commissary and the front receptionist's desk or anything of that sort. Chevrolet had designated the Trans-Am homologation package as "option Z-28." Chevrolet displayed the prototype Z28 at Riverside, California, on November 26, 1966, and built the first production model on December 29 of that year. Drivers who knew how to wring out a peaky, high-revving engine liked the new car. *Car and Driver* magazine called the engine's horsepower rating of 290 "ridiculously conservative," comparing the acceleration of the Z28 to a 426 Hemi. But most drivers preferred cars with big engines that produced big, tire-burning torque and Chevrolet sold just 602 Z28s for the 1967 model year.



CHAPTER 4

Cars like the Shelby GT350, Formula S Barracuda, and Z28 Camaro held terrific potential as world-beating automobiles. Though rather crude in their original form (in a *Car and Driver* road test, an automotive journalist called the Shelby GT350 "a brand-new, clapped-out race car"), the Trans-Am homologation specials, with their lightweight engines and sporting suspensions, represented the most balanced performance cars built by the US auto industry in the mid-1960s. But this was not an era defined by balance. It was an era defined by excess. Wretched excess.

Whether equipped with a 440 or a 426 Hemi, Plymouth's GTX was one of the fastest cars a person could buy in the late 1960s. *Archives/TEN: The Enthusiast Network Magazines, LLC.* Chrysler kicked off the era of wretched excess when it introduced the street Hemi as a regular production option for its redesigned 1966 B-body cars. Chrysler hadn't intended to create a street-racing legend when it unleashed the Hemi on an unsuspecting public, and it certainly hadn't intended to ignite a horsepower war between itself and its larger, better-funded rivals. It simply planned to homologate the engine for NASCAR racing. Chrysler never intended to sell many Hemis for street use.

And it didn't. Chrysler sold more street Hemis than expected in 1966, but Hemi sales were eclipsed by the sales of B-body cars with other engines. Of the 37,344 Chargers Dodge sold in 1966, a mere 468-1.2 percent of total Charger production—featured Hemi engines. The 325-horsepower 383-cubic-inch B-block, the next step down on the Chrysler engine hierarchy in 1966, made much more sense for the average driver. The 383 cost significantly less than the Hemi, putting it within the price range of the average buyer. Though it cost much less than the Hemi, the torquey 383 proved more satisfying in normal driving conditions. It had been designed for the stop-and-go driving encountered on city streets, and from 0-to-60, it was as quick as the expensive Hemi. Of course, at that point, a welltuned Hemi disappeared into the distance, leaving the 383 for dead, but the Hemi was never engineered for normal street use. It was designed to blast through the quarter-mile in as short a time as possible-or to run flat out for hours on end on superspeedways. Like so many racing homologation engines of the 1960s, the Hemi hadn't received an expensive redesign before seeing street use. It had merely been detuned, and driving one was like trying to modulate an on-off switch that unleashed a 500-horsepower explosion. To check the \$1,000 Hemi box on the option sheet meant an owner wanted to do some serious drag racing, or else that he really, really wanted to have bragging rights, because he certainly wasn't buying a car for practical transportation.

A Charger equipped with the 383 B-block engine, on the other hand, provided extremely practical transportation, as well as thrilling burnouts when cruising Main Street on a Friday night, thanks to the engine's 425 lb-ft of torque.

The new B-body cars sold well enough for Chrysler, though the model designed for the youth market—the Charger—failed to strike a chord with baby boomers. Compared to the 72,272 Chevelle SS 396s Chevrolet sold, the 96,946 GTOs Pontiac sold, and the breathtaking 607,568 Mustangs Ford sold, the 37,344 Chargers sold indicated that Dodge's interpretation of a sporty car wasn't connecting with baby boomers.

The easiest way for Chrysler to make its B-body cars more appealing to younger buyers was to rely on the company's engineering expertise and expand the car's list of optional engines. In 1966 Chrysler had introduced a 350-horsepower 440-cubicinch engine for its full-sized luxury cars, the Imperial and New Yorker. Because it gained its extra displacement in part through an increased stroke, Chrysler dubbed the engine family the RB series, "RB" standing for "raised block." Chrysler made this engine available for the B-body cars starting in 1967. When used in the B-body muscle cars, the engine received a hot-rodding treatment consisting of special heads with 10 percent larger valves and stiffer valve springs, hotter camshafts, and a huge Carter AFB four-barrel carburetor. These tricks raised the horsepower rating to 375, the highest of any engine equipped with hydraulic lifters. But peak horsepower was not what this engine was all about. It was about torque, lots and lots of tire-smoking torque. The engine, labeled 440 Magnum when mounted in a Dodge and the 440 Super Commando when mounted in a Plymouth, churned out a class-leading 480 lb-ft of torque.

In addition to a new engine for 1967, Chrysler offered a pair of new B-body models aimed squarely at the muscle car market: The Dodge Coronet R/T, which stood for "Road and Track," and the Plymouth GTX, which apparently stood for nothing in particular but sounded like a car that could kick a GTO's ass. When equipped with either the 440 or the 426 Hemi, it certainly had the stones to accomplish that task.

The new Mopars looked like they were ready to whup some ass too. Where the Charger had been a well-equipped personal-luxury car, these new B-body models were bareknuckle street brawlers. The styling of these crisp, clean, purposeful cars has weathered the test of time much better than some of the cars' outrageous competitors, but in 1967, outrageous was in. Confused youngsters from across America and around the world were putting flowers in their hair and heading off to San Francisco, most of them without even knowing why they were going. The nation was about to experience the Summer of Love, a time in which young people would engage in acts so outrageous that their parents could not even imagine such despicable behavior a generation earlier. The year 1967 was not a good one for restraint, and Chrysler's B-bodies, with their restrained styling, suffered mightily. Charger sales fell to just 14,980 units, and sales of all three B-bodied muscle cars—the Charger, Coronet R/T, and GTX totaled a mere 37,176 units, less than the Charger had sold alone the previous year. One bright spot for fans of Mopar muscle was that Hemi sales more than doubled. In 1967, 1,121 buyers found the testicular fortitude to equip their cars with the expensive Hemi engine.

Up until this point, Chrysler had relied on its engineering prowess to compensate for its shortcomings in styling. As far as many younger buyers were concerned, Chrysler's B-bodies were only slightly more stylish than AMC Ramblers. This was a difficult fall from grace for a company that had become famous for its stylish cars a decade earlier.



"Gran Sport styling is an either/or proposition either you like it or you don't-seemingly in a ratio of 5-to-1 for. The machine doesn't have the Skylark custom chrome side strip, and that's a good thing. GM Divisions seem predisposed to bring out trend setters like the Riviera and then style the rest of their line after it. How well this tack works can be partially appreciated by a surprising majority of casual observers who thought the GS 400 was really a '68 Riviera or at least some mini-sport version . . . The GS 400 is the kind of car you can drive and drive and not get tired of. The cold-air packages, cams, forged pistons-all of them very important in this marketbut you've got to be able to live with the car, too. For a while there may be a few machines that put the GS down at the track, but on the way to the track, that's a horse of a different color."

Hot Rod magazine, January 1968



The Buick Gran Sport wasn't the fastest car the magazines ever tested at the racetrack, but it was one of the most comfortable cars to use going to and from said racetrack. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

When the Charger hit the streets in 1966, it found itself in much the same situation as the Barracuda of a couple years earlier. Had the competition been the 1964 A-bodies from General Motors—the GTO, Chevelle, Skylark, and 4-4-2—the Charger might have appeared more contemporary. Instead, Chrysler dropped the Charger into a market where it would have to compete with restyled A-bodies from General Motors. Instead of the slab-sided body panels of the original A-cars, the 1966 models featured what was referred to as Coke-bottle styling. Cars earned this nickname by having more rounded body panels with arcs over the wheelwells, making them resemble bottles of Coca-Cola laid on their sides. Chevrolet introduced this style to the American auto market with its 1963 Corvette and took it to its illogical extreme with the 1968 Corvette, though that car more closely resembled a prosthetic phallus than a Coke bottle. General Motors applied this style to its A-body cars for 1966 and experienced record sales.

Chrysler had applied Coke-bottle styling to its 1967 Barracuda, but it wasn't enough to make the newly handsome little car stand out among the long-hood, short-deck pony car competitors from General Motors and Ford. For 1968, Chrysler applied its interpretation of the Coke-bottle styling treatment to its struggling B-body cars. The resulting machines, with their smooth lines, subtly rounded curves, and near-perfect proportions, were some of the most stunning automobiles of the classic muscle car era. The cars still looked as if they were itching for a fight, but they looked more like a brawny Hollywood movie star itching for a fight than a cauliflower-nosed ex-pugilist itching for a fight.

Engines remained unchanged for the most part—it was pretty hard to improve on the torque-monster 440 or the brutal Hemi. The 383-cubic-inch B-block received the improved heads off the 440 Magnum, bumping power output up to 335 horses. When mated to a four-speed transmission, B-bodies equipped with the new 383 Magnum made for entertaining rides.

Dodge introduced a restyled Charger and Coronet R/T for 1968, along with a new R/T rendition of the Charger. The Charger R/T package consisted primarily of the addition of a few cosmetic badges, though it did include one critically important piece of standard equipment: the 375-horsepower 440.

Plymouth added a companion model for the GTX, a raw street racer even more barebones than the R/T. This represented a move in the opposite direction from the trends muscle cars had been following throughout the decade. They had grown larger, heavier, more luxurious—in other words, flabbier. Plymouth thought there might be a market for a trimmed-down hot rod in the mold of the original GTO. The automaker took the lightest, least-expensive version of the B-body chassis—the coupe—and stripped it of all frills like bucket seats and carpeting. Plymouth endowed the car with the heavy-duty suspension from Chrysler's police package and gave it the 335-horsepower version of the 383 as standard equipment. Best of all, the automaker priced the car at \$2,896, making it the performance bargain of the classic muscle car era.

Chrysler had had enough of restraint. In one of the most outrageous marketing moves of the period, Plymouth licensed the use of a popular Warner Brothers' cartoon character and named the car Road Runner. The hot rod Plymouth featured graphics of the cartoon bird as well as a dual-toned horn designed to ape the Road Runner's distinctive "meep-meep" voice. This was not a car for a shrinking violet





top: In 1968 Oldsmobile partnered with Hurst Performance Products to produce something that General Motors wouldn't allow Oldsmobile to produce on its own: a 4-4-2 with a monster 455-cubic-inch engine. GM limited its division's intermediate-sized cars to 400-cubic-inch engines at that time. **middle, left:** According to legend, Oldsmobile shipped 4-4-2s to Hurst's facilities, where the big engines would be installed. In reality the cars were shipped with the big engines intact and were only modified by Hurst. The story was made up so that GM executives wouldn't put the kibosh on the program. **middle, right:** The interior of the Hurst/Olds was as lavish as the rest of the car. **bottom, left:** The Dual-Gate Hurst shifter in the Hurst/Olds was given the politically incorrect nickname "his-and-hers shifters," because apparently testicles were required to figure out how to use the performance setting. **bottom, right:** The beating heart of the Hurst/Olds was the 390-horsepower 455-cubic-inch V-8 engine.

FORD MUSTANG 423 COBRA JET

"The C.J. will be the utter delight of every Ford lover and the bane of all the rest because, guite frankly, it is probably the fastest regular production sedan ever built ... Ford has had the good pieces right along, but getting them into a package was the problem . . . Of course our car was not quite representative. By special order, all of the sound-deadening material was omitted during manufacture, so this Mustang was a light 3240 pounds. As a result, it was quite noisy inside-perhaps in the same decibel range as the Mark IV GT that Gurney and Foyt won Le Mans with last May. Motoring about the countryside in a 50-gallon steel echo chamber can have a tiring effect in doses of 300 miles, but we got used to it. We also adapted to the high-effort steering that a noseheavy car like this has without power (it's a drag car, right?), and in the long run everybody ought to have biceps like Steve Reeves ... On very tight downhill curves there was noticeable understeer . . . You can get the whole thing sliding at unique angles quite easily."

Hot Rod magazine, March 1968



Ford enthusiasts had been frustrated with the fact that Ford seemed to be sitting out the muscle car wars raging in the mid-1960s. Their frustration came to an end when Ford introduced the potent 428 Cobra Jet as an optional engine in the Mustang. *Archives/TEN: The Enthusiast Network Magazines, LLC.* who wanted a restrained, inconspicuous car. If an owner wanted to abandon any semblance of restraint, he could order a 426 Hemi. When equipped with a Hemi, the lightweight Road Runner became the fastest regular production stock car of the 1960s.

The new models from Chrysler seemed perfect for the market, but there was no guaranteeing they would not suffer the same fate as earlier Chrysler attempts at reaching baby boomers, especially since they dropped at the same time as a new intermediate from Ford and dramatically restyled A-bodies from General Motors.

THE AERO WARS

In 1968, Ford introduced its first new entrant aimed directly at the youth market since the Mustang: the Torino GT. The Torino was part of a plan to phase out the Fairlane nameplate. Pedestrian Torinos still carried Fairlane badges, but these were absent on the GT. The Torino was slightly larger than the Fairlane and featured fastback styling that resembled the 1966–1967 Charger. While the style was already somewhat dated, Ford designers were more interested in aerodynamic efficiency than gaining market share, since the Torino would form the basis for the company's NASCAR racing efforts.

By this time, engineers had reached the upper limits of horsepower using normally aspirated push-rod V-8 technology, at least until perfecting advanced electrical controls and fuel injection technology. This would not happen for a few more years, so Ford had to resort to methods other than raw horsepower to attain a top-speed advantage over the competition. The most promising way to attain extra speed was to improve aerodynamic design. A small increase in aerodynamic efficiency increased top speed as much as a large increase in total horsepower output. The Torino may have featured styling that would not set the muscle car world on fire, but it worked on





top: While the COPO program might have gotten a buyer a killer big-block performance engine, because of the clandestine nature of the COPO program, it didn't get the buyer stripes or engine callouts announcing what lurked beneath the hood. **bottom, left:** What lurked under the hood was one of the most potent engines in Chevrolet's arsenal: the 427-cubic-inch L72 V-8. **bottom, right:** The interior of the COPO Chevelle was as proletariat as the exterior.





NASCAR's superspeedways. Driver David Pearson dominated the 1968 season in a Holman-Moody-prepared Torino GT, winning 16 races and finishing in the top five 36 times. The Torino's aerodynamic design had helped Ford finally break the Hemi's dominance of NASCAR's Grand National series.

Ford listed an optional big-block engine for the Torino GT, a hydraulic-valve version of the 427-cubic-inch FE-block engine that powered Pearson's car to victory, but most customers ordered the same 390 big-block engine found in the Mustang.

Pearson's 1968 result validated Ford's Total Performance concept. Throughout the 1960s, Total Performance manifested itself in two distinct ways: performance cars for the street and performance engines for racing. In the mid-1960s, Ford laid most of its total street performance eggs in the Mustang's basket. When it came to total racing performance, Ford cast its seed across a broader furrow, competing in sports car, stock car, open wheel, and drag racing events. Ford Motor developed high-performance V-8 engines that often were the ones to beat on a racetrack. Its first race engine to attain dominance was the 427inch NASCAR engine, a development of the 406 FE-block engine. Released in 1963, this engine used such exotic technology as cross-bolted main bearing caps, top: As delivered from the factory. the 426 Street Hemi was not a great street engine; it was basically an unfinished race engine waiting for a good tune-up. But when the right tuner dialed it in, holy hell. bottom, left: The GTX was Plymouth's upscale muscle car, a more luxurious version of its bare-bones street-fighting Road Runner. bottom, right: Although this 1969 GTX was equipped with Mopar's monstrous Hemi engine, it didn't advertise that fact with giant billboard stickers plastered across its flanks. The only clues as to the madness that lurked beneath the hood were discrete callouts on the hood and rear trunk lid.

impact-extruded pistons, forged-steel exhaust valves with chrome stems, and transistorized electronic ignition. The drag racing version of this engine, which used a pair of four-barrel carburetors, developed 425 horsepower. When equipped with a single four-barrel carb, as required by NASCAR's regulations, it generated 410 horsepower. Galaxies powered by the new Ford engine captured the top five spots at the Daytona 500 in 1963, and Ford went on to win the manufacturer's championship that year. Ford homologated the engine by building lightweight Galaxies equipped with the engine, but these were pure race cars with fiberglass hoods and fenders. They lacked the most basic accoutrements of a passenger car, like heaters and sound-deadening insulation.

While Ford dominated NASCAR's Grand National series in 1963, it had less success in NHRA drag racing. The problem was its car, the Galaxie. Even with all the drastic weight-saving measures taken with the lightweight models, the basic car was still too big and too heavy to be successful against the lighter competition from Chrysler. For 1964, Ford mounted the engine in its intermediate-sized Fairlane. With the use of fiberglass body panels, Ford lowered the weight down to a bit more than 3,200 pounds. The resulting car, dubbed the Thunderbolt, was fast enough to bring home a couple of NHRA titles that year.

It seemed as if Ford could either succeed at drag racing or stock car racing, but not at both. In 1964, Ford lost the lead it had held in NASCAR racing the previous year, thanks to the introduction of Chrysler's new Hemi-powered cars, which handed Ford's Galaxies their asses on superspeedways around the country. Since Ford's "Performance" would be less than "Total" without NASCAR championships, the company pulled out all stops in an effort to build a motor to outpower the Hemi. The result became known as the Cammer, thanks to the camshafts



Anyone who knew cars in 1969 knew that the steel wheels with dog-dish hubcaps and the Hemi callout on the trunk lid meant this GTX was a force to be reckoned with. perched atop each cylinder head. This overhead-cam engine, with its massive eight-foot-long timing chain spinning each cam in front of the block, cranked out an estimated 600 horsepower. Its size, weight, and insane power output made the Cammer wholly unsuitable for use in a street-going production car, and as a result Ford was unable to homologate the engine to meet NASCAR's requirements for eligibility. In NHRA drag racing the engine was only eligible for the F/X class. For NASCAR racing, Ford went back to using a slightly redesigned 427, a version nicknamed the "side oiler" because it featured oil passages machined into the sides of the engine block.

Like Chrysler's 426 Hemi, the heavy, brutish, temperamental side oiler engine had not been engineered for street use and made a poor choice for daily driving. Still, Ford had to sell passenger cars equipped with the engine to make it legal for racing. Versions of the side oiler occasionally appeared in passenger cars over the years. Most of these were full-sized vehicles like the Mercury Marauder, with one notable exception. In 1967, Ford sold a version of the intermediate Fairlane equipped with a version of the side oiler. Other than a small fender badge announcing the engine's 427-cubic-inch displacement, the Fairlane XL500 427R looked exactly like the car Grandma drove to church on Sunday morning, a car that could get lost when parked next to a sporty Mustang on a dealer's lot, monster motor or not.

In 1965, Ford developed a more streetable version of the FE-block engine for its large sedans. With milder tuning and hydraulic lifters, this 345-horsepowere engine was more tractable in the stop-and-go driving conditions encountered outside the confines of a racetrack. The engine lacked the durability of the side oiler when subjected to the extreme conditions of competition driving, but it made a good powerplant for use in a muscle car thanks to the 462 lb-ft of torque it generated. Though this engine displaced 426.9 cubic inches, Ford marketers, knowing that bigger numbers sounded better to customers' ears, dubbed the engine the 428 Cobra Jet. Midway through the 1968 model year, Ford made a version of this engine available in its Torino GT. When mounted in the Torino, the engine was rated at 335 horsepower, though this was a conservative estimate designed to prevent a buyer's insurance agent from totally freaking out.

