

“My Wild Ride with Dan Gurney!”

MOTOR TREND



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APRIL, 1968

SUPER COMPACTS *which is hottest?*

CHEVY II • DART GTS
FALCON • AMERICAN

Why Detroit won't
build you a
“different” car

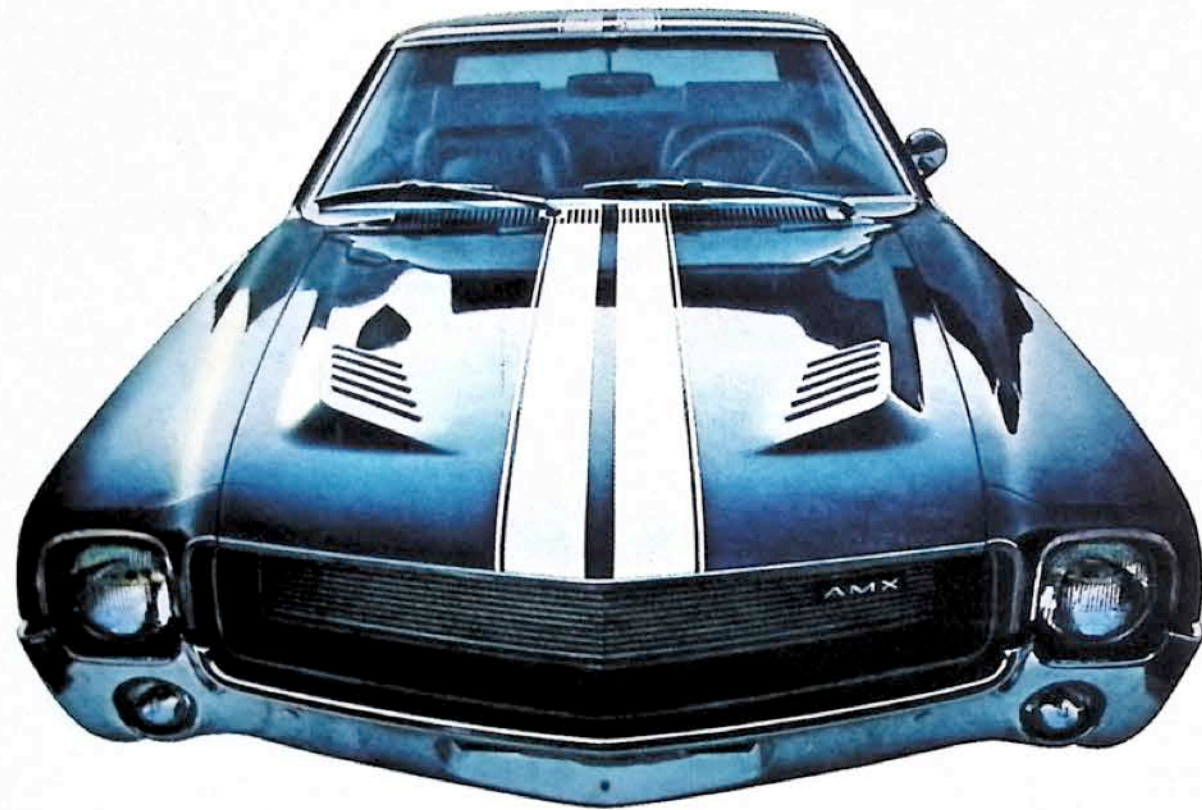
Testing a
Ford-powered,
\$8000 sports car

1969...Year of
of the
Electrics?



MT-Riverside 500 Kicks Off '68 Stock Car Season

The new