The new Torino GT was just one of the cars Chrysler's new B-bodies were up against when vying for youth-market dollars in 1968. General Motors provided even more serious competition with its redesigned A-bodies. These cars applied pony car proportions—long hood, short rear deck, small passenger compartment—to GM's lineup of intermediate cars. Since the Mustang had grown in size for 1967, the distinction between the pony car genre and the muscle car genre was starting to blur. The cars still featured curves over the wheelwells, but by blending the roofline into the rear deck in a semi-fastback style, designers moved away from a design that could reasonably be compared to a bottle of Coca-Cola.

Pontiac produced the most outrageously styled version of the new A-body platform. The 1968 GTO featured what Pontiac called an Endura bumper, a body-colored, close-cell, urethane foam bumper bonded to a metal frame. The absence of a chrome bumper gave the GTO's front end a futuristic appearance unlike any car Detroit had ever produced.

AMC AMX

"Plain driving brings out the ultra-firm ride, yet proves it's not abusive to one's physical well-being. Firmness is there for a reason. Whip it through a tight turn or a sweeping curve and you'll soon know the exact reason. It's called handling, and the AMX displays it. The short 97-inch wheelbase can get you in trouble, though, if caution isn't one of your driving habits. While the vehicle is completely controllable when operated correctly, there are a few drivers who might find out how the road looks while traveling backward if they put too much emphasis on the gas and not enough on their thinking. 'Course these are the guys who can cause trouble in a parking lot, but it's best that everyone knows just how temperamental the car can become. "

Hot Rod magazine, August 1968



Though it only had two seats, American Motors' AMX was really more of a muscle car than a sports car. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

Pontiac had introduced a revised V-8 engine for 1967 with better flowing cylinder heads. When mounted in the GTO, this engine displaced 400 cubic inches, the maximum capacity a nervous GM management would allow in its intermediate cars at the time. These timid souls also put the kibosh on multiple carburetion in 1967, in an attempt to mollify a growing number of safety zealots hell-bent on saving hot rodders from themselves. This group, led by *Unsafe at Any Speed* author Ralph Nader, rattled the cages of GM corporate management. General Motors tried to find a compromise between Nader's safety Nazis and the public's demand for more power. Pontiac's 400-cubic-inch engine was one example of such a compromise. While the triple-two-barrel carb setup was history, the increased displacement and freer-flowing heads meant that the high-output version of the new engine retained the 360-horsepower rating of its Tri-Power 389-cubic-inch predecessor.

RAM IT UP YOUR HOOD SCOOP

Pontiac introduced an interesting option for the GTO in 1967: the ram air system. Pontiac supplied this system in the trunks of ram air-equipped GTOs and specified it for use only in dry weather. This system consisted of a second ornament for the hood scoop, one that lacked the block-off plates of the standard scoop. This effectively turned the fake hood scoop into a real one. A driver could remove the standard plate with three speed screws and install the ram air system, though he or she was supposed to replace the standard plate in the event of any precipitation. below, top: Pontiac used a vacuum-operated solenoid to open ram-air vents; Chrysler used a mechanical button on the dash.
below, bottom: For street use, a bone-stock 440 was torquier, more tractable, and, to be honest, faster than the vaunted 426 Hemi.













top: The Plymouth GTX was the most restrained example of Chrysler's B-body muscle cars in 1970, with just a faux scoop in front of the rear wheels accounting for fake ornamentation. **above, left:** The manually operated hood scoop was anything but fake; it fed fresh air to the 440 engine lurking beneath the hood. **above, right:** Chrysler offered optional rear spoilers for its muscle cars, but the original owner of this example must have appreciated the clean lines of the GTX. **left:** When the dash-mounted button was pulled, a flap in the hood opened to feed fresh air to the engine.



When Pontiac introduced the restyled GTO for 1968, it included what it called the Ram Air II option. Like the original Ram Air, the breathing equipment Pontiac supplied came in the car's trunk. But the scoop inlets were the least important part of Ram Air II. Of more importance to a driver's right foot were new round-port cylinder heads with polished and tuliped valves, a wilder camshaft, and freer-flowing exhaust manifolds. In addition, Pontiac moved the air inlets up higher on the hood of the redesigned GTO, where they could scoop more air into the engine compartment. The result of all this fine tuning was that when equipped with Ram Air II, the 400-cubic-inch engine generated 366 horsepower.

The results paid off. *Motor Trend* magazine picked the GTO as its car of the year and sales rose to 87,684 units, up nearly 6,000 units over the previous year. More importantly for Pontiac, the division sold more than 340,000 Tempest models, including the GTO, putting Pontiac second behind Chevrolet in the intermediate car market and ahead of every other brand.

Rival GM divisions Oldsmobile and Buick were just bit players in the muscle car melodrama in the late 1960s. Buick especially struggled to connect to the youth market. The division's marketers resorted to outright deception in an attempt to siphon off some baby boom dollars. Buick's marketing team wanted to cash in on Pontiac's strong GTO sales, and it knew that big numbers sold cars in a market obsessed with more of everything. Even though its 401-cubic-inch muscle car engine Though we seldom think about handling characteristics when we think of muscle cars today, the Chrysler muscle cars of the late 1960s, like this Plymouth GTX, were often praised for their cornering prowess. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



above: The coupe versions might have had more rigid bodies for drag racing, but a 1969 GTX convertible had the edge in cool. right: The skinny bias-ply tires of the era were the Achilles heels of muscle cars on the drag strip, but on the street they were the bomb for smoky burnouts.





displaced more cubic inches than the Pontiac engine, the souped-up Pontiac mill produced more power than the 335-horsepower Buick. The one area where the Buick engine excelled was in torque production. The Buick engine produced an impressive 445 lb-ft of twisting force. To capitalize on that, Buick's marketing team named the 1966 version of the engine the Wildcat 445.

This ruse did not help Buick's cause. Sales plummeted for the 1966 model year, falling 80 percent from 1965 levels. The original GM performance division desperately needed to create a car that the youth market would covet if it wanted to avoid getting a reputation as GM's Rambler division. Buick's rendition of the 1968 A-body had to stand apart from the crowd if it was to sell to baby boomers. The lines Buick's designers penned certainly made the car stand out among its A-body brethren. Rather than the smooth curves of the other A-bodies, they split the sides of the car with an accent ridge that started at the top of the headlight, ran over the fender, then curved down toward the rear wheelwell, giving the car a droopy-jowl look. The market responded as one would expect; while sales of the A-body muscle cars from other GM divisions rose for the 1968 model year, Gran Sport sales continued to flatline. The addition of a functional fresh-air induction system in 1969 wasn't enough to overcome the Gran Sport's frowning-octogenarian profile, and sales fell another 40 percent that year. With total Gran Sport sales of just 8,132 units in 1969, Buick's position in the youth market couldn't have been grimmer if division stylists had drilled portholes in the car's unfortunate front flanks.

Although a capable car, Ford's 1969 Torino CJ428 didn't resonate with the muscle car market as well as did the cars produced by Ford's competitors. That's because the styling of the car wasn't designed to appeal to buyers; it was designed to be as slippery as possible on NASCAR ovals. *Archives/TEN: The Enthusiast Network Magazines, LLC.*
For Oldsmobile, the stakes in the intermediate market were even higher than they had been for Buick, and the success of its new-for-1968 A-body was critically important to the division. While Oldsmobile's total sales fell in 1967 and the company slipped from fifth to sixth place in the marketplace, sales of the division's A-body cars had actually risen that year. Olds did not want to mess up the one model in its lineup that sold well.

Even though Oldsmobile sold large numbers of its rendition of the A-body, most of the nearly half-million F-85s the division sold in 1966 and 1967 went to elderly buyers. The Cutlass was the intermediate car of choice for the blue-haired crowd. Barely 10 percent of its F-85 customers purchased the sporty 4-4-2 version. Even at that early date, the division's customer average age was getting dangerously high. Its cars just didn't connect with baby boomers. The 4-4-2 was a capable car with arguably the best suspension of any A-body variant, but its conservative styling meant that most young buyers didn't even notice the car existed.

Oldsmobile designers did a commendable job in making the 4-4-2 version of the 1968 Cutlass distinctive-looking, perhaps not as distinctive as Pontiac's GTO, but on par with Chevrolet's restyling effort and leaps and bounds ahead of Buick's sad-faced Gran Sport. Performance was on par with the muscle cars from competing GM divisions too, at least when the car was equipped with the W-30 package, which featured a 360-horsepower, 400-cubic-inch engine.

GOING ROGUE

Three hundred and sixty horses were good, but by this time GM's A-bodies were starting to earn a reputation as underpowered. Compared to Chrysler's 440 Magnum and 426 Hemi, and Ford's soon-to-bereleased 428 Cobra Jet and rare 427 Side Oiler, the 400-cubic-inch displacement dictated by corporate headquarters was starting to seem a bit puny. George Hurst, owner of Hurst Performance Products, sensed there might be an opportunity to capitalize on the squeamishness of GM management and approached Olds with a proposal to build some special editions of its 4-4-2. Hurst guessed—rightly—that Oldsmobile's

PLYMOUTH GTX HEMI

"Bomb-that's what it is. The fastest guarter-mile full-size Supercar you can buy off a showroom floor. Without touching the 426-cid/425-bhp Hemi V-8, we handily turned the guarter in 13.43 sec. While we didn't touch the engine, we ... proceeded to swap (the stock F70-15) tires to Goodyear 9.00-15 drag slicks, and we stuck in a 4.56:1 rear axle (replacing the stock 3.23:1 gears). Of all the cars we've tested this year, none but the 435-bhp Corvette has beat these figures. . . . With the 4.56 gears, it's nearly impossible to use the GTX for street purposes. Switching back to its standard 3.23 gears, though, the car becomes at least livable, if slightly thrilling at times. Wet pavement demands the utmost care in leaving stop signals, and even dry concrete can sometimes produce a lot of noise and smoke if you don't exercise proper restraint on takeoff. The Hemi makes a lot of noise so it's not a car well-suited to restful cross-country touring. Besides, gas mileage (9-15 mpg) isn't the sort you'd like to take on long trips."

Car Life magazine, September 1968











above: In 1970 sales of Dodge's Charger, which had grown a bit long in the tooth, began to sag, but by then sales of all muscle cars were beginning to sag. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

opposite page, top: Chrysler did not factor in considerations like usefulness, practicality, or potential unit sales when designing its insane 1969 Charger Daytona. The extended nose and exaggerated airfoil in back were designed for one purpose only: to dominate the competition in NASCAR racing. middle: Holy crap. Really, what else can you say about this car? A car like this had never been built anywhere before, and changes in NASCAR rules meant that there would never be anything like it built again. bottom, left: The Daytona Charger could be had with a 440 engine, but anyone who really wanted the full NASCAR experience ordered the Hemi. bottom, right: The interior of the Daytona Charger wasn't much different from the Dodge Coronet that your spinster aunt drove to church every Sunday, but since the interior was gutted for NASCAR racing, that wasn't a problem.

desperation to reach the youth market might make his proposal an easy sell.

The plan was simple: do an end run around GM's corporate baby sitters and build a muscle car with the biggest engine to date. Oldsmobile shipped Cutlasses without engines to Hurst's facilities in Lansing, Michigan. It also shipped Hurst its largest engines, the 455-cubic-inch big-blocks used in the division's luxury sedans. Hurst mildly hot-rodded the engines, bumping power to 390 horses and torque to 500 lb-ft.

In addition to power, the Hurst/Olds cars featured every luxury in the Oldsmobile catalog, and quite a few options unique to Hurst. It seemed to be exactly the kind of car the market wanted. Hurst sold cars as fast as he could build them, which, unfortunately for fans, was not very fast. His Lansing facility produced slightly less than 1,500 cars in 1968 and 1969. The baby boomers' reception of these Hurst/Olds proved that there was a market for a GM muscle car with a monster V-8 engine, a lesson GM management was not yet willing to learn.

Chevrolet fared much better than Buick and Olds with its redesigned 1968 A-body. Beginning with the ultra-low-volume Z16 package of 1965, Chevy had developed a reputation for high performance that translated into sold cars. When it restyled the Chevelle for 1966, it introduced a new model: the SS396. As the name implies, the 396-cubic-inch version of the Mark IV big-block became the standard engine for the SS model. The base engine for this car was the 325-horsepower L35 version of the engine, and an optional 360-horsepower L34 version was

PONTIAC GTO JUDGE

"The GTO has led the field in sales and prestige since its introduction in '64. And . . . here they are in '69 with their own idea of an economy supercar. . . . We first met the Judge at Ubly Dragway. . . . As were the first few thousand off the line, this one was finished in an eye-catching Dayglo red (Carousal Red). From the front we could tell very little different between the Judge and a standard GTO . . . but from the backside, there's no mistaking it. A full-width rear deck spoiler is a standard item, and it's as different from current air-spoiler designs as is this car . . . At first we considered the spoiler a bit ostentatious. We changed our opinion soon afterward, though. Like anything unusual, it takes getting used to. Drag racers will quickly realize a benefit from the fiberglass spoiler, as its rear placement on the car adds weight to the tail end, desirable for weight transfer on acceleration . . . Our best quarter-mile clocking was a 14.41-second e.t., and top speed wound up at 99.55 mph . . . Worth noting in regard to our test is the fact that this particular car had power steering, front disc brakes with power assist, electric windows, and a couple of other weight-adding, performance-robbing extras. "

Hot Rod magazine, December 1968



While initial tests of Pontiac's new 1969 Judge indicated the car might be a bit down on power compared to the competition, when one had been treated to the full Royal Bobcat treatment, as had this example, no one complained of lack of power. *Archives/TEN: The Enthusiast Network Magazines, LLC.*



Chrysler's 1970 B-body muscle cars entered the new decade unchanged, which, in the case of the Super Bee, was not necessarily a bad thing. *Archives/TEN: The Enthusiast Network Magazines, LLC.* available as an option. The 375-horsepower L37 engine from the Z16 of 1965 didn't make the option list in 1966. The 1966 Chevelle SS396 received a stiffer suspension to cope with the added weight and power, and to help tame the A-bodied cars' tendency to understeer in corners.

In the spring of 1966 Chevrolet released another optional engine, the L78. With a bump in compression, solid lifters, and the big-valve cylinder heads off of the Corvette's 427-cubic-inch engine, the L78 generated 375 horsepower. A good selection of engines combined with the lowest base price of any of GM's A-bodied muscle cars helped Chevrolet sell 72,272 Chevelle SS396 models for 1966.

In a move that typified how truly out of touch GM's top management was with the car-buying public, the only major change to the SS396 for 1967 was a decrease in the horsepower rating for the optional L34 engine, the most popular powerplant in the SS396 stable. The decreased rating doesn't appear to have been the result of any engineering changes. Rather, it seems to have been an attempt by GM's corporate management to throw the safety crowd a bone. In 1966, GM had changed the 10-pounds-per-cubic-inch rule to 10-pounds-per-horsepower. Instead of messing with the engine of one of its most popular models, Chevrolet simply changed the horsepower rating of the L34 from 360 to 350, which, when mounted in the 3,500-pound Chevelle SS396, skirted under the corporate limit. The 375-horsepower L78 disappeared from the regular production option list entirely. The effects this move would have on sales were obvious to anyone but the oblivious suits running General Motors—Chevelle SS396 sales decreased dramatically in 1967.

Fortunately for performance fans, GM's arbitrary new rules proved even more difficult to enforce than the old 10-pounds-per-cubic-inch rule. Zora Arkus-Duntov managed to continue mounting multiple carburetors on his Corvette sports car, and options like the L78, while not advertised as regular production options, continued to be available as unadvertised dealer-installed options. This loophole would open the door to all kinds of mayhem and madness in the final years of the decade by allowing clever Chevrolet dealers to mix and match parts, quietly encouraged by GM's merriest prankster Vince Piggins, to create the most outrageous muscle cars of the era.

In the face of decreasing sales, Chevrolet felt pressure to nail the design of its 1968 A-bodies. The basic shape of the new A-body had the right pony car proportions for the period. Somehow Buick managed to screw up the clean lines of the basic design, but division stylists had to work at it. Chevrolet kept it simple and the new cars looked great. Engine options remained unchanged for 1968, though management relented and allowed the division to offer the L78 as a regular production option toward the end of the model year. This saved the engine from the clandestine gulag of the dealer installation program, where only wellconnected gearheads knew how to find it.

RUN THROUGH THE JUNGLE

The 1968 redesign of the Chevelle was generally well received, and the SS396 version of the car made a solid base for hot rodders wanting to build serious street fighters, but sales once again declined. Part of the sales decline can be attributed to the failure of General Motors management to fully engage in the horsepower wars raging in Detroit at the time, but another reason for the decline was occurring half a planet away, in the jungles of Vietnam.

Throughout the mid-1960s the US military had been sending troops to Vietnam in increasing numbers. By the summer of 1965 more than 125,000 US troops were stationed in the far-off little country in Southeast Asia. A year later that number had risen to nearly half a million. In January 1968 the North Vietnamese army began what became known as the Tet Offensive, the bloodiest battle of the entire Vietnam War. To replenish troop strength, the US army began to increase the number of young males it conscripted into military service. The bulk of these conscripts were young blue-collar males from the very demographic group that bought muscle cars. As the war droned on, these potential muscle car customers were being killed in alarming numbers. More than 58,000 US soldiers perished in the conflict. Shipping a half-million potential Chevelle SS396 customers to the other side of the world at any given did not make Chevrolet's job of selling muscle cars any easier, either.

Still another factor in declining Chevelle SS396 sales was an increasingly crowded muscle car market. Ford offered the Torino GT along with a bewildering array of Mustangs. The other General Motors divisions all had their A-body muscle cars, and Pontiac had its hot-selling Firebird. In addition to its own F-body Camaro, the Chevelle had to contend with another Chevrolet product cannibalizing SS396 sales: a redesigned Chevy II Nova SS.

Chevrolet based the new car on the Camaro platform, which made sense since the Camaro had been based on the previous Chevy II platform. The Nova SS looked a bit like a swollen Camaro, thanks to its enlarged passenger compartment, but it was a handsome, well-proportioned car nonetheless. All sense of proportion went out the window, however, if a buyer opted for the newly available 375-horse L78 engine. This motor turned the lightweight Nova into a smoking-fast muscle car that could eat GTOs for breakfast. Chevy II sales nearly doubled for 1968, an increase that came in part at the expense of the Chevelle.

One source of competition in the 1968 muscle car market came from an unexpected direction: Mopar's newly energized B-body lineup. Mopar had long had a corner on the "muscle" part with its Hemi and wedge engines, but the stodgy styling of the cars themselves made them the choice of mainly foaming speed freaks hell-bent on tearing up quarter-mile drag strips. The average baby boomer opted for something more stylish from Ford or General Motors. Its restyled-for-1968 B-body lineup failed to adopt trendy pony car proportions, but apparently that was just fine by baby boomers. Sales of the redesigned 1968 Charger exploded to nearly 100,000 units, topping the sales of Pontiac's car of the year, the GTO. Nearly 75,000 Charger buyers chose the standard 383-equipped car, and the bulk of the rest selected the 440-equipped R/T, while a handful of nut jobs selected the expensive Hemi option. Chrysler's other

Part of the reason Chrysler didn't restyle the B-body muscle cars for 1970 was that it was preparing new E-body challengers for the pony car market. The Dodge version of the E-body was called, appropriately enough, the "Challenger." Archives/ TEN: The Enthusiast Network Magazines, LLC.









top: Unlike Pontiac's Judge, which quickly moved upscale after originally being conceived as a bargain muscle car, Plymouth's Road Runner stayed true to its economy roots, as this base 1970 example illustrates. **middle, left:** The stock 383 Magnum engine found in the Road Runner might not have been the fastest powerplant available in 1970, but it was still capable of overpowering the car's modest handling capabilities. **middle, right:** This 1970 example features the Spartan interior that was originally conceived of as part of the low-cost muscle car package the Road Runner embodied. **left:** By 1970, stripper Road Runners that had the base 383 Magnum engine and bench seats like this example were getting thin on the ground; most buyers were loading their cars up with options.

B-bodied muscle cars sold well, too, especially the barebones Road Runner. Plymouth moved 44,595 examples of its outrageous cartoon cars for 1968.

Encouraged by the success of the Road Runner, Dodge developed its own cartoon car midway through the 1968 sales year. Rather than license an existing cartoon character, Dodge created its own: the Super Bee. Like the Road Runner, the Super Bee was a stripped-down version of Dodge's B-body coupe—the Coronet—that came with a standard 383 Magnum engine and a four-speed transmission. And like the Road Runner, the Super Bee could be ordered with an optional 426 Hemi engine. Sales of the Super Bee helped push total sales of B-body muscle cars to 173,872 units. This was on top of the sales of pedestrian B-body Coronets, Belvederes, and Satellites, which totaled 582,315 units. The year 1968 was a very good one for Chrysler Corporation.

Perhaps the most remarkable statistic for all of 1968, at least regarding automobile sales, was the number of buyers selecting Chrysler's optional Hemi engine. Chrysler sold 2,276 Hemi-powered B-bodies in 1968, an all-time record. Almost half of those elephant engines ended up in the lightweight Road Runner. Apparently a lot of people were willing to pay a steep entrance fee and undertake the challenges associated with owning and maintaining a street Hemi in return for the privilege of driving the baddest-assed car on the road.



The AAR package for Plymouth's version of the E-body, the 1970 Barracuda, was a homologation special for the SCCA's Trans-Am racing series. *Archives/TEN: The Enthusiast Network Magazines, LLC.*





top: Chrysler developed its 1970 E-body pony cars simultaneously with its 1971 B-body muscle cars. The E-bodies shared major components with the larger B-bodies, including the firewalls, which meant that the 'Cuda was much wider than cars like the Mustang, Camaro, and Firebird. **above, left:** The shaker scoop poking through the hood of 1970 E-body cars was functional, unlike the similar-looking scoop used on 1970 1/2 Trans Ams. **above, right:** When Chrysler got into the pony car market in a serious way for the 1970 model year, it offered the company's full range of performance engines, including the Hemi that powered this 'Cuda.

For 1969, Chrysler chose not to mess with a good thing and the lineup returned largely unchanged, although the Super Bee and Road Runner models received an engine option that was outrageous even by 1969 standards: the A12 Six-Pack. This was a version of the high-performance 440-cubic-inch engine with a trio of Holley two-barrel carburetors mounted atop its specially designed, Edelbrockbuilt, aluminum intake manifold. In stock form this engine cranked out 390 horsepower. To cope with the added 15 horsepower, the engine received beefier valvetrain components. Although expensive at \$462.80, a Six-Pack-equipped Mopar cartoon car provided its owner with more easily accessible power than any other muscle car on the market, at least when properly tuned. As these cars aged, it became challenging to keep the three Holleys running in perfect unison, and they did not respond well to the meddling of ham-fisted would-be backyard mechanics.

After Chrysler had eaten Pontiac's muscle car lunch in 1968, Pontiac General Manager John DeLorean formed a committee to brainstorm ideas for the 1969 model year. One of the challenges the committee faced was developing Pontiac's answer to the Road Runner, which had cut into GTO sales. Focusing on Plymouth's initial marketing of the Road Runner as a low-priced muscle car, the committee originally devised a car called the E/T, a budget-priced GTO with a hopped-up 350-cubic-inch engine. While this car could beat a 383-equipped Road Runner through the quarter-mile, DeLorean was less than happy with the committee's engine choice, saying that there was no place for a 350-cubic-inch engine in a 400-cubic-inch world.

This forced the committee to entirely rethink its approach. DeLorean's edict made sense—initially the Road Runner had been marketed as a budget-priced car but most buyers had loaded it up with enough options to bring the price up to GTO levels. The committee began adding standard equipment to the new package, transforming it from the least expensive GTO into the most expensive GTO. The group made the 366-horsepower Ram Air III engine standard equipment, and the Ram Air IV engine, conservatively rated at 370 horsepower, was the only optional engine. The Ram Air IV option put the GTO on par with a 440-Six-Pack-equipped Road Runner when it came to quarter-mile times.

When the committee showed the revised car to DeLorean, he liked the upscale concept, still called the E/T, though he renamed it "The Judge" after a skit on the popular televisions show *Laugh In.* The Judge succeeded in its intended mission of raising the GTO's profile in an increasingly crowded muscle car market. Perhaps it succeeded too well. Pontiac had difficulty in filling all the orders it received, which caused problems with the division's dealer network. At the end of 1969, Pontiac had sold 6,833 Judges, nearly 10 percent of the 72,287 GTOs it sold that year.

In late 1967, GM's directors passed over Semon E. "Bunkie" Knudsen for the position of corporation president. When Henry Ford II learned this top GM executive was available, he recommended his board promote Ford corporation president, Arjay Miller, to vice chairman, opening a key spot for Knudsen. Bunkie, a product-oriented and innovative car enthusiast, had encouraged the creation of the Camaro and its Trans-Am-race-series-inspired Z28 while at GM. He had vigorously pushed Pontiac division's GTO and other John DeLorean-directed inspirations. Now Knudsen, who knew GM's plans for a few years ahead, was in a position to wreak terrible vengeance on his former employer.



When Chevrolet was allowed to put its most powerful motor in the Chevelle, which in 1970 meant the mighty 454-cubic-inch LS6, it created the most potent muscle car of the classic muscle car era. Archives/TEN: The Enthusiast Network Magazines, LLC.

On February 6, 1968, Knudsen arrived at Ford World Headquarters and moved into the president's office there. To him, this was the chance to get as much good-looking, fine-handling Ford horsepower into the market place as possible, and to do it fast. He quickly learned that the corporation already had several projects ready that would race toward that goal. Of particular interest to the muscle car-friendly Knudsen was the mating of the 428 Cobra Jet engine with the intermediate Torino GT and the Mustang pony car.

Knudsen wasted no time, and within months of his arrival, Ford division had the 428 Cobra Jet Mustang ready for introduction as a mid-year 1968 model. As a rather costly (\$434) option, the 428 offered only 335 horsepower, which disappointed some enthusiasts. However, buyers and drivers quickly learned how conservative this number was. *Hot Rod* magazine tested a 428CJ in a Mustang fastback and achieved 0-60 miles per hour in 5.9 seconds, and standing start quarter-mile runs at 106.6 miles per hour in 13.56 seconds. From the factory, the engine developed more than 400 actual horsepower, yet its deceptive rating granted it more competitive placement in lower classes for NHRA and AHRA (American Hot Rod Association) amateur and professional events.

Ford offered it only in the GT package, which included a ram air functional coldair induction hood scoop (the CJ-R) and power front disc brakes. Buyers could order the car with either an automatic three-speed transmission or a fourspeed manual. While Ford assembled 654 notchbacks, it produced 2,253 fastbacks, and a handful of convertibles emerged as well. To keep it on the road, Goodyear introduced its wider F70 poly-glass tires for the Cobra Jet.

A stealth version of the Cobra Jet Mustang arrived in 1969, and Ford offered it only through 1970. Known as the Super Cobra Jet, buyers had to understand the dealer order forms to find it hidden among option codes. While it was never specifically labeled the SCJ, buyers received it when they ordered the Drag Pack Axle option. The base hardtop or SportsRoof retailed for \$2,618 in 1969, and adding the normal Ram Air 428 Cobra Jet was a \$421 option. After selecting the transmission and whatever other items the buyer desired, spending that last \$155 replaced the CJ with the SCJ and added a 3.91:1 Traction-Lok rear end. The primary functional improvement of the Super Cobra Jet engine over the regular 428 Cobra Jet was more durable crankshafts, rods, pistons, along with a harmonic balancer, all designed to help the engine better withstand the higher RPM requirements of drag racing. If absolute performance with no road comfort compromise was the goal, Ford's knowledgeable dealers suggested spending yet another \$52 for a 4.30:1 Detroit Locker differential and rear axle.

In 1969, Ford offered a pair of Mustangs that carried the nickname Larry Shinoda, a designer Knudsen had brought with him from General Motors, used for Knudsen: "Boss." The first car, the Boss 302, was a purposeful racer designed to win Trans-Am championships. The second, the Boss 429, was a balls-to-the-wall muscle car designed to homologate Ford's new NASCAR engine.

With many engine parts from Ford's GT40 race car installed in the 302 racing blocks, the factory racing version of the Boss 302 developed 500 reliable horsepower at an astronomical 9,000 rpm. Production versions put out 290 horsepower at 5,800 rpm, but even those gained 20 horsepower if a driver dared rev the engine to 7,000 rpm. The street 302 engine also adopted many of the technologies Ford engineering had invented and proven in the first 289-based engines for the GT40s as well.

Ford's desire for superiority in NASCAR sparked the idea for the Boss 429. While Ford's 427-cubic-inch engines had been doing well enough in NASCAR's Grand National series, much of that success was attributable to aerodynamic efficiency. The engine itself was getting a bit long in the tooth and engineering envisioned the 429 as its successor. Ford's 429 was a semi-hemi, a design sometimes called a crescent head because the flat areas around the valve seats are crescent-shaped. NASCAR required minimum production numbers of any engine to qualify it for racing, so Ford offered the 429 in the Boss, beginning in 1969.

Ford assembled the first 279 of the Boss 429 street engines with hydraulic lifters and cams. Sometime in mid-1969 Ford had revised the engine to use a mechanical cam. Rated conservatively at 375 horsepower, these Boss engines were assembled in Ford's Lima, Ohio, engine facility. However, once engines were completed, car assembly became quite complex. Engines left Lima and went to Kar Kraft, a kind of official-unofficial

©HEV¥ N©VA SS396

"An odd thing is revealed when trying to get sales information for a 396/375-horsepower Nova: it isn't listed in any of the Chevy sales literature. The 375-horse engine is conveniently omitted from every listing in salesroom brochures. But the thing is there. A 375 engine is an L-78 option which costs over \$300 extra on a Chevy II. The Turbo Hydro is an M40. The Nova is model 11427. Chevrolet may not admit they build the engine to general audiences, but every informed hot rodder knows about it. NHRA knows about it, too, and the combination Chevy II and 396 engine is stock in their books . . . It can be had with a four-cylinder engine, though it's hard to see why . . . It needs power front disc brakes and gets them; because the Nova SS optional equipment, which includes discs, is a mandatory item with big-engined Chevy IIs . . . Quarter-mile tryouts at Orange County Raceway were gratifying, even though the car didn't show full strength. It consistently bested the 103-mph mark, reaching 105-plus for a top record. A low e.t. of 13.87 seconds couldn't be duplicated or bettered, and the very worst e.t. was 14.47."

Hot Rod magazine, July 1969

Ford fabrication and racing shop that had first developed the Boss 302 and 429 engines for racing. Everything was sent to the Kar Kraft facility in Brighton, Michigan. The engines came in from Ohio and completed cars arrived from Ford's River Rouge plant.

Complication arose because Rouge refused to build cars without engines, even though Kar Kraft didn't want the 428s the Rouge plant assembled. To keep peace, Kar Kraft accepted the Boss 429s off the assembly line with 428CJ engines installed, along with all the modifications necessary for the CJ package to become the big Bosses. Kar Kraft's people drove the cars onto transporters, trucked them to Brighton, and removed their engines, which were placed in storage. The Kar Kraft crews did some suspension modifications, installed the 429 engines and oil coolers, relocated the batteries to the trunk, and fitted the huge, front hood scoops, racing mirrors, and decals. Then Kar Kraft returned the completed Boss 429s to the Rouge plant for distribution.

Ford and Kar Kraft produced 859 of the Boss 429s in 1969, but production only reached 499 in 1970. By comparison, the Boss 302 sold 1,934 in 1969. Magazine reviewers loved the performance, handling, and balance of the 302 version. Production jumped to 6,318 in 1970. The Boss 302 was a \$676 option in 1969, while the 429-ci engine added \$1,208 to the sticker. In 1970, Ford product planners made the Boss 302 a separate package, pricing it at \$3,720 (compared to the \$2,771 base price for a SportsRoof, Ford's 1969 and 1970 designation for its 2+2 fastback body style). The 429 remained an option and its price went unchanged.

GENERAL MOTHERS

Of the big three US automakers, only General Motors hadn't made the leap to wretched excess when it came to engine displacement. Chrysler's muscle cars, led by the Hemis, had already attained legendary status, and Ford had redeemed its early aversion to high performance by producing cars like the Torino GT and the Boss Mustangs. Meanwhile, General Motors continued to operate under rules designed to enforce its corporate notions of the public good. The baby boom generation had rejected such rules when they were put forth by their parents, law-enforcement agencies, and political leaders; they certainly weren't about to accept such intrusions from a car manufacturer. Auto enthusiasts joked that GM stood for "General Mothers," and viewed the company's attitude as unwanted nagging. These buyers might have had to tolerate such nagging from their mothers, but they didn't have to take it from a multinational corporation. They could simply buy their cars from other manufacturers, and that's exactly what hundreds of thousands of them did.

In the late 1960s it seemed everyone was jumping on the cubic-inch bandwagon except General Motors. General Motors' timidity about building muscle cars with excessive muscle meant that Chevrolet never officially supplied its 427-cubic-inch Mark IV engine as a regular production option in a traditional muscle car—those would have to make do with the 396-cubic-inch rendition of the engine. But the Bowtie Division did develop the 427-cubic-inch powerplant for use in full-sized production cars and trucks, and also for the Corvette sports car, providing the fiberglass two-seater plenty of muscle. opposite page, top: This 1970 GTO Judge is as close to original as it is possible to get. middle: Though it had the obligatory Boeing 747wing rear spoiler and exaggerated fender stripes, the 1970 GTO Judge was still an understated car compared to the competition, which may be why it was outsold by Pontiac's Trans Am, which had a fire-belching chicken on its hood. bottom, left: At the time this photo was taken in 2006, the Judge had covered just 50,246 miles since new. The owner drives it just 200 miles per year, meaning it now has less than an estimated 53,000 miles on the clock. bottom, right: This headlight, which was replaced in 1971, is one of the few items on the car that is not original factory equipment.









In 1966, Chevrolet made the 427-cubic-inch engine available in two forms: the 390-horsepower L36 pedestrian version and the 425-horsepower L72 for the Corvette and full-sized Impala SS. The L72 version featured forged aluminum pistons, forged crankshaft journals, and four-bolt main bearing caps. Mechanical lifters meant that the owner would have to deal with valve-lash adjustments. Chevrolet only offered the L72 in the Corvette for one year.

The L72 disappeared from Chevy's engine stable in 1967 (it would reappear as an option for the Impala SS in 1968 and 1969), but the Corvette got a selection of optional 427-cubic-inch engines that provided even more horsepower. The L68, a version with hydraulic lifters and a trio of Holley carburetors, produced 400 horsepower. The L71 was essentially the 1966 L72 with the triple-carb setup from the L68. For \$368.65 a Corvette buyer could order regular production option L89 and get a pair of optional aluminum cylinder heads attached to his or her L71 engine. But the most radical version of the 427-cubic-inch engine Chevy offered Corvette buyers in 1967 was the L88. It wasn't listed in the standard Corvette brochure, but the L88 was a regular production option in 1967. Chevrolet sold only 20 Corvettes equipped with the L88 in 1967, but those 20 cars have achieved mythological status.

The L88 represented the crowning achievement of Zora Arkus-Duntov, the father of the Corvette, and his engineering team. By 1966 the team had developed a number of exotic big-block V-8 engines, but none that ever saw production. These included a 660-horsepower 427 that used a chain-driven overhead cam, much like Ford's Cammer, and a pushrod 427 hemi that generated 628 horsepower. The L88 grew out of this development program. This engine could be described as an L71 with standard aluminum heads, but the L88 was much more than that. It was strengthened for racing use wherever needed, and wherever possible it used weight-saving aluminum parts. Since this engine was intended for racing use instead of street driving, buyers who selected it could not get air conditioning, power steering, power windows, or radios. Chevrolet rated the L88 at 430 horsepower at 5,200 rpm, but if a driver had the nerve to explore the upper ranges of the tachometer, it produced much more than that. The Corvette had been designed as America's sports car, but with the addition of engines like the L88, it also served as a hyper-performance muscle car.

The ultimate expression of the 427-cubic-inch big-block Mark IV engine and the most exotic pushrod V-8 engine ever produced by an American auto manufacturer—was the ZL-1, which was essentially an all-aluminum L88. The Chaparral racing organization originally developed the aluminum version of the Mark IV for use in a Can-Am racing chassis. Chaparral manufactured and built a dry-sump big-block based on the Mark IV design. This engine used aluminum heads with an aluminum block and featured iron cylinder liners. Chevrolet decided to develop a version of the Chaparral motor as a production racing engine, a task that fell to Arkus-Duntov. It took much detail engineering to craft a 427-cubic-inch engine out of mostly aluminum, and the engine wasn't ready for production until the 1969 model year. Chevrolet rated the engine at the same 430 horsepower as the L88, but every engine built produced an honest 500 horsepower on the dyno.

PONTIAC FIREBIRD 400

"Pontiac and GM styling have successfully bridged a long open breach between European styling and U.S. functionality with the Firebird . . . The latest Firebird appears smaller than earlier models because of its single side glass. It really is 1.2 inches longer than a '69 'Bird, though it is a halfinch narrower . . . Handling and ride are the most significant aspects of the '70 Firebird. Ride is generally smoother and softer on all models because of reduced spring rates and the fact that the driveshaft tunnel in the rear is higher, which allows more suspension travel . . . The Trans-Am Firebird we drove at the introduction session had one of last year's 3.90:1 gear sets, and a close-ratio four speed, which is a special order item . . . Don Evans, slick-shifting editor of *Hot Rod*, did the honors here, bringing the Trans-Am through the quarter-mile in 13.9 seconds at a speed of 102 mph."

Hot Rod magazine, February 1970



With the 1970 1/2 Trans Am, General Motors produced a car that was like a gaudier version of the grand-touring cars produced by European manufacturers.

The ZL-1 was one of the most technologically advanced engines produced in the 1960s. Except for the forged-steel crankshaft, connecting rods, and camshaft, almost every part of the engine was made of aluminum, including the 12.25:1 compression pistons and cylinder heads. The entire engine weighed about the same as one of Chevrolet's small-block V-8s. It was easily the most exclusive engine ever offered by an American auto manufacturer. The only car ever to receive the ZL-1 engine as a regular production option was the 1969 Corvette, and only two buyers checked the ZL-1 option box when ordering cars that year. This was not a surprising number, given that the \$4,718.35 engine roughly doubled the price of the already-expensive Corvette. In all, Chevrolet built a total of 154 ZL-1 engines, most of which ended up in purpose-built racing cars.

General Motors' reluctance to provide its customers with the big-cube engines they demanded frustrated many Chevy fans, but where most saw obstacles others saw opportunities. Chevrolet had the stylish Super Sports: the Camaros, Novas, and Chevelles. And the Bowtie Division possessed the engines, the Mark IV family of 427-inchers ranging from the pedestrian L36 to the insane ZL-1. It also had a little known system for combining the two: the Central Office Production Order (COPO) program. This program provided equipment not deemed useful for cars sold to the general public. Usually this took the form of special paint schemes for fleet vehicles and heavy-duty suspension parts and durable interior fabrics for taxicabs, but it also included high-performance parts for police use. This program provided an ideal means through which Chevrolet's renegade engineers could circumvent the corporate ban on racing and supply speed equipment to racers.

Vince Piggins made good use of the COPO program. Essentially, once Piggins and his cadre of engineers created some wild and wonderful prototype, Piggins worked the phones. He called dealers around North America, usually one in each major metropolitan area. He knew the owners already had high-performance customers with deep pockets. Piggins told each dealer about the new car or a new engine, and asked the dealers how many they would take.

Piggins and other renegades within Chevrolet plotted ways to use this program to build the image of Chevy cars like the Camaro. Sales of the division's pony car had been strong, but Ford still sold more Mustangs than Chevrolet sold Camaros. Building a credible Camaro counterpart to the Boss 429 Mustang would have helped remake the Camaro's image, but GM management had yet to relent on its policies concerning horsepower-to-weight ratios.

Installing the mighty ZL-1 engine in the Camaro would make it a Mustang stomper, but there was no way corporate brass would allow such a reprehensible act. Not only would it make Ralph Nader and his cronies apoplectic; it would not result in a very good street car. The engine had never been developed for street use and lacked such amenities as a choke. It had never been designed to use restrictive street exhaust systems and the open-plenum manifold meant it would be all but undrivable on the street.

Mounting a ZL-1 engine in the lightweight Camaro body presented problems, but the idea was just too cool not to try it. The engine was given COPO code 9560 for Camaro use and offered through Piggins' clandestine program. If someone was brave enough or foolhardy enough to plunk down an extra \$4,160 over the base price of the Camaro and request COPO option 9560, he received a ZL-1 engine



top: Oldsmobile's 4-4-2 offered a muscle car for drivers with more discriminating tastes. **above, left:** By 1970 4-4-2 buyers could get Oldsmobile's 455-cubic-inch V-8 without having to buy a Hurst/Olds. The red fender linings mean this is the 365-horsepower W-30 version. **above, right:** 4-4-2 buyers who opted for an automatic transmission could order the optional air conditioning, which felt pretty good on a hot day, even in a convertible.





top: A young gentleman pulling into the drive-in aboard a 1970 Olds 4-4-2 was more likely to select his potential life partner from a higher class of young ladies than, say, the driver of a clapped-out '32 Ford with a built-up flathead. **middle, left:** The locking hood clips looked cool, but more importantly they kept the hood from flying open at the high speeds this car was capable of generating. **middle, right:** The giant air snorkels in the hood were functional when the W-30 package was ordered. **bottom, left:** The original owner of this car didn't check a lot of the flashy option boxes, but couldn't resist ordering the exaggerated rear wing. **bottom, right:** Unlike the Spartan interiors of most muscle cars, the 4-4-2 coddled its riders in genuine luxury.

with a Z28 body wrapped around it, including the Z28's racing suspension but without the Z28 stripes. The cars featured street mufflers, which robbed the awe-inspiring engine of a bit of its thunder, but not enough to tame it. Even with its restrictive exhaust system, the car still possessed enough snort to make a trip to a burger joint a genuinely terrifying experience. Chevrolet hoped the high price of the ZL-1 engine would be enough to keep people from buying the car for anything but racing use.

Chevrolet produced an estimated 69 of these outlandish cars, none of which made their mark at the drag strip. Although intended for racing use, ZL-1 Camaros were not very successful in NHRA racing. It wasn't because the cars were slow; a well-tuned ZL-1 Camaro could easily break into the 10-second bracket. The problem was the competition. Chevrolet rated ZL-1 horsepower at a ridiculously low 425 ponies so it could compete in Super Stock C and D classes, but the sanctioning bodies saw through this cheap ploy and classified it as a modified, where it would have to run against purpose-built race cars. By this time the F/X class had morphed into the Funny Car classes and the 10-second ZL-1 Camaro found itself racing against all-out dragsters running through the guarter-mile traps in the seven-second bracket.

Don Yenko, a resourceful Chevrolet dealer from Cannonsburg, Pennsylvania, discovered the hidden secrets of the COPO program and exploited it to produce the cars General Motors should have built in the first place. Yenko was also a lifelong hot rodder and had achieved some success as a drag racer. In 1967, Yenko removed the engines from 54 SS350 Camaros and replaced them with the L72 version of Chevy's 427-cubic-inch engines. Those sold well so in 1968 he performed the same transplant on another 64 Camaro SS396s. Again, these cars sold well, but transplanting the engine required a lot of work and expense. Plus there was the issue of what to do with the leftover stock engines. In 1969, Yenko approached Chevrolet about forming a partnership for building 427-cubic-inch Camaros and Chevelles and selling them around the country. He convinced Chevrolet that he could sell 500 cars, enough to earn both Yenko and Chevrolet a profit.

Having seen the success Oldsmobile had with the Hurst/Olds, Chevrolet took Yenko up on his

CHEVROLET CAMARO Z/23

"The street version of the Z/28 is quite an impressive little package over last year's car—and brother, that's saying somethin'. We were afforded an opportunity to wring out the car (no sense in calling it driving) around Riverside's twisting course, and you didn't have to be Mark Donohue to turn in a few quick laps—that car really worked. The power felt strong, but was somewhat weak at low rpm; however, it's still an improvement over the low-throttle response of the smaller 302. Our car was equipped with a standard 3.73 rear gear ratio, but we strongly recommend ordering the optional 4.10 gear—even for the street. After all, who would buy this car for economy purposes anyway?"

Hot Rod magazine, March 1970

offer. Yenko souped up L72 versions of the 427 to produce 450 horsepower and mounted these engines in most of the Yenko Camaros and Chevelles he produced. He also built a few 427-powered Yenko Novas in 1969, but he felt these cars were unbalanced, and in 1970 he produced a small run of Yenko Novas with the 350-cubic-inch LT1 engine from the Corvette.

Yenko and other dealers, like Baldwin Chevrolet in New York, Nickey in Chicago, and Dana in California, filled a market need that General Motors was unwilling to fill. But the day of the dealer-prepped special was rapidly coming to a close, since General Motors was soon to relent and give its muscle cars some real muscle.

THE FAULKNERIAN IDIOT MANCHILD AWAKENS

If American Motors Corporation was the red-headed stepchild of the US auto industry, then the Rambler was AMC's Faulknerian idiot manchild. The company's successful Trans-Am racing effort, which culminated in national championships in 1971 and 1972, had drawn some much needed attention in the press, but it hadn't translated into the massive Javelin sales AMC hoped for. Meanwhile, the Rambler droned on in its monotone fashion, babbling non sequiturs about fuel economy to a world that wanted to hear about nothing but performance. By 1969, AMC had pulled the feeding tube from the Rambler's brain-dead carcass and the nameplate was in the process of wasting away.

Some elements within the company secretly fought to keep the Rambler alive. Deep within the corporate closets of American Motors was a small contingent of fetishists who harbored a love for the Rambler. These folks believed that AMC was making a mistake by killing the Rambler nameplate, and they plotted for its survival. Keeping the Rambler name alive was not an acceptable orientation to have as far as AMC's corporate hierarchy was concerned, and the company's Rambler cowboys had to go outside corporate halls to practice their love that dare not speak its name.

George Hurst of Hurst/Olds fame offered these corporate deviants sanctuary. Hurst agreed to take stripped-down Ramblers, strengthen their chassis, and drop in a 315-horsepower version of AMC's 390-cubic-inch engine. To differentiate these cars from the pedestrian Ramblers that drove the nursing home set mad with automotive lust, Hurst gave the car one of the most outspoken paint schemes of the entire muscle car era. The red-and-white car, called the SC/Rambler/Hurst, featured a blue stripe across the roof and rear deck. The stripe began with an arrow on the hood pointing to the huge, blocky hood scoop, with the phrase "390 CU-IN" at the base of the arrowhead.

The cheap (\$3,000), light SC/Rambler was a rocket, easily capable of turning in quarter-mile times in the mid-14-second bracket. With a few Group 19 parts, it could break into the 12-second bracket. After the first batch of 500 sold out, Hurst built a second run of 500 cars, this time with toned-down paint. Some AMC dealers had been so offended by the outrageous paint of the original that they refused to put the cars on their lots. Realizing that such attitudes probably contributed heavily to AMC's financial woes, when the company ordered a third batch of SC/ Ramblers, it specified the original paint scheme. In all, AMC sold 1,512 SC/Ramblers.





top: The 1970 1/2 Trans Am had the same wheelbase as the 1969 car, but it was slightly longer and slightly narrower. **middle:** The redesigned Trans Am had a rear spoiler that was less flashy than the 1969 example, but unlike the earlier version, the new one actually contributed useful downforce. It wasn't enough to save the Rambler nameplate, but at least it sent the old man off in fine style.

By 1970, everyone in the automotive industry knew the muscle car era was coming to an end. Smog, which was a slang term for smoky fog, had become a major health concern in metropolitan areas. The federal government had taken action to curb the air pollution that was choking American cities, and this action had the support of the majority of the American people. President Richard Nixon created the Environmental Protection Agency (EPA), a federal department that sniffed out sources of smog and tried to eliminate them. As a major source of smog creating pollutants, passenger cars became a primary focus of the EPA's attention. The federal government began requiring increasingly stringent emissions control equipment on cars, equipment that robbed the engines of power. To maintain higher power levels, engines grew larger. In 1970, Chevrolet raised the displacement of its biggest big-block to 454 cubic inches through an increased stroke. The bore on the original Mark II racing engine was about as big as the block could handle from the beginning of its development. Increasing the stroke was the only option for building a larger engine with any reliability. Rather than casting a taller block, as Chrysler had done with the 383 B-block to create the 440 RB-block, Chevrolet engineers installed a crankshaft with a longer throw. Motorcyclists had used this trick to increase the displacement of Harley-Davidson motorcycle engines for years. Other than an increased stroke, Chevy engineers didn't change much when converting the 427 engines to 454 cubic inches. Even the camshafts of the various engine packages remained virtually unchanged. The LS4, the basic package that went in passenger cars and trucks, was rated at 345 horsepower. The LS5 had a hotter camshaft and produced 360 horsepower. The hottest version, the one everyone wanted to have powering their Chevy muscle car, was the LS6 version, rated at 450 horsepower and a massive 500 lb-ft of torque.

Muscle car sales had declined across the board in 1969. General Motors' offerings had suffered even greater sales drops than had the big-engined cars from rivals Chrysler and Ford. When faced with a choice between protecting customers from themselves and losing money or giving the market what it seemed to want, GM's management chose the bottom line over what it believed to be the greater good. For 1970, management allowed its divisions to mount their biggest engines in their intermediate-sized muscle cars.

Chevrolet responded to this newfound freedom by stuffing the new 454-cubicinch engine under the Chevelle's hood. When composing the list of regular production options for the 1971 Chevelle, the division saw fit to include the 450-horsepower LS6 version of the big engine. If a Chevelle buyer could scrape up an additional \$1,004.36 to add a regular production option Z15 to his car's build sheet, he could drive off with one of the most iconic cars of the entire muscle car era.

The LS6-equipped 1970 Chevelle SS454 was also one of the fastest cars of the era. Even the most ham-fisted magazine tester could get the car into the 13-second bracket on stock tires, and with the right driver and the right tires, 12-second times were possible. This was a regular production Chevrolet that would run with the COPO cars and the dealer specials.

BEGINNING OF THE END

In 1971 General Motors ordered its divisions to lower compression ratios across the board. The EPA had warned US automakers that it was soon going to ban the use of tetraethyl lead as an additive in gasoline. Lead had been added to gasoline since before World War II to prevent engine detonation, allowing the use of higher compression ratios. Leaded fuel technology reached maturity during the war, allowing fighter and bomber aircraft engine makers to develop much more power, but lead was a nasty carcinogenic substance that caused birth defects, developmental disabilities, and all sorts of problems with the environment, though its role in these problems wasn't clearly understood at the time. What was known was that the EPA planned to institute emissions requirements beginning in 1975



top, left: In an attempt to offer performance cars that weren't hammered by high insurance premiums, some manufacturers offered their top engines in models that weren't considered muscle cars, like this 1971 Cutlass SX, which featured the same potent version of Oldsmobile's 455-cubic-inch V-8 found in the division's 4-4-2. **top, right:** All Cutlass SX models came with a TH 400 transmission. When the W-32 performance package was ordered, the stock 2.56:1 rear gearset was changed to 3.08:1. **bottom, left:** The 1971 Cutlass SX might have had all the power of Oldsmobile's 4-4-2 muscle car, but it also had all the amenities found in Grandma's Cutlass luxury coupe. **bottom, right:** In 1971 Oldsmobile measured its 455-cubic-inch V-8 at 250 horsepower using the SAE net measuring method, but when using the SAE gross method of previous years, that number translated to 320 horsepower. Likewise the SAE net 370 pounds of torque translated to 460 using SAE gross, meaning that the emissions equipment and lower compression hadn't decreased performance quite as much as it might have seemed on the surface.



that would require most automakers to install catalytic converters in their exhaust systems. These converters used platinum-coated beads to reduce the toxic emissions in automotive exhaust. Lead stuck to these beads and plugged up the exhaust system.

General Motors' decision to reduce compression levels was the first step in preparing its passenger cars for the upcoming catalytic converters and the lower-octane gasoline their use would mandate. In 1971, the LS6 engine only lost 25 horsepower. The big engines would lose far more power before General Motors started installing converters for the 1975 model year. The coming of the catalytic converter meant the classic muscle car era would soon be over.

In the meantime, Chevrolet was determined to produce the best muscle cars it had ever built. The same was true for other General Motors divisions. When word came down from on high proclaiming that GM's muscle cars would finally have engines equal to or better than those of their competitors, Oldsmobile had no problems mounting its 455-cubic-inch engine in the division's 4-4-2. Since 1968, the 4-4-2 had featured a 400-cubic-inch engine that was simply a 455 with reduced cylinder bores.

In 1969, Olds' W-30 option featured improved suspension components, a plastic hood with functional air induction, a hotter camshaft, higher compression, and a larger carburetor. Olds rated the 400-cubic-inch W-30 at 360 horsepower. In 1970, Oldsmobile applied this same treatment to the 455-cubic-inch version of the W-30 package. The extra 55 cubic inches of displacement only brought a 10 horsepower increase in the power rating, but this was more a result of Oldsmobile's desire to fool insurance companies than any tendencies toward underachievement of the W-30 engine. Artificially low horsepower ratings were becoming almost Chrysler introduced bigger, heavier B-body muscle cars for the 1971 model year, and the popular Road Runner was part of that line. Although the cars retained the potent engine lineup from the previous year, including the omnipotent 426 Hemi, the added weight led to slower quarter-mile times. Archives/TEN: The Enthusiast Network Magazines, LLC. standard practice for muscle car manufacturers. Insurance companies were starting to exert a negative influence on muscle car sales. The equation of high-horsepower, low-weight cars plus young male drivers yielded the sum of exorbitantly high insurance premiums. While many baby boomers could afford the relatively low prices the manufacturers charged for muscle cars, they were starting to have problems affording the steep costs of insuring the beasts.

Oldsmobile had built one of the finest interpretations of the muscle car concept with the 1970 4-4-2. It provided exceptional power, in spite of the low horsepower rating the manufacturer gave it, and it was one of the best handling of all the A-body cars from General Motors, but sales disappointed the division. Olds sold 33,607 4-4-2 models when the car was redesigned for 1968. When GM management finally allowed the division to bore the engine out to full strength in 1970, sales fell to just 19,330 units. The following year sales fell to just 7,589 units.

Part of the problem was that the A-body design that had seemed so fresh and contemporary in 1968 was starting to look dated, but a larger problem was that the classic muscle car era was coming to an end. Gas prices were rising, insurance was becoming prohibitively expensive, and the big-motored intermediates were turning into dinosaurs. Also, the market was changing. The Vietnam War raged throughout President Nixon's first term, and the young men who formed the bulk of muscle car buyers continued to be shipped to the other side of the planet by the hundreds of thousands. No industry can withstand a half-million customers from its prime demographic group being removed from the market at any given time without experiencing drastic changes.

Another factor in the impending demise of the classic muscle car era was the fact that baby boomers were aging. The customers who had been in their teens and early 20s when the muscle car market exploded were now in their late 20s and early 30s. More often than not, they had families of their own to support. The Mustang had been the perfect car for these people in the previous decade. Now they needed something a bit more practical for hauling the kids to football practice.

MERCURY CYCLONE C-J

"Montego Cyclones have a 351 engine as their base powerplant. But the 429 is what turns them into supercars. In Cyclones, Cyclone GTs and Cyclone Spoiler Mercurys, there is a choice of C-J 429s. One is a non-ram-air version. Then there's the ram-air variety, and finally a Super Cobra Jet design that is part of the Drag Pack option. The Super C-J has mechanical valve train, 4-bolt bottom end, forged aluminum pistons and remote oil cooler, and is supplied with either a 3.91:1 limited-slip axle or a 4.30:1 Detroit Locker-equipped rear cog. All the C-J engines offer either a four-speed stick or a three-speed automatic. There's also a limitedproduction option containing the NASCAR crescent-head 429 in street-operable form. In street form, the engine isn't at its peak, and the limited-production restraint causes it to have a rather high price tag. It is offered as much to qualify it for use in stock car racing as it is to be sold. Most, if not all, NASCAR 429-powered Cyclones will end up on some type of race track."

Hot Rod magazine, April 1970

In 1968, when DeLorean said that it was a 400-cubic-inch world, he was guilty of understatement. In truth, the auto industry was well on its way to becoming a 440-plus-cubic-inch world. When GM management finally decided to enter the mega-cubic-inch engine frenzy in 1970, Pontiac found the transition a bit more difficult than Oldsmobile, which already had a sleeved-down 455-cubic-inch V-8 engine powering its A-body muscle cars. The largest engine Pontiac offered in any of its cars in 1969 displaced 428 cubic inches. There was no way the performance division was going to let rival Oldsmobile have a larger engine in its muscle car, so Pontiac's engineers increased both the bore and the stroke of the 428 to create a 455-cubic-inch monster motor.

At least everyone expected Pontiac to produce a monster motor. Instead, the division left the 370-horsepower Ram Air IV engine as the top performance engine in the GTO, reasoning that with its shorter stroke the higher-revving 400-cubic-inch Ram Air IV would provide livelier performance. Pontiac rated the new 455 HO option at just 360 horsepower and marketed it on the strength of its 500 lb-ft of torque. After internalizing the "more-horsepower-is-better" mantra for a generation, the market did not buy Pontiac's logic, and GTO sales fell nearly 50 percent in 1970. For 1971 Pontiac relented and used the freer-flowing round-port heads from the Ram Air IV package in the 455 HO, but by this time it was too late. General Motors management had ordered its divisions to reduce compression ratios in all their engines to prepare for the coming of unleaded, lower-octane gasoline, and the 1971 455 HO put out just 335 horsepower. Pontiac had missed a very brief window in which the division had the opportunity to produce the killer GTO of all time.

While the 1971 Road Runner was a much larger car than its predecessor, it was also more stylish, with the obligatory long hood and short rear deck.





top: The Plymouth version of the 1971 B-body platform was more rounded and less edgy than the Dodge version, looking more like an airplane fuselage and less like a shark. **bottom, left:** When equipped with the Hemi engine, the 1971 Road Runner was still a fierce muscle car with massive performance potential. **bottom, right:** The interior of the 1971 Road Runner was as over-the-top as the striping on the exterior.

'CUDA 340

"Plymouth's Barracuda is offered in many configurations, but there's one that is best of all: the 'Cuda 340 . . . The 'Cuda 340 is a far better-driving machine than either the 440 or 426 V8-equipped 'Cudas, and at least equals the performance you might expect from an assembly-line-stock hemi 'Cuda. Both of the larger engines cost several hudred dollars more, weight is greater, and the cost of operating is a little harder to live with than with the 340. An odd thing that goes in favor of the 'Cuda 340 handling is that it depreciates overall car weight by 100 pounds when compared to the stock 383 V8 (standard engine) 'Cuda. Only the 383 and the 340 'Cuda are fitted with rear stabilizers, which does much to get them around a curve fast. The 440 6-bbl engine will run away from a 340 'Cuda, but not enough so for it to be an easy contest. A 340 'Cuda is such an appealing supercar that it demands comparison to its foes."

Hot Rod magazine, January 1971



While the 'Cudas with the big engines, especially the 440 6-BBLs and 426 Hemis, garner the most love in the collector market, *Hot Rod* magazine picked the 340 version as the best of all. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

General Motors' conservative Buick division had been a bit quicker to capitalize on this opportunity in 1970, producing one of the greatest muscle cars ever built. That year the Gran Sport received aesthetically pleasing bodywork, ditching the bizarre accent crease along its side that gave it the profile of a surly Norwegian bachelor farmer. More importantly, it received one of the great engines of the muscle car era. A quick glance at the spec sheet didn't reveal the 455-cubic-inch engine's greatness. The engine's 350-horsepower rating fell below the ratings of its big-engined competitors, but given the artificially low ratings of the period, this number had little relationship with the engine's actual output. To get an idea of how underrated the engine was, consider that the same engine in the same state of tune was rated at 370 horsepower when mounted in the Buick Riviera. But like the engines powering earlier versions of the GS, the 1970 GS455 engine wasn't about peak horsepower. The GS455 had one of the highest torque ratings of any engine ever to power a muscle car: 510 lb-ft of the twisting force. This is enough torque, according to the late astrophysicist and muscle car fanatic Carl Sagan, to measurably change the earth's rotation.

Starting in 1970, Buick offered a GSX package for the GS455 consisting of a 455-cubic-inch Stage I engine rated at 360 horsepower and some cosmetic upgrades. This car was Buick's answer to Pontiac's Judge. The car was quick as hell, capable of breaking into the 13-second quarter-mile bracket with the right tires, but unlike Pontiac, Buick put almost no effort into promoting the package. Buick built fewer than 1,000 GSX models, including a miniscule run produced at the beginning of the 1972 model year.

WINGED WONDERS

In 1970 one didn't need to be a professional clairvoyant with the supernatural ability to scry into a crystal ball to see that the muscle car era was ending, but Chrysler was on a roll and continued to develop ultra-high-performance machines. Chrysler intended to build its powerful street fighters until the federal government pried the last Hemi from its corporate fingers. Much of Chrysler's single-minded focus on performance came about as a result of the company's determination to regain the NASCAR Grand National championship from Ford. Like Ford, Chrysler had developed its racing Hemi about as far as possible, given the technological limitations of the day. And like Ford, any increase in performance would have to come through increases in aerodynamic efficiency. In 1968, Chrysler's designers took the aerodynamically awful Dodge Charger into the wind tunnel and began crafting a car as slippery as the Ford Torino and Mercury Cyclone twins. The most notable features of the car that resulted from this work, the Charger 500, were a flush-mounted front grille and a flush-mounted rear window in place of the tunnel-type rear window used on the regular production Charger. Though stylish, this tunnel contributed to terrible airflow over the car and held down top speeds on NASCAR tracks.

With the Charger 500, Chrysler took a much-improved aerodynamic package to Daytona for the running of the 1969 Daytona 500. Unfortunately for Chrysler, Ford presented an even more aerodynamic version of the Torino and Cyclone couplet, the Torino Talladega and the Cyclone Spoiler. The Ford cars used the same basic aerodynamic tricks as the Charger 500—flush grille, flush-mounted glass—to greater effect. A Ford Talladega won the 500 that year.

At this point Chrysler declared all-out war on Ford, as well as any other company impudent enough to challenge Mopar supremacy on NASCAR's superspeedways. Its designers went back to the wind tunnel and emerged with the single most insane automobile of the entire muscle car era: the Dodge Daytona. At its front the new Daytona featured an 18-inch prosthetic nose, designed to reduce frontal area and provide downforce at speed. In back, to balance the downforce up front, the car featured a huge wing placed on 23-inch-tall uprights. To provide downforce in racing, the wing only needed to be raised 12 inches from the rear deck, but Dodge designers placed it almost twice that high to allow the trunk lid to open on street-going versions of the car. This aerodynamic package made the racing version of the car good for top speeds of nearly 250 miles per hour.

Plymouth created its own version of the winged car, the Superbird, later in the year. The Plymouth used a similar wing and nose, but had to improvise a bit on the roof design. Though the stock Road Runner had a more aerodynamically efficient rear window area than the stock Charger, the Charger's tunnel design lent itself to creating a more efficient fastback by simply covering the tunnel with a window. The rear sail area of the Road Runner had to be extended to create as efficient a design. To cover up the cobbled-together bodywork around the rear window, all Superbirds featured vinyl roof covers.

Both cars were built offsite by a company called Creative Industries, which had to hustle to build enough street-legal cars by the January 1, 1970, deadline to homologate the car for NASCAR racing for that year, but the results were worth the effort. The Mopars humiliated Ford on NASCAR tracks, winning 38 of 48 Grand National races. They would have won more, had tire technology been up to the speeds produced by the amazing winged cars, but it wasn't. Tire failure led to some of the hairiest crashes in NASCAR history. The combined threat of deadly crashes and total Chrysler domination led NASCAR's sanctioning body to ban the winged cars following the 1970 season.



"The 455 W-30 has an almost unholy torque capability, reaching a pinnacle of 640 lbs-ft. at the same point where maximum horsepower of 370 is obtained at 5200 rpm. Usable torque range comes in around 3600 rpm, and that is the point take for advertised torque of 500 lbs.-ft. transferring this amount of turning power calls for more than just street tires. Moving the 455-engined 4-4-2 off the Orange County Starting line called for deft throsttle work."

> *Hot Rod* magazine, April 1970

When Chrysler redesigned the B-body lineup for 1971, the winged cars disappeared. Since they were ineligible for NASCAR racing, there was little point in spending the money to develop winged versions of the new cars.

While NASCAR domination was a major focus at Dodge, the division had not been neglecting its customers who wanted to drag race. In 1969, it had followed Oldsmobile's lead and had contracted George Hurst to build a super hot rod version of its compact car, the Dart. Hurst built a handful of Dodge Dart GTS models with four-barrel versions of the 440-cubic-inch RB engines. These cars, along with a handful of Plymouth Barracudas that featured the same engine, were built largely for promotional reasons and were not regular production options. Chrysler was still not a player in the lucrative pony car market. But Chrysler had big plans for changing all that. The corporation finally had a bit of extra cash with which to develop cars for the youth market, thanks to the success of its B-body intermediates. Chrysler designers took the cowl under development for the next generation B-body cars-along with a number of other B-body chassis components to keep development costs down-and built a pony car around them. Internally coded the E-body, the car featured classic pony-car proportions: long hood, short deck, small passenger compartment. With its beautifully sculpted lines and purposeful stance, the car turned out to be one of the classic designs in all of automotive history.

The car was actually a pair of cars: the Dodge Challenger and Plymouth Barracuda, introduced for the 1970 model year. The Dodge Challenger rode on a wheelbase that was stretched 2 inches over its Plymouth counterpart—112 inches versus 110 inches—and overall, the Dodge pony car was 4.3 inches longer than the Plymouth. This gave the Challenger more traditional proportions than the Barracuda, but it gave the Barracuda a more muscular stance. Technically they broke little new ground, but they did blur the line between pony car and muscle car. Because they used the basic front cowl from the impending B-body redesign, the new E-bodies were larger than their pony-car competitors from Ford or General Motors, but they were smaller than Chrysler's B-body muscle cars. Using B-body components also allowed Chrysler's engineers to mount any engine in the company's stable in the engine bays, including the Hemi, which, when mounted in the new E-body cars, created the most potent muscle car package in the Mopar lineup.

Although offered in basic models with slant-six or 318-cubic-inch V-8 engines, the performance models of the cars were the ones that attracted the interest of muscle car fans. The sporty version of the 1970 Challenger was the R/T. The R/T featured the 383-cubic-inch B-block engine with Magnum heads as its base powerplant, though a buyer could chose an optional 440-cubic-inch engine with either a single four-barrel or three two-barrel carburetors. If that buyer wanted to have the fastest car in town, he could order the optional 426 Hemi. The performance version of the Barracuda was simply called the 'Cuda and had the same selection of engines, with the addition of a high-performance 340-cubic-inch four-barrel-equipped engine. The smaller engine could be ordered as a no-cost option.

By 1972 the Pontiac GTO was no longer a free-standing model. Instead, it had once again become an option package for the Le Mans. It did still have that terrific aggressive face, however. Archives/ TEN: The Enthusiast Network Magazines, LLC.

Marminka Piti

The one engine option unique to the E-bodies came as standard equipment on a pair of cars built to homologate the chassis for the SCCA Trans-Am racing series, which was still extremely popular in 1970. The engine was a 340-cubic-inch unit topped by three Holley two-barrel carburetors, and the cars were the AAR 'Cuda and the Challenger T/A. The T/A in the Challenger special's name stood for Trans-Am, obviously, but the AAR name is a bit less obvious to those not steeped in American racing history. The letters stood for All American Racers, the name of racing legend Dan Gurney's company. Chrysler and Gurney formed a partnership in 1969, an arrangement that saw Gurney heading Plymouth's factory Trans-Am racing team. Chrysler's Trans-Am racing efforts met with limited success, but the

Chrysler's Trans-Am racing efforts met with limited success, but the homologation cars were home runs. The cars equipped with the high-revving small-block 340 engines handled much better than their big-block counterparts because there was significantly less weight over the front wheels. In AAR and T/A forms the E-body cars received upgraded suspensions that further improved their handling, making them the best handling muscle cars Chrysler ever produced. Though not on par with the monstrous big-blocks in sheer power output, the six-barrel-equipped 340s, conservatively rated at 290 horsepower, were faster





than many of the big-block cars produced by the competition. Their lightweight fiberglass hoods proved to be delicate and prone to cracking and their side-exiting exhaust pipes could deafen passengers on a long ride, but these were still some of the most desirable cars of the classic muscle car era.

Chrysler's last big money shot in the muscle car wars was its redesigned 1971 B-body platform. The new B-body models retained the Coke-bottle styling of the previous generation of cars, but adopted long-hood-short-deck pony-car proportions. Chrysler maintained the Charger, Super Bee, Road Runner, and GTX versions of the B-body chassis, but the Coronet R/T didn't make the cut. The killer big-block engines that had earned Mopar its legendary performance reputation all made the cut for 1971, including the Six-Pack versions of the 440 and the **top:** The 1972 Trans Am looks as fresh today as it did when new. **bottom, left:** Although the HO 455's horsepower rating fell to 300 in the 1972 Trans Am, torque actually increased, from 410 lb-ft to 415 lb-ft. **bottom, right:** While it lacked the power of the muscle cars from the previous decade, the 1972 Trans Am handled better than any of its muscular predecessors. omnipotent 426 Hemi. Chrysler followed the lead of General Motors and reduced the compression ratio of the RB-block engines for 1971 but held the line with the Hemi. Though hampered by increasing emissions equipment, the Hemi's horsepower rating remained unchanged in 1971, making it the last original combatant standing in the muscle car battlefield.

THE DEATH OF FUN

In 1972, Chrysler further detuned its engines and the mighty 426 Hemi disappeared from the lineup. The B-body cars could still be ordered with big-block engines, but these engines struggled to put out as much power as the small-block engines of a few years earlier. The 340-cubic-inch engine was the top offering in the E-body cars for 1972; the big-block engine had disappeared from their option lists. Almost before anyone realized what was happening, one of the most exciting periods in automotive history had all but come to an end.

The year 1970 went down as the peak year for muscle car performance. Beginning in 1971, US automakers began to detune their engines with lower compression, retarded ignition, milder camshafts, and increasingly restrictive intake and exhaust systems in an attempt to meet toughening pollution-control standards. Horsepower ratings began to drop and would continue to decrease for a generation. Chevrolet lowered the compression ratio of its engines in 1971 to cope with the removal of lead additives from gasoline. Horsepower of its LS6 454 fell from 450 to 425 that year, though torque rose to an astounding 575 lb-ft. For 1972 the LS6 disappeared entirely.

Part of the decrease in the horsepower ratings manufacturers applied to their engines involved the way in which they measured horsepower output. Prior to 1972, most American automakers rated their engines in terms of SAE (Society of Automotive Engineers) gross horsepower, which was measured using a blueprinted test engine running on a stand without accessories, mufflers, or emissions control devices. This did not provide an accurate measurement of the power output of an installed engine in a street car. Gross horsepower figures were also easily manipulated by carmakers. They could be inflated to make a car appear more muscular or deflated to appease corporate and insurance safetycrats or to qualify a car for a certain class of racing.

By 1972, US carmakers quoted power exclusively in SAE net horsepower, which rated the power of the engine with all accessories and standard intake and exhaust systems installed. This provided a more accurate measurement of a given car's potential, but the overall numbers were lower. Even engines that had received no mechanical changes or additional emissions-control equipment suddenly had lower horsepower ratings in 1972. For example, a 1971 Plymouth 'Cuda equipped with a 340-cubic-inch four-barrel was rated at 275 SAE gross horsepower. The same car with no significant mechanical changes was rated at 240 SAE net horsepower in 1972. The 35-horsepower drop was almost entirely due to the different measurement method. To this day, the 1972-1973 versions of the 340-four-barrel engines have reputations as "smog motors," even though they are virtually identical to the 1970-1971 engines.

PONTIAC GOES OUT SWINGING

The psychological effect this had on what was left of the muscle car buying public was a final nail in the coffins of these cars. This was a time before online communities argued ad nauseum about the merits of different brands of valve springs. It was before the Internet, before cable television even, and geniune information was hard to come by. Most hot rodders operated in a fog of misinformation and old wives' tales. People believed the power ratings printed in advertising brochures because often this was the only information available regarding power output. The average buyer didn't know SAE gross from SAE net; he only knew that the horsepower number had suddenly become smaller, and bigger was better than smaller. As a result, some very quick cars built between 1972 and 1974 earned undeserved reputations as underpowered.

As bad as this was, it wasn't the worst thing to happen to the market for high-performance cars. If an aging demographic, Draconian insurance premiums, and increasing encroachment by the federal government weren't enough to kill off muscle cars, the 1973 oil crisis was. This began on October 17, 1973, when Arab members of the Organization of Petroleum Exporting Countries (OPEC) announced that they would no longer ship petroleum to nations that had supported Israel in its conflict with Egypt, which meant the United States and its allies in Western Europe. The effects of the embargo were immediate, and the price of oil quadrupled by 1974. The embargo ended on March 17, 1974, but the aftermath would have a chilling effect on the performance-car market well into the next decade.

By 1973 it seemed to everyone that the muscle car era was dead and gone. Chrysler's Hemi had disappeared, and Chevrolet's 454 was a faint shadow of its former self. When GM management ordered its divisions to drop compression ratios on all the company's engines, muscle car sales plummeted. GTO sales fell from 40,149 in 1970 to 10,532 in 1971. The year 1972 saw an even more drastic decrease in power output from the big engines along with a corresponding decrease in sales. Discounting the measurement differences created by the change from SAE gross to SAE net, Oldsmobile's 455-cubic-inch engine lost 50 horsepower in 1972. The classic muscle car era appeared to be over. But Pontiac, the brand that had kicked off the muscle car movement in the first place, wasn't about to roll over in submission and urinate on its soft corporate underbelly just yet. In a final act of defiance, the division thrust one last mighty middle finger in the face of the automotive establishment. In 1973, when every other manufacturer had jumped the sinking high-performance ship, Pontiac built something that everyone else thought impossible: a true muscle car.

By this time the last performance car in Pontiac's lineup was the Firebird. The GTO was just a sad option on the restyled LeMans model. The following year it would migrate to the Ventura, Pontiac's version of the lowly Nova, and after that it would disappear for the next two decades. The sportiest Pontiacs were the Formula and Trans Am Firebirds. The Trans Am package had debuted midway through the 1969 model year, the last year of Pontiac's original Camaro-derived F-car. Even though the name "Trans Am" implies that the car was designed for the SCCA's Trans-American Sedan Racing series, the car was built for the street and never homologated for racing. The name just sounded cool.


DODGE SUPER BEE 440-6

"Our test subject, a Super Bee with a Six-Pack 440 engine, isn't going to carry any low insurance rates for under-25 buyers, but if you can afford the tab—whatever your age then you'll no doubt enjoy the car. This car's performance fell short of our expectations. Best we could manage was a 14.28-second elapsed time at Orange County International Raceway's quarter-mile, with a top end of 99.55 mph. This is short of the clocking a nearly identically equipped Coronet Six-Pack 440 ran for a feature in our August '69 issue. That car weighed 3850 pounds and ran a 13.56-second e.t. at 105.63 mph in full street trim. This '71 Super Bee tipped the scales at 4135 pounds."

Hot Rod magazine, February 1971



The test car that *Hot Rod* magazine used in its test of the 1971 Dodge Super Bee 440 6-Pack had been abused by virtually every automotive magazine in America before the magazine's editors got their greasy-nailed hands on it, partially explaining its dismal guarter-mile times. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

OVER-BORED 179

In 1970, Pontiac introduced a redesigned Firebird. This redesign allowed Pontiac to build the F-car it had always wanted to build, and the new Firebird quickly earned a reputation for killer handling, especially in Trans Am trim. In addition to sporty bodywork and stripes, the Trans Am package included a number of suspension improvements. The top engine in the 1970 car was a 345-horsepower, 400-cubic-inch Ram Air IV, similar to the top engine offered in that year's GTO.

As with the GTO, Firebird power levels started to drop in 1971. That year Pontiac offered a low-compression version of the 455 HO with an SAE gross horsepower rating of 335 as an optional engine in the Trans Am. Horsepower ratings fell again in 1972, though Pontiac used the better-breathing round-port heads to help compensate for the power drained off by new emissions control equipment. Power appeared to fall yet again in 1973, but that was the case only for those living in the rarified world of numbers on paper. In the real world, 1973 marked a resurgence of Pontiac performance, in the form of the Super Duty 455 option available on the Formula and Trans Am versions of the Firebird.

The SD455 engine combined every high-performance piece remaining in Pontiac parts catalog—radical camshaft, big carburetor, four-bolt main-bearing caps, forged connecting rods, aluminum flat-top pistons—in a last-ditch effort not to let the encroaching nanny state strangle the fun out of performance cars. With a low 8.4:1 compression ratio, the engine was only rated at 290 horsepower, not, seemingly, the stuff of which muscle car legends are made. But that horsepower rating told only part of the Super Duty story.

Consider this: While the SD455 was rated at only 290 horsepower, it was rated at 390 lb-ft of torque, and that was using the SAE net measurement. To put that figure in perspective, while a 426 Hemi had a SAE gross torque rating of 490 lb-ft, when measured using the SAE net method, that same engine generated 390 lb-ft of torque, as did the SD455. Any engine that generates as much torque as a 426 Hemi deserves a place in the pantheon of great motors. Without question the SD455 Firebirds were true muscle cars, as their 13-second quarter-mile times bear out.

They were the last of the true muscle cars, as it turned out. Pontiac got a late start building SD455 Firebirds and only produced 396 examples in 1973. In 1974, Pontiac built 943 SD455 Formulas and Trans Ams before the engine fell victim to the OPEC-induced oil shock. After that, the Super Duty engine disappeared from Pontiac's option list and with it the last of the true big-engine muscle cars. Pontiac would continue trying to maintain its reputation as GM's performance division, producing some admirable cars along the way. Pontiac engineers managed to massage 220 horsepower from the 400-cubic-inch engine used in the 1978 Trans Am, and even resorted to turbocharging when the automaker was forced to scale back to a small 301-cubic-inch engine for the 1980 Trans Am. But Pontiac was fighting a losing battle. It would be nearly two decades before performance once again rose to SD455 levels.

Pontiac was the last manufacturer to keep the performance flame alive, releasing the potent Super Duty 455 engine option for its Firebird Formula and Trans Am models in 1973. *Archives/TEN: The Enthusiast Network Magazines, LLC.*







FROM BONEYARDS TO BIG BUCKS

Pollowing the demise of the SD455, the performance car market in the United States entered its Dark Ages. After offering a series of huge-displacement engines that generated embarrassingly small amounts of horsepower imagine a 455-cubic-inch engine that produced just 160 ponies—the big motors disappeared entirely. Various manufacturers attempted to stir interest in the youth market by putting legendary nameplates like Road Runner, 4-4-2, and Cobra on lowly econocars and pimped-out personal luxury cars, but no one cared anymore.

General Motors wasn't going to sit out the new muscle-car wars; Chevrolet resurrected the Camaro as its entrant. *David Newhardt*



Pontiac persisted with performance cars longer than most, but not with the original muscle car, the GTO. The demise of Pontiac's Super Duty 455 coincided with the demise of the GTO nameplate entirely. In 1972 the GTO had gone back to being an option on the LeMans rather than a stand-alone model. In 1973 GM redesigned the entire line of A-body cars, including the LeMans. The new cars no longer came in multiple body styles. No GM division offered a convertible version of the new intermediate chassis and the hardtop was history. Increasingly stringent government safety requirements meant that the pillar-less coupe body would no longer meet minimum crash protection standards set by the federal Department of Transportation. Pontiac's LeMans coupe, the base car upon which the GTO would continue to be built, featured a sleek, low roofline with a fixed triangular window behind the large post between it and the driver's window. If buyers ordered the optional (and extra-cost) sport coupe, that window was replaced by a louvered metal panel.

The GTO featured a pair of trendy NACA (National Advisory Committee for Aeronautics) ducts in its hood. (Pontiac's original 1973 GTO brochure mistakenly called these "NASA ducts.") These had been designed as part of a ram air package that had been developed for the car. This system never saw production because it made the GTO too loud to pass new drive-by noise laws that were being passed at both the state and federal levels, so the ducts on the production version of the GTO were nonfunctional. It was a handsome car, but just a mere shadow of what it should have been.

Before GTO sales had tanked, Pontiac had been developing a new GTO that would have been a separate model from the LeMans. When the GTO became an option package on the LeMans, Pontiac had gone too far and spent too much The 1973 Z28 certainly looked the part of a muscle car.









top: The dual exhaust pipes sprouting out the back gave the illusion that a free-breathing engine powered the car.
bottom, left: Chevrolet engineers went to great lengths to keep Camaros equipped with the RS package from having to feature ugly safety bumpers.
bottom, right: The problem with the 1973 Z28 resided under the hood, in the form of a strangled engine producing just 245 horsepower.

money on what was to have been the redesigned GTO to kill the new car, so the division made it a completely new model; the car that was originally supposed to have been the GTO became the Grand Am.

The 1973 Grand Am was everything the 1973 GTO should have been. Instead of the economy interior from the LeMans, the Grand Am had the more luxurious Grand Prix interior, which consisted of an elegant dash layout, a Rally Gauge Cluster with full instrumentation (tachometer optional), a three-spoke Formula steering wheel, genuine Crossfire Mahogany trim on the dash facing, radio, and clock surrounds, and a center console between the front seats. Those Strato bucket seats included recliners and adjustable lumbar support, features common on European sports and grand-touring cars but virtually unheard of on American cars of that time. In keeping with its high-end European theme, the Grand Am was one of the first US-built cars to come with a turn-signal-mounted headlight dimmer switch, a feature that had been common on imported cars for decades.

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top: The front-end styling treatment was as fearsome as the engine was tame. **bottom, left:** The fastback roofline was fading fast by 1972. **bottom, right:** While the 1972 Torino was as sleek and stylish as its predecessor, it was no longer a muscle car.

opposite page, top: When Ford introduced an all-new Gran Torino for 1972, the big 429 Super Cobra Jet engine was history. The top engine was a hopped-up 351 Windsor. **middle, left:** Hood scoops do not a muscle car make. **middle, right:** The top-performing version of the 351 Windsor in the 1972 Grand Torino produced just 266 horsepower. **bottom, left:** The crude emissions-control equipment of the early 1970s was the main culprit for the anemic performance. **bottom, right:** Though it was not a real muscle car engine, the 351 Windsor could still light up the tires when hooked to a four-speed transmission, thanks to 301 lb-ft of torque.

TRANS AM: STILL SUPER AFTER ALL THESE YEARS

"Oh, things were touch-and-go for a while there. In fact, as Pontiac learned to grapple with the smog situation, T/A performance got pretty pathetic. Even then the cars kept right on selling, and eventually the factory bounced back with a 20-horsepower *increase* for 1977. This little move contrasted nicely with what had been happening all through the sluggish seventies; namely, drastic compromises in new-car performance. They made the same move this year, the unpredictable devils, by injecting another 20 horses for the '78 edition. Even with AC, power accessories and every conceivable creature comfort included, this American motorcar loses ground to practically nothing on the road—any road—today."

Hot Rod magazine, April 1978



In 1978 the fastest car in America was Pontiac's Trans Am. During that grim era, 220 horsepower seemed like a lot. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

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The suspension of the Grand Am, which featured variable-ratio power steering that allowed the car to have a quicker steering ratio at slower speeds without being twitchy at higher speeds, nearly equaled the suspension on the Trans Am. As a result of its European-inspired performance and luxurious interior appointments, the Grand Am was popular among magazine editors. Meanwhile the magazines all but ignored the GTO. The Grand Am came with every performance part in Pontiac's catalog either as standard equipment or as an available option, including the division's strongest engines and four-speed transmission. The new model received all the available funds when it came to marketing and advertising, but even with some marketing muscle behind it, the Grand Am proved a poor seller. Pontiac sold just 43,164 units for the 1973 model year, 17,083 1974 versions, and killed the car after the 1975 model year, when it sold just 10,679 Grand Ams.

THE DEATH OF THE ORIGINAL MUSCLE CAR

Instead of being the car it was supposed to be—the European-inspired Grand Am—the GTO package returned for the 1973 model year as an option on Pontiac's new LeMans order sheet. Pontiac planned to return the GTO to its street-fighting roots with the new car. According to the original plan, the GTO was to receive the new Super Duty 455 engine when that became available later in the model year. But just about the time the car hit the market, Pontiac got cold feet. It limited the application of the 310 horsepower SD 455 engine to the F-body Formula and Trans Am after production delays prevented Pontiac from building enough engines for the F-bodies, much less supplying them for the A-body GTO and Grand Am.

This meant the top engine offered in the GTO would be the 250-horsepower 455-cubic-inch D-port engine because the round-port 455 HO engine was no longer available. The base engine would remain the 400-cubic-inch D-port engine, which had now dropped to 230 horsepower thanks to a lower compression ratio (8.1:1) and the installation of the exhaust gas recirculation (EGR) system, which consisted of new pollution-control equipment that



In the early 1970s car manufacturers were becoming more interested in building personal-luxury coupes like the Pontiac Grand Prix than in building muscle cars. sent unburned exhaust gases back into the intake manifold to be burned with the incoming fuel-air mixture. Pontiac tried to pull a fast one on the EPA and designed the system with a solenoid to shut it off after running for 53 seconds. This was because the EPA only tested an engine in 50-second cycles. The EPA saw through this ploy and on March 15, 1973, ordered Pontiac to revise the system immediately. Cars built after that date featured a version of the EGR system without the solenoid.

A four-speed transmission was available, but only with the 400-cubic-inch engine. This was the M20 wide-ratio transmission; the M21 transmission had gone the way of the Ram Air IV engine. Pontiac quit equipping the manual-transmission cars with Hurst shifters for the 1973 model year and reverted to the clumsy (but less expensive) Inland shifters. Pontiac again failed to promote the new GTO at all. In an eight-page press release on the 1973 lineup, much of which was devoted the new Grand Am, the only mention of the GTO was buried in a section with the heading "Other Intermediates." The entire text read: "The GTO—offered as an option on the LeMans coupe and LeMans sports coupe." The 1973 LeMans GTO never had a chance. It was a decent car with a lot of potential, but it had too many factors working against it. People just never warmed up to the styling of the new A-bodies. It never received the bodywork, interior appointments, or proper powertrain it should have received: the Endura bumper, Grand Prix interior, and SD 455 engine. And most of all, people didn't know the 1973 GTO existed because Pontiac failed to promote the car.

All things considered, it's surprising that Pontiac managed to sell 4,806 examples of the 1973 GTO. Most buyers—4,312—choose the \$3,376 sport coupe, while 494 buyers bought the \$3,288 coupe. The optional engine was even less popular than the base coupe; 212 cars featured the 455 engine in 1973. It's hard to justify the extra cost of the big 455 and its increased thirst for fuel when it



top: As overwrought as styling was becoming in 1972, it would become much, much more so as the decade progressed. **middle, left:** The Grand Prix SSJ had luxury up the old wazoo. **middle, right:** Hurst teamed up with Pontiac to build the 1972 Grand Prix SSJ. **bottom, left:** Yes, it had an engine. **bottom, right:** Although most of the 1972 Grand Prix SSJ's styling cues were pure 1970s, the wheels were decidedly retro. netted the buyers a mere 20 horsepower gain. Just 1,113 buyers equipped their cars with the four-speed manual tranny. Because of the increasing emphasis being put on fuel economy, the lowest-geared rear end available was a wimpy 3.23:1. Fuel economy was about to get a whole lot more important, and the fate of the GTO was about to get a whole lot worse.

After suffering the worst sales year yet for the GTO, Pontiac decided to move the GTO package to the Ventura's option sheet. The Ventura was Pontiac's version of GM's X-body economy-car platform, which included the Chevrolet Nova, the Oldsmobile Omega, and the Buick Apollo. For the bean counters who had taken over the auto industry after all the loose-cannon car guys had been squeezed out of Detroit, this might have seemed like a good idea. The oil crunch had caused the buying public to purchase smaller cars with lower-displacement engines, and the lightweight X-body platform was almost 800 pounds lighter than the A-body platform. In theory this should have made the new GTO a decent performer, even with a smaller engine, and the Ventura GTO should have gotten more miles out of every gallon of gas. At least in theory . . .

The problem was that the X-bodies were truly awful cars: crude, cheap, tinny, loud, uncomfortable little beasts. When driving in a crosswind, an owner could actually see the sheet metal in the hood rippling in the wind. The GTO was available on both the post coupe and the post hatchback versions of the Ventura. The car's handling characteristics were considered marginal in the mid-1960s, when the X-body architecture had first appeared, and the design hadn't aged like fine wine. The new GTO represented everything that was wrong with the way American cars handled. The only engine available was a 200-horsepower 350. When hitched to the optional four-speed manual transmission, the engine should have motivated



The idea of a Hurst/Olds "muscle car" with a 455-cubic-inch engine producing just 260 horsepower would have been inconceivable just a couple of years earlier. the 3,400-pound car in a spritely fashion, but that was not the case. Performance was dismal; even when equipped with the four-speed transmission and Safe-T-Track rear end, the GTO was barely able to break into the 15-second quarter-mile bracket. Sixteen-second quarter-mile times were an embarrassment for the once-proud GTO. And the loss in performance didn't come with an increase in fuel mileage. The little Ventura GTO managed to coax a mere 12 miles out of each gallon.

Part of the problem was the engine's low 7.6:1 compression ratio. Another factor contributing to the car's leisurely acceleration was that even with the optional Safe-T-Track limited-slip differential, the only available gearing was a tall 3.08:1. This long-legged gearing combined with the lousy Inland shift linkage and the underachieving engine ensured that the 1974 GTO would be a slug in the quartermile. In every way the Ventura GTO was a step down not just from the previous year, but from every GTO ever built, including the original model introduced a decade earlier, and it gave buyers very little reason to purchase a new GTO rather than purchase a used one. Even though the car had evolved dramatically during its first 10 years, the GTO produced in the final year of the car's original production run was the crudest, least-sophisticated one of them all.

KEEPING THE FLAME ALIGHT

Throughout the 1970s and early 1980s, which was the bleakest era in American automotive history, Pontiac tried to maintain its reputation as GM's performance division, producing some admirable cars along the way.

Pontiac engineers massaged 220 horsepower from the 400-cubic-inch engine used in the 1978 Trans Am, and they even resorted to turbocharging when it was forced to scale back to a small 301-cubic-inch engine for the 1980 Trans Am. Even though the rest of the US auto industry was urinating on itself in submission, Pontiac refused to give up on its performance image. The division may have had to give up its big cubic-inch engines, but if it had to run a small V-8 in the Trans Am, then it would extract maximum performance from that engine by any means necessary. In 1980 that meant turbocharging the gutless little economy motor.

Pontiac's engineers mounted a Garrett TB305 turbocharger—the same unit used by Buick and Ford at the time—on the 301-cubic-inch engine and dialed boost up to nine pounds. The turbocharger utilized a primitive draw-through design; that is, the turbocharger sucks in the fuel-air charge through the carburetor rather than forcing air through the carburetor and letting it mix its fuel charge just prior to entering the combustion chamber. This prevented the turbocharger from working to its full potential and also created intolerable turbo lag.

It was a compromised system, at best, but the possibility of a fuel leak causing a fire was too great to use a blow-through system on a carbureted car. Turbocharging would not become a practical solution on American cars until US automakers developed advanced fuel-injection systems. The blown engine produced 210 horsepower and 345 lb-ft of torque—impressive numbers for the period, at least on paper; in reality, the turbo lag inherent in the design meant a driver almost had enough time to chug a refreshing beverage between the moment he stepped on the accelerator and when the little engine came to a boil. In 1981, output fell to 200 horsepower and 340 lb-ft of torque. The engine was dropped after that.



In 1973 Hurst once again teamed with Oldsmobile to produce a Hurst/Olds 442.

In what was perhaps the most damning indictment of the US auto industry at the time, the most muscular car of 1979-1980 wasn't even a car: it was a pickup truck. It was Dodge's Li'l Red Express truck, to be precise. With its gaudy red-and-gold paint and outrageous Peterbilt smokestack exhaust, the Li'l Red Express continued Chrysler's long-standing tradition of building cartoonish cars. But unlike other so-called performance cars of that time, which were mere caricatures of the muscle cars of old, the Li'l Red Express had some real snort. A huge Carter Thermoquad four-barrel carburetor fed the 360-cubic-inch engine through a high-rise intake manifold. With an 8.2:1 compression ratio, the engine produced 225 horsepower and 295 lb-ft of torque, enough to send the outrageous little pickup through the quarter-mile in 15 seconds. While it might not seem like much today, compare the Li'l Red Express' power output to that of the 1979 Trans Am. With the exception of a small run of cars using 220-horsepower 400-cubic-inch Pontiac engines left over from 1978, the Trans Am's top engine offering for 1979 was a 403-cubic-inch Oldsmobile engine that pumped out a pathetic 185 horsepower.

The Li'l Red Express was an entertaining hot rod. With all the weight over the front wheels, handling was abysmal, but the frontal weight bias meant that a seriously antisocial owner could put all the torque to good use. To this day, no one has ever built a vehicle that can burn through a pair of rear tires as quickly as the Li'l Red Express. Entertaining or not, the fact that a truck was the top-performing vehicle on the market in 1979 illustrates the incredible malaise the US auto industry was in at the end of the 1970s.

Things began to look up for fans of high-performance automobiles in the 1980s. After years of limping along, the economy finally began to pick up and the price of gas began to fall. Automakers started to figure out how to meet



top: The 1973 Hurst/Olds showcased GM's new colonnade body style for its A-body cars. **middle, left:** The swivel bucket seats in the 1973 Hurst/Olds looked cool, but they were not very supportive. **middle, right:** The faux vents on the hood mimicked the performance potential of the faux muscle car engine that lurked beneath. **bottom, left:** The enormous (455-cubic-inch) V-8 engine produced just 250 horsepower. **bottom, right:** In case a buyer forgot that the car under his half-vinyl landau top was a Hurst/Olds, the inscription on the opera window would remind him.



Pontiac moved the GTO option package from the A-body platform to the economy X-body platform for 1974. This spelled doom for the original GTO. Archives/TEN: The Enthusiast Network Magazines, LLC. emissions standards without sacrificing performance, and horsepower ratings began to rise. New technological developments like computerized ignition and fuel injection systems began to improve both performance and fuel economy. Forced induction systems, such as turbocharging and supercharging, led to significant increases in horsepower.

With the help of advanced technology, Buick made one last blip on the radar of muscle car fans in the 1980s. Buick had experimented with turbocharged engines since the dawn of the muscle car era. In the early 1960s the division had developed a turbocharged version of its all-aluminum V-8 engine that had been installed in Oldsmobile's F-85. Buick engineers continued to experiment with turbocharging, but such technology wouldn't appear on a production Buick until the 1978 model year.

The engine Buick boosted for its 1978 Regal was its venerable 231-cubic-inch V-6, a design it had developed in the 1960s, then sold to Jeep during the heyday of the muscle car era because there was little market for economical V-6 engines. In 1974, during the height of the gas crisis caused by the OPEC oil embargo, Buick bought the design back from Jeep and began updating it. The turbocharging system introduced for the 1978 model year was primitive, with an exhaust-driven air compressor drawing air through a carburetor, but when that carburetor was

a four-barrel, the little engine produced 165 horsepower, as much as some of the huge-displacement V-8s of the day.

In 1982, Buick first called its Regal the Grand National, a nod to NASCAR's top stock car racing series. Originally the Grand National was just a cosmetic package for the Regal and didn't even use the turbocharged engine from the Regal T-type. Instead, it used a 125-horsepower, 4.1-liter version of the normally aspirated V-6. When the Grand National name returned for 1984, the car had something more to offer than just exciting trim. Not only did the 1984 Grand National use a turbocharged engine, it featured sequential fuel injection instead of carburetors. The addition of a modern fuel injection system made the turbocharged Buick engines much more tractable in daily driving and also much more powerful. A stock 1984 Grand National produced 200 horsepower, putting it on par with the small-block V-8s found in Camaros and Mustangs of the era.

REBIRTH OF THE AMERICAN MUSCLE SUPERCAR

In 1987, the division introduced the ultimate version of the Grand National, the one-year-only GNX. The GNX followed in the tradition of specialty cars built by outside firms, like the Shelby Mustangs and Hurst/Olds cars of the 1960s. Buick sent fully optioned Grand Nationals to ASC/McLaren Specialty Products, where they received more efficient Garrett air-to-air intercoolers, front fender vents to pull away engine heat, and a special Garrett turbocharger that used a lightweight ceramic impeller. ASC/McLaren set maximum boost at 15 psi, bumping the horsepower output to 275. The company also beefed up the suspension and body structure, but the handling still wasn't on par with other performance cars of the day. One magazine wag writing for *Car and Driver* described the GNX as a great engine looking for a decent car. That great engine didn't come cheap, either. The GNX package added \$11,000 to the car's base price, bringing the total cost of purchasing the car to \$29,900.

The Buick turbos grew into true muscle cars by the time they disappeared, along with all the GM rear-wheel-drive intermediates following the 1987 model year. A stock GNX could turn in 13-second quarter-mile times. Today the cars have developed a cult status, in part because of what they were capable of when new, but mostly because of their potential. A stock GNX might have developed 275 horsepower, but with the addition of a few electronic components and a bit of fuel injection tweaking, the engines were capable of producing more than twice that much horsepower.

Ford's Mustang and Chevrolet's Camaro share responsibility for restarting the performance wars in Detroit. Beginning in the mid-1980s, competition between the two traditional pony cars caused horsepower ratings to begin climbing back up to acceptable levels.

General Motors redesigned its F-cars for 1982. Chevrolet's suspension engineers did such a good job with the Z28 that it earned a reputation as the best-handling car built in America (at least until a redesigned Corvette appeared for the 1984 model year). It stole this title from rival Pontiac's Trans Am. At that time the Mustang couldn't compete with the Camaro when it came to handling. The









top: Although one of the slowest Z28s ever made, the 1979 version was also one of the best selling, indicating that buyers were more interested in style than performance. **bottom, left:** By 1979 horsepower ratings for the Z28's 350-cubic-inch V-8 had fallen to just 175 horsepower. Today's frontwheel-drive subcompacts produce more power from their fourcylinder engines. **bottom, right:** Even though power output was meager, the Z28's cockpit was still a sporty place to hang out. Mustangs of the era had been redesigned in 1979, but the resulting car was based on what Ford called its Fox platform, the basic underpinning of such universally reviled cars as the Ford Fairmont. When any amount of power was applied to this chassis, the rear end would hop like a 1962 Chevy II on methamphetamine.

Ford's engineers worked to solve the car's handling issues throughout the 25 years the Fox-based Mustang was in production. In 1984, Ford's Special Vehicle Operations (SVO) team made great strides toward taming rear-wheel hop when it introduced a revised rear suspension for the Mustang. Originally mounted on a special turbocharged four-cylinder Mustang called the SVO, this system used four shocks instead of two to control axle hop. When applied to the standard Mustang, it allowed the use of increasingly powerful V-8 engines.

Increasingly powerful V-8 engines were exactly what people wanted. The SVO was one of the sportiest American cars produced in the early 1980s, but a fourcylinder engine powered it. Sure, the engine was turbocharged to produce 175 horsepower, but it was still a four-cylinder engine. Everyone knew that a proper muscle car needed a proper V-8 engine. For 1993, GM restyled its F-cars once again. The Camaro adopted distinctively Japanese-looking lines, while the Firebird adopted a wild array of exaggerated curves and angles that all seemed to compete with one another for attention. When Ford redesigned its Mustang the following year, its designers did not follow GM's lead and adopt postmodern styling. Rather than looking to Japan for inspiration, as Chevrolet had done, or designing a vehicle that looked like a child's toy, as Pontiac had done (when equipped with the WS6 package, a last-generation Trans Am received not two, but four ram air intake openings stacked up on the front of the hood, resulting in an alien-looking vehicle that John Travolta might drive in *Battlefield Earth*), Ford mined its own rich heritage. The new Mustang combined a modern look with inspired elements from the car's past.

Performance-wise, the car was far from the equal of the new F-cars from General Motors. The new Mustang was just a reskinning of the old car, wart-like Fox chassis and all. The 302-cubic-inch engine was tuned to produce 215 horsepower, roughly equal to the Camaro's high-output 305, but by that time General Motors was offering the new 348-cubic-inch LT1 small-block V-8 engine developed for the Corvette in the F-body cars. This engine developed 275 horsepower in the Z28, and some versions developed much more than that. In 1986, Ed Hamburger started a company that developed automotive aftermarket parts to improve performance while still meeting emissions standards, called, appropriately, Street Legal Performance (SLP). The company's first collaboration with an automaker occurred in 1992, when SLP and Pontiac worked together to produce the SLP Firebird Firehawk. The 1992 SLP Firehawk produced 350 horsepower and 390 lb-ft of torque. This 13-second quarter-mile terror was a true muscle car, though a very expensive one at \$40,000.

Meanwhile the Mustang traded on its 215 horsepower and good looks. Magazine writers weren't especially kind to the new Mustang, preferring the more powerful and better-handling pony cars from General Motors. Unfortunately for GM, magazine writers seldom buy cars of their own. They analyze cars with their heads. The buying public analyzes cars with their hearts. The new F-cars were superior to the Mustang by any empirical measurement—speed, handling, comfort—but the Mustang outsold the Camaro two-to-one and the Firebird three-to-one.

THE NEW PONY WARS

For 1996, Ford introduced a new engine for the Mustang, a 281-cubic-inch V-8 that abandoned traditional pushrods for overhead cams. Initially the engine produced the same horsepower and torque as the aging 302 it replaced. However, a version was tuned by Ford's Special Vehicles Team (SVT) for the limited-production (and expensive) Cobra version of the Mustang that produced 300 horsepower and 300 lb-ft of torque, which was quite a lot compared to the dismal power ratings of the Mustangs Ford had produced for the previous 25 years, but compared to the competition from General Motors, it was a bit on the lame side. In 1996 Chevrolet joined Pontiac in partnering with SLP to produce the Bowtie Division's own Mustang-slaying pony car, the Camaro SS.

Chevrolet shipped Z28s to SLP's facility in Quebec, where the cars were given fresh-air induction systems and treated to a host of other hot-rodding tricks to

TRUCKS CALIFORNIA STYLE: DODGE LI'L RED TRUCK

"The bright-red bomb from Dodge was the fastest piece on the beach, and also the noisiest (thanks to its low-restriction intake and exhaust systems). If all the engine racket won't turn your head, the bright cosmetics are sure to catch your eye. Chrome stacks, steps, bumpers and wheels (not to mention valve covers), super-wide Goodyear GT radials and the exterior woodwork are all factory-direct with the Li'l Red Truck."

Hot Rod magazine, June 1978

In 1978 the fastest car in America might have been Pontiac's Trans Am, but the fastest passenger vehicle wasn't a car; it was a truck. Dodge's Li'l Red Express, to be precise. *Archives/TEN: The Enthusiast Network Magazines, LLC.*







top: In 1978 the Trans Am had been the most powerful muscle car on the market, but that was not the case in 1979. **bottom, left:** The interior of the 1979 Trans Am was as sporty as ever, though. **bottom, right** After Pontiac used up its existing stock of 400-cubic-inch 220-horsepower V-8 engines in 1979, it began installing a 403-cubic-inch Oldsmobile engine rated at 185 horsepower. Buyers could receive a \$195 credit if they ordered a 4.9-liter engine rated at 150 horsepower.

opposite page, top: Even though the 1979 Trans Am with a 4.9-liter engine didn't have the snort of the car driven by Burt Reynolds in *Smokey and the Bandit*, buyers still got the fire-breathing chicken hood decal. **bottom:** In many ways, 1979 marked an all-time low point in muscle car performance.



bump output of the 5.7-liter LT1 V-8 to 305 horsepower and torque to 325 lb-ft. The result was a genuine 154-miles-per-hour supercar. The car absolutely smoked even the hottest version of the Mustang, the SVT Cobra. Even so, Ford sold almost twice as many of its pretty Mustangs as Chevrolet sold of its odd-looking Camaros (107,891 units versus 61,362 units). In 1998 the Camaro Z28 got an even more potent engine, the LS1 from the Corvette. General Motors originally mounted the 5.7-liter (346-cubic-inch) LS1 in the 1997 Corvette. It was the first GM regular production V-8 engine to feature an aluminum block. This clean-sheet design—the first complete redesign of the Chevrolet small-block engine since the first Chevy V-8 in the 1950s—was designed to be powerful, emissions-friendly, and easy on fuel. Even though it retained the classic two-valve, pushrod architecture, bucking the modern trend of four-valve overhead-cam performance engines, the LS1 was a thoroughly modern powerplant, capable of giving any car in which it was mounted world-class performance. In the 1998 Camaro, the LS1 was tuned to produce 305 horsepower and 335 lb-ft of torque.

In 2001 the engine was retuned to produce 325 horsepower and 350 lb-ft of torque, but it no longer mattered. Sales of GM's pony cars had fallen to such dismal levels that the only things keeping them in the lineup were tradition and entropy. The year 2002 saw the death of both the Firebird and Camaro nameplates. Interest in the cars had fallen to such a low point that, like the Rambler before it, few people noticed when the cars finally shuffled off this mortal coil.





Unlike GM's F-cars, the Mustang continued to thrive. For 2005, Ford introduced an all-new Mustang with its first new chassis since the 1970s. Based on the Lincoln LS platform, the most sophisticated rear-wheel-drive chassis in Ford's lineup at that time, the new Mustang was, like the best pony cars of the past, a true muscle car. It featured a version of the overhead cam 281-cubic-inch powerplant that produced 300 horsepower and 320 lb-ft of torque, enough to propel the 3,600-pound Mustang through the quarter-mile in the high 13-second range, making the Mustang GT one of the fastest cars ever to carry the Ford nameplate up until that time.

RETURN OF CARROLL SHELBY

Between the mid-1980s and the mid-2000s, American muscle cars had gradually been returning to form, and by the time Ford unleashed the new 2005 Mustang, muscle car mania was in full swing. The muscle cars from the classic era had become some of the most valuable collector cars on the market, with pristine examples of the rarest models fetching seven-figure prices at auction. With a resurgent interest in muscle cars and a new Mustang platform, the time was perfect for the return of one of the most iconic figures in the history of the automobile: Carroll Shelby. The first new Shelby Mustang in 35 years was a collaboration with a company that had first partnered with Shelby at the dawn of the muscle car era: Hertz Rent-a-Car. In 1966 Hertz had purchased modified Shelby GT 350s to rent to customers as part of its Hertz Sports Car Club, which offered prequalified By 1987 performance was making a comeback, and Buick's Grand National GNX was at the top of the heap. Its turbocharged V-6 engine cranked out 276 horsepower, but with a little tuning it was capable of producing three times that amount. renters who were at least 25 years old the opportunity to rent a variety of high-performance cars. Forty years later Hertz once again collaborated with Shelby for another batch of cars based on the new Mustang.

Ford shipped 500 standard Mustang GTs to Shelby's Las Vegas facilities to be converted to GT-H cars for Hertz. All were finished in black with gold stripes, fitted with a new front fascia and body side scoops, a special Shelby hood with hood pins, and a standard Mustang GT rear deck lid spoiler. All interiors were finished in dark charcoal gray, with doorsill plates that read "Hertz Shelby GT-H" and serialized Shelby GT-H dash plaques mounted between the center dash vents. Once at Shelby, the standard Mustang GT 4.6-liter 300-horsepower engines were fitted with a Ford Racing Performance Parts cold-air intake, a performance exhaust, and a special computer that adjusted fuel mixture and ignition timing, resulting in a gain of 25 horsepower. Shelby swapped the standard Ford rear axle ratio of 3.25:1, standard on all automatic-equipped Mustang GTs, for the same 3.55:1 gear sets fitted to five-speed manual cars. Special dampers, stiff springs that lowered the car significantly, beefier anti-roll bars, and a strut tower brace in the engine compartment brought handling up to Shelby's standards. For 2007, Hertz purchased 500 Shelby GT-Hs, but this time the model was topless. Gone was the fastback coupe; all GT-Hs were convertibles.

Because of the strong interest in the GT-H Hertz cars, Shelby and Ford produced a version of the car to sell to the general public, the Shelby GT. Unlike the GT-H, the Shelby GT could be ordered with a five-speed manual transmission, which was fitted with a Hurst short-throw shifter. Rather than the aggressive hood of the GT-H, the GT featured a standard Mustang hood with a nonfunctional hood scoop riveted on. Only available in a coupe for 2007, for 2008 the car was available in either coupe or convertible form.

Cool as these cars were, they were just the appetizers; the main course was on its way: The 2007 Shelby Mustang GT 500. Although the new Shelby GT 500 featured every luxury imaginable, the heart and soul of the beast was its 5.4-liter, 32-valve, supercharged engine that produced 500 horsepower, the highest horsepower ever in a production Mustang. The only transmission available was a special heavy-duty Tremec TR6060 six-speed manual with a GT500-specific clutch. Cosmetically the car hearkened back to the 1968 GT500. As one would expect, performance was astounding, with 0-60 coming in just 4.5 seconds. When Ford updated the Mustang's sheet metal for the 2010 model year, power output of the Shelby GT 500's supercharged 5.4-liter engine rose to 540 horsepower.

In 2008 Ford commemorated the 40th anniversary of the original 1968 Shelby GT500 KR by producing a modern version. Ford shipped 2008 GT500s to Shelby's Las Vegas facility where they were upgraded with a Ford Racing Performance Package that raised supercharger boost and other modifications to produce 540 horsepower. If that wasn't enough, customers could opt for the Super Snake Package. Available as either a 605-horsepower model that carried a limited warranty or a 725-horsepower version that had no warranty, the 605-horsepower Super Snakes used a Ford Racing engine upgrade kit to bump the power and the 725-horsepower versions used aftermarket Kenne Bell superchargers to get the job done. Carroll Shelby died in 2012, but that didn't spell the death of the Shelby Mustang. In 2013 the GT 500 received an all-new supercharged 5.8-liter aluminum





above: By 1991 the output of the Mustang GT's 5.0-liter V-8 had grown to 225 horsepower with an even 300 lb-ft of torque. **left:** In 1991 the Mustang could once again be called a muscle car.

V-8 engine that cranked out 662 horsepower and 631 lb-ft of torque, making it the most powerful production V-8 engine in the world at that time.

Although Carroll was gone, Shelby's Las Vegas operation continued at full steam. For 2014 Shelby American offered two Super Snake packages, one that primarily upgraded the suspension and cosmetics and a second that added a 3.6-liter Kenne Bell supercharger that boosted engine output to 850 horsepower. But even that wasn't the ultimate Shelby Mustang. That honor went to the Shelby 1000. The 1000 name was somewhat misleading; actual output was 1,100 horsepower.

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THE RESURRECTION AND CRUCIFIXION OF THE GOAT

Ford's Mustang isn't the only legendary muscle car nameplate left on the market. Pontiac revived the GTO for the 2004 model year. When Pontiac decided to revive its original muscle car concept, it had no rear-drive platform to which it could turn, having killed off the Firebird a couple of years earlier. While some great front-wheel-drive performance cars are on the market, such cars are sport compacts and not muscle cars. Even when you stuff a V-8 engine in them, as Pontiac did with the last iteration of its front-wheel-drive Grand Prix, they are not muscle cars. And if it was not a muscle car, it most certainly wouldn't have been a GTO.

While Pontiac lacked a proper muscle car platform, Holden, General Motors' Australian division, had the Monaro, a great potential muscle car. This car made a logical choice as a starting point for building a modern GTO. Swiss-born Robert A. "Bob" Lutz, a man who has held high-ranking positions at each of the big three US automakers, championed the new GTO and made it a reality through the sheer force of his will. The 2004 GTO rode on a 109.8-inch wheelbase and harkened back to the Wide Track Pontiacs of vore. The front track measured 61.4 inches across and the rear track measured 62.1 inches wide. Like the Monaro from which it sprang, the new GTO had a world-class suspension, a thoroughly modern design with independent rear suspension, unlike classic American muscle cars (as well as the 2004 GTO's only real muscle car competitor at the time, the Ford Mustang), which transferred their power to their rear wheels through solid rear axles.

The fully independent suspension featured MacPherson struts in front and

DELIVERING FORD PERFORMANCE

"While pushing ahead forcefully in in high-tech 4-cylinder engine development and superior handling in vehicles like the Mustang SVO, the SVO group has carefully implemented a program that gives current and long-standing Ford enthusiasts everything they need to be competitive."

Hot Rod magazine, February 1984



Ford's SVO division pushed hard to get the public to accept high-performance four-cylinder cars like the SVO Mustang, but the public much preferred good-old V-8 motivation. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

MOTOR TREND ON '93 PONTIAC FIREBIRD TRANS AM

"Pontiac's Trans Am is about two things: absolute pavement-eating performance and flashy styling. For 1998 there's a new 305-horse aluminum V-8 ready to crank up the wick under the car's already attention-grabbing look. If you're crying about the end of the LT1 or the LT4, dry your eyes and gander at a 5.1-second 0-to-60 time, and a quarter-mile in 13.4 seconds at better than 107 mph."

Hot Rod magazine, February 1998

Pontiac teamed up with Street Legal Performance to bring back real muscle-car performance with the Firehawk. *Archives/TEN: The Enthusiast Network Magazines, LLC.*







top: In the mid-1990s a company called SAAC, which was associated with Shelby, produced the Shelby Mk. II Mustang. **bottom:** The SAAC Shelby Mk. II produced 295 horsepower. a semi-trailing arm design in the rear, with specially tuned strut valving and spring rates. Direct-acting stabilizer bars and a variable ratio power steering system were tuned to provide a sporty feel and increased driver feedback. Seventeen-inch alloy wheels and performance tires, a performance-tuned suspension, and a limited slip differential also came as standard equipment. In addition to delivering power to the correct pair of tires through a sophisticated suspension, the new GTO had a true muscle car engine: the Chevrolet-sourced LS1 that had been used in the final generation of Firebirds. In GTO trim, the LS1 engine produced 350 horsepower at 5,200 rpm and 365 lb-ft of torque at 4,000 rpm.

The fit and finish of the new car were top notch inside and out. The elegant interior of the new GTO brought to mind the best sports and grand-touring cars from Europe. The problem with the Monaro was that it didn't look like a real

American muscle car. Lutz had an extremely limited budget when bringing the car to the US market, and his team burned up most of the available funds converting the car from right-hand drive to left-hand drive. When they finished, there was little money left for restyling efforts. Pontiac added some GTO badges and a Pontiac-style front-end treatment and brought the Monaro to the US market as the Pontiac GTO.

The 2004 GTO was a solid performer, but the car's appearance was nondescript at best and the cars sold as slowly as the last generation of Firebirds. Pontiac imported 15,728 cars from Australia (where they were built by Holden) for the 2004 model year but sold just 13,569 of them. By the middle of the 2004 model year, it had become clear that buyers weren't responding to the new GTO and dealers were discounting the car by 30 percent of their original retail price or more.

top: Kar Kraft also got in the specialized Mustang game in the mid-1990s. **bottom:** Kar Kraft built just six Boss by Kar Kraft Mustangs in 1992.







When the muscle-car wars of the twenty-first century hit their stride, Chrysler was in the thick of things with a new Dodge Challenger. David Newhardt Pontiac designers made a few token efforts at giving the GTO more presence for 2005, like punching a couple of ram air-style holes in the hood and bolting a Judge-like wing to the rear deck, but there was only so much they could do with a car that looked like a coupe-version of the 1996 Ford Taurus.

The designers might have been hamstrung by the car's basic shape, but Pontiac's engineers had a terrific car to develop. For 2005, Pontiac borrowed the new LS2 engine from the just-released C6 version of the Corvette and stuck it in the GTO. The 2005 GTO's LS2 V-8 incorporated several significant changes compared to the LS1 used in the previous year's car. The aluminum block was an all-new casting with revised oil galleries. Cylinder bore and stroke was increased to 4.00 inches and 3.22 inches, respectively, for a total displacement of 6 liters (364 cubic inches). The engineering team developing the LS2 reduced weight and mass wherever possible, from the water pump to the exhaust headers, making the LS2 the quickest revving pushrod V-8 ever built up until that time. More efficient ignition coils required less energy to provide a comparable spark. The compression was raised to 10.9:1 and engine redline rose to 6,500 rpm. All of this resulted in an engine that generated 400 horsepower at 6,000 rpm and 400 lb-ft of torque at 4,400 rpm, making it the most powerful GTO that Pontiac ever produced. The 2005 GTO cranked out more SAE net horsepower than the old Ram Air IV produced using SAE gross horsepower measurements. The addition of the LS2 engine turned the 3,800-pound car into a genuine rocket. *MotorWeek* ran one through the guarter-mile in 13.5 seconds at 108 miles per hour, the guickest any as-delivered production GTO with stock tires had ever gone.

The new GTO may not have had the visual flash of its illustrious GTO predecessors, but it had enough muscle to spank each and every one of them in a stoplight drag race. Besides, many people believe nondescript looks aren't necessarily a bad thing for a car capable of going 160 miles per hour. Sometimes it's better not to draw too much attention to yourself. Unfortunately for Pontiac, the general public seemed uninterested in buying a nondescript car and GTO sales remained dismal. An almost complete lack of advertising undoubtedly contributed to these low numbers, but it seems unlikely that even the most outrageous advertising campaign could have generated much interest in the last iteration of the GTO. *Automobile* magazine summed up the situation: "Sad to say, but if Pontiac put some ridiculous 'Judge' stickers on it, made it less pleasant to drive, and added a big stupid wing, it might even sell some." By then it was too late to make the car look like a classic Judge. Pontiac sold just 11,069 units for the 2005 model year. In 2006, that number jumped to 13,948 units, but that still wasn't enough to save the car. The last new GTO rolled off the Holden production line in Port Melbourne, Australia, on June 14, 2006. After building just 40,808 cars over a three-year period, Pontiac once again pulled the plug on the GTO.

THAT THING GOT A HEMII?

Pontiac wasn't the only US automaker getting back in the muscle car game. Dodge revived the Charger name for the 2006 model year, and the Chrysler division gave the car some serious muscle. In R/T form, the car was powered by a 350-horsepower Hemi. Once again the Hemi had been brought back from the dead. This 345-cubic-inch pushrod V-8 topped its fabled predecessor's SAE net horsepower rating and equaled the 390 lb-ft of torque (SAE net) that the older 426 cubic-inch version produced. But the new car had an even hotter version: The Charger SRT8 featured a 370-cubic-inch Hemi that produced 425 horsepower and 420 lb-ft of torque. This modern Hemi produced net ratings that equal the

Would a Challenger R/T be a real muscle car without period-correct stripes? *David Newhardt*



old engine's gross ratings. The new Charger tore through the quarter-mile in the 13-second bracket, despite weighing a hefty 4,200 pounds. Everyone expected Dodge to bring back the Charger. What no one expected was that the new car would have four doors. In the past, all muscle cars have had two doors, or possibly three if the car was a hatchback.

Many people wondered if a four-door sedan could be a true muscle car. Chrysler had an answer for those people in the form of a reborn Challenger. There would be no new 'Cuda version, since DaimlerChrysler—the temporary and unhappy company that formed when Daimler Benz bought Chrysler in the 1990s and dissolved when Daimler sold Chrysler to the investment group Cerebus in 2007 pulled the plug on the Plymouth brand after the 2001 model year, but the reborn Challenger did an excellent job of appeasing Mopar fans jonesing for a modern muscle car. The new Challenger was larger than its illustrious ancestor. Its 116-inch wheelbase was 6 inches longer than that of the original 1970 E-body Challenger (8 inches longer than Plymouth's Barracuda) and its overall length of 197.8 inches was almost 9 inches longer than the original car. (The new Challenger was more than 11 inches longer than the original 'Cuda.) Even with larger proportions, Dodge designers did a commendable job re-creating the classic E-body look in a car with modern aerodynamic efficiency. Perhaps the most visible differences were the shorter front and rear overhangs on the new car.

One area where the new Challenger paid faithful tribute to the original was in its engine bay; therein resided an SRT8 Hemi, at least on the first batch of cars produced in early 2008. Chrysler introduced this car at the January 2006 North American International Auto Show in Detroit, to universally positive response. In August of that year the company announced it would build production versions. SRT8 examples began rolling off the assembly line in early 2008, all equipped with automatic transmissions, and production of standard 5.7-liter versions began for the 2009 model year. After the initial run of automatic-transmission SRT8 versions, Chrysler offered a six-speed automatic with a classic Hurst-style pistol-grip shifter, a design that became a hallmark of Chrysler muscle cars from the 1970s.

The first Challenger SRT8—serial number one—was auctioned off at the Barrett-Jackson Collector Car Auction for \$400,000 on January 18, 2008. This auction took place several weeks before the February 6, 2008, public unveiling of the production car at the Chicago Auto Show. Another Challenger SRT8 bearing the serial number 43—Richard Petty's racing number—was auctioned on eBay on February 13, 2008, as part of the celebration of Petty Enterprises 50th anniversary. As could be expected, that car was painted B5 Blue, otherwise known as Petty Blue. Chrysler donated proceeds from both auctions to charity.

THE GREAT RECESSION

The rebirth of the Challenger should have been cause for major celebration at Chrysler had it not popped from the company's womb at the most financially challenging time in the company's entire history. The year 2008 marked the beginning of the worst economic crisis since the Great Depression. Dubbed the "Great Recession," this crisis saw the demise of a host of manufacturing corporations, including Chrysler, at least as an independent automaker. On





October 23, 2008, Daimler announced that its stake in Chrysler had a book value of zero dollars and the following day Chrysler announced a 25 percent cut (5,000 jobs) in its salaried and contract workforce. Several days later, the big three US automakers sought financial aid at a Congressional hearing in Washington, DC. In December 2008, Chrysler announced that it was dangerously low on cash and may not survive past 2009 and would most likely file for bankruptcy and shut down all operations permanently. On January 20, 2009, Fiat S.p.A. and Chrysler LLC announced that they had a nonbinding term sheet to form a global alliance. Under the terms of the potential agreement, Fiat could take a 35 percent stake in Chrysler. Chrysler filed for chapter 11 bankruptcy protection at the Federal Bankruptcy Court of the Southern District of New York, in Manhattan, on April 30, 2009, and announced its alliance with Fiat. **top:** The new Camaro was designed to be a convertible right from the start. *David Newhardt* **bottom:** This 2011 Camaro convertible would not have looked out of place sitting on a beach in 1969. *David Newhardt*

CAMARO REBORN

The Camaro's death in the early years of the twenty-first century seemed logical. No nameplate lives forever, but one car bucked that trend: Ford's Mustang. While Camaro sales withered and the car died of neglect, the Mustang continued to sell. The success of Ford's Mustang proved that there was still a viable market for a muscular rear-wheel-drive sport coupe, one that General Motors should not ignore. But the situation at GM was radically different than it had been four decades earlier, when Chevrolet Division only had to raid its parts bin to create the Camaro. This time around, the only rear-wheel-drive platform in Chevrolet's automotive stable was the exotic and expensive-to-produce Corvette sports car. To resurrect the GTO, Pontiac Division had addressed this problem by raiding the stable of Holden, General Motors' Australian subsidiary. Chevrolet went to the same well to develop a new Camaro.

The Bowtie Division began working on a Camaro concept car in early 2005. The project grew out of a conversation Ed Welburn, GM vice president of global design, had with designer Bob Boniface over beers not long after Boniface took charge of Chevrolet's Advanced Design Studio. Welburn asked Boniface what he planned to build as his first project, and Boniface said he'd like to do a new Camaro. Like Boniface, Welburn was a huge Camaro fan, but he knew that such a project would meet resistance from GM management. "Just don't tell anybody," Welburn advised.



The new crop of muscle cars came in stunning colors that would have made a GTO Judge blush. *David Newhardt*



Boniface began working on a concept in April 2005. About halfway through the year, designer Tom Peters, who had led the development of the sixth-generation Corvette, joined the project. His team built a concept car using the Cadillac STS architecture, though the plan was to base any possible production Camaro on the new Holden Zeta architecture, which provided the platform for the Monaro/GTO. When the Australian Division redesigned the Zeta architecture for the next-generation Monaro, it engineered the car to be either right-hand or left-hand drive, which meant that developing versions for the North American market was a much-less-expensive proposition.

Peters' crew produced a modern design that was unmistakably a Camaro. The concept car measured 186.2 inches long, almost identical to the original Camaro, but it was 79.4 inches wide, almost 5 inches wider than the original, reflecting a more modern performance car aesthetic. With its strong lines and powerful stance, the concept was a tour de force of automotive design. It captured the details of the iconic 1969 Camaro, such as the pointed grille and vents in front of the rear-wheel openings, in a design that was both a classical muscle car and a modern, forward-thinking performance car.

When Bob Lutz, GM's North American chairman at the time, drove the concept onto the stage at the 2006 North American International Auto Show in Detroit on January 8, 2006, he ignited a furor among the automotive world that wouldn't subside until August 10, 2006, when GM officially announced plans to put the fifth-generation Camaro into production. Chevrolet scheduled production to begin in late 2008, with customer cars being delivered in early 2009. In automotive terms, there was a remarkably short period between the show car's 2006 debut and the scheduled 2008 production date. Development time had been condensed in part because of the use of the existing Holden Zeta architecture, though Chevrolet didn't just tweak this architecture, as Pontiac had done with the GTO, but rather borrowed components to create an entirely new car. In January 2007, Chevrolet showed a convertible version of the Camaro at that year's Detroit Auto Ford's 2012 Boss 302 was the most powerful non-Shelby standardproduction Mustang Ford had built up until that time. *David Newhardt*
Show. This car generated even more excitement than the concept coupe had the previous year.

The rebirth of the wildly anticipated new Camaro should have been the big news coming out of Chevrolet in the spring of 2009, but as with Chrysler's new Challenger, the Camaro's introduction was overshadowed by a far bigger story the impending bankruptcy of General Motors. By the time production of the new Camaro ramped up, what had been unthinkable just a few short years ago had become a looming reality: General Motors was on the brink of going out of business. In 2005 GM reported a loss of \$10.6 billion. In 2007 losses grew to \$38.7 billion. Then in 2008 the United States experienced another oil shock. Gas prices spiked up near five dollars per gallon and the bottom fell out of the auto market. This led directly into the Great Recession. GM sales fell by 45 percent.

In December of 2008, GM told Congress that it needed a \$4.6 billion loan just to keep its doors open for the next several weeks. The government had no choice; it had to bail out GM in order to keep millions of Americans employed. Like the auto industry, the US economy as a whole was in a major downward spiral in 2008. The banking industry experienced a crisis that rivaled the crash of 1929 and unemployment skyrocketed. In better times, the federal government might not have bailed out GM. But as 2008 gave way to 2009, the powerbrokers in Washington, DC, could not afford to have another one to two million people thrown out of work; thus the government bailed out both GM and Chrysler. While it basically gave Chrysler away to Fiat, it kept control of General Motors. Camaro production began on March 16, 2009, rather than the originally planned fall 2008 target date.

Fans of Chevrolet's new pony car were lucky it was built at all. The government bureaucrats running GM at the time had no interest in building muscle cars.



When Ford enlarged its overheadcam V-8 to 302 cubic inches it was able to revive another iconic Mustang: the Boss 302. *David Newhardt*



Fortunately the car was too far along to kill and the car belatedly became available in LS, LT, and SS trim levels. The LS and LT versions were only available with a V-6 engine, but what a V-6: a 3.6-liter (220-cubic-inch) direct-injection unit that pumped out 304 horsepower, just 1 horsepower less than the 4.6-liter V-8 in the rival Mustang GT. The engine could be mated to either an automatic or a six-speed manual transmission. In automatic form, the V-6 even returned an estimated 29 miles per gallon.

Of course the version everyone wanted—the SS—came with something a bit more potent under the hood: either an L99 V-8 or an even more powerful LS3 unit, both of which displaced 6.2 liters. The L99, which was used in tandem with an automatic transmission, generated 400 horsepower and 410 lb-ft of torque. The LS3, which was mated to the Tremec TR6060 six-speed manual transmission, pumped out 426 horsepower and 420 lb-ft of torque. As with the Camaros of the 1960s, the LT and SS models could be upgraded with an RS appearance package. This consisted of 20-inch aluminum wheels, special taillights, HID headlights with auxiliary lights that GM called halo rings, and a rear spoiler. All Camaros, from the base LS to the top-of-the-line SS, came with a modern independent rear suspension as standard equipment.

The car was a hit, one of the few bright spots for GM in what was otherwise the company's most dismal year ever. For the first 12 months it was on sale, GM sold 121,653 copies—more than 20,000 units over GM's perceived mandate to make the car profitable. During that same period, Ford sold just 109,872 Mustangs, even though that car had received a major redesign for the 2009 model year. Like the 1969 Camaro, the 2010 model benefitted from an extended production run and

When Ford redesigned the Mustang for 2015, it had to completely reinterpret the entire concept of a muscle car. *David Newhardt*



The 2015 Ford Mustang featured styling that both honored the original and captured the essence of modern design. *David Newhardt* ultimately went on to sell 154,329 units before the introduction of the 2011 models in the fall of 2010. The Camaro continued to outsell the Mustang, even though the 2011 Mustang (released in early 2010) featured a new 5.0-liter V-8 engine that nearly matched the Camaro's LS3 output with 412 horsepower and 390 lb-ft of torgue.

Things were looking up for the Camaro and they were also looking up for General Motors. With a steady stream of new and desirable vehicles coming to market, GM was able to emerge from bankruptcy and resurrect the convertible version. The ragtop Camaro began rolling off the assembly line in the fall of 2010. Then in July 2010 the company dropped an even bigger bombshell—it would produce a ZL1 version of the car for the 2012 model year. This car, easily the most potent Camaro ever built, featured a supercharged version of the 6.2-liter V-8 that GM uses in its Cadillac CTS-V and Corvette ZR1. The Cadillac used an LSA version of the engine, which cranked out 556 horsepower. The Corvette ZR1 used an LS9 version of the engine that pumped out 638 horsepower. In the Camaro ZL1 the engine was tuned to produce 580 horsepower and 550 lb-ft of torque.

While Chrysler managed to survive with new Italian ownership and General Motors was able to emerge from bankruptcy and get out from under the thumb of governmental ownership, the Pontiac nameplate, which had given birth to the original muscle car, did not survive the transition. General Motors simply didn't have the resources to keep its myriad brands afloat, especially in Pontiac's case. Instead GM cherry-picked Cadillac, Chevrolet, Buick, and GMC to survive. This meant that there would be no Firebird counterpart to the reborn Camaro.

MEET THE NEW BOSS

After what basically amounted to a cosmetic revamp for the Mustang in 2010, Ford responded to the Camaro challenge with an upgrade that really resonated with buyers: a powerful new engine for 2011. In place of the aging 4.6-liter V-8, Ford mounted an all-aluminum 5.0-liter V-8 it dubbed the "Coyote." Generating 412 horsepower, the new engine put the Mustang within spitting distance of Chevrolet's popular Camaro. The following year Ford produced an even hotter version for a new Boss 302 Mustang. In Boss form, the Coyote engine cranked out 444-horsepower, enabling *Motor Trend* magazine to hit 60 miles per hour in 4 seconds and get through the quarter-mile in 12.3 seconds.

For 2015 Ford put that potent powerplant to even better use in the first all-new Mustang in a decade. Ford already had the engine—a mild reworking of the 5.0-liter Coyote pumped power up to 435 horses, but what really excited car buffs was that the Mustang was finally joining the Camaro and Challenger (and most of the rest of the modern automotive world) by using an independent rear suspension. This wasn't the first Mustang to use an independent rear suspension. The 1999–2004

Chevrolet brought back a legend with the supercharged ZL1. Archives/TEN: The Enthusiast Network Magazines, LLC.





Ford's Mustang is the only muscle car to remain in continuous production since its introduction. *Archives/TEN: The Enthusiast Network Magazines, LLC.* SVT Cobra featured such a system, but the independent rear suspension used on the 2015 Mustang was much more thoroughly developed and far better sorted. It brought handling up to standards unheard of in any previous American muscle car.

While 435 horsepower might have seemed incredibly potent back in the classic era, by 2015 it seemed almost pedestrian. Ford had initiated the supercharged horsepower wars with its Shelby GT500, and Chevrolet had upped the ante in 2011 with the 580-horsepower Camaro ZL1. In 2013 Ford responded with the 662-horsepower GT500. In 2015 Chrysler finally got in on the mega-horsepower market with a supercharged version of its Challenger, the 707-horsepower SRT Hellcat.

This was one of the most powerful cars a person could buy at any price, beaten only by the 1,200-horsepower Bugatti Veyron, the 950-horsepower Ferrari LaFerrari, the 903-horsepower McLaren P1, the 887-horsepower Porsche 918 Spyder, the 730-horsepower Ferrari F12, and the 720-horsepower Pagani Huayra. With the exception of the Ferrari F12, each of those cars cost more than \$800,000. With a manufacturer's suggested retail price of \$58,295, the Challenger Hellcat represented a savings of more than \$270,000 over its next cheapest rival, the \$330,000 F12. Certainly the two-seat supercars had a handling advantage over the Dodge Hellcat, but a buyer could perform a lot of chassis upgrading for \$270,000. All the money in the world probably wouldn't get the Challenger to match the



stop speeds of its exotic competitors, given the barn-door aerodynamics of the Challenger's retro shape, but Chrysler estimated the Hellcat version can achieve a top speed of 199 miles per hour, which should be fast enough for most mortals.

Not to be outdone, Chevrolet introduced an all-new Camaro for 2016. While the new Camaro looked a lot like the model it replaced, it was a completely new car. Rather than basing the new car on the Holden Zeta platform, which was very heavy, the new Camaro was built on GM's Alpha architecture. As mentioned above, the 2006 Camaro concept car had also been built using Alpha architecture, which also provided the basis for such cars as the Cadillac CTS. The Alpha was light, stiff, and modern. While the Alpha architecture was much more rigid than the Zeta platform, it was also much lighter. As a result, the V-8 SS version of the new Camaro weighed about 200 pounds less than model it replaced. Like the seventhgeneration Corvette, the Camaro SS used the new direct-injected LT1 of Chevrolet's small-block V-8. Rated at 455 horsepower and 455 lb-ft of torque, the standard Camaro SS engine was more powerful than the base V-8s offered in the Challenger RT and Mustang GT. Better yet, the hood vents on the SS were fully functional; they relieved under-hood pressure to reduce lift.

In 2014 the muscle car celebrated a half century of existence. As it entered its second half century, its future seemed brighter than ever. Each of the big three US automakers cranked out the best muscle cars it had ever produced. Base versions of the Mustang, Camaro, and Challenger each came with standard V-8s that cranked out more power than the most potent engines of the classic muscle car

Chevrolet introduced an all-new Camaro for 2016. *Archives/TEN: The Enthusiast Network Magazines, LLC.*

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era, and each offered specialty versions with supercharged engines that generate amounts of power that were unimaginable back in the classic muscle car era.

We have cars today that will outperform the classic muscle cars in every measurable way. We have faster cars. We have better handling cars. We have more comfortable cars. We have safer cars. We have cars that can run through the quarter-mile 50 percent quicker than cars of the classic era. We have cars that will halve the time a classic muscle car took to get through a slalom course. We have cars that will do all this while coddling the driver in as much comfort as he or she would find in the luxury suite of a five-star hotel and keeping him or her as safe as it is possible to be in a moving vehicle. These are wonderful cars, but they are not the same. They do not raise their middle fingers in a rousing salute to authority the way real muscle cars do. Real muscle cars don't run every driver input through a committee of computers to decide if said input is really a good idea. Real muscle cars don't have 19 airbags. Real muscle cars don't have traction control. Real muscle cars don't even have power steering or air conditioning. Instead they have big engines for people daring enough to use them. And that's about it.

When Chrysler resurrected the Charger, the car had four doors, pushing the very definition of "muscle car." *Archives/TEN: The Enthusiast Network Magazines, LLC.*

What more do you need?



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A muscle car symbolizes *freedom*. It was freedom that brought the muscle car into existence—the freedom of cheap gas and open roads, the freedom offered by the postwar American dream, the freedom to go just about anywhere and do just about anything. When Pontiac marketed its GTO to the baby-boom generation, the cars, the people who drove them, and the times in which the two came together led to one of the greatest stories in automotive history. When those first lucky buyers cranked up the 360-horsepower Tri-Power 389 engines and drove their GTOs off dealer lots, those cars took their owners toward adventure, romance, success, the future. *American Muscle Cars* tells the story of the most amazing and desirable cars ever to come out of Detroit. It's a story of flat-out performance told at full-throttle, illustrated with beautiful modern and historical photography.

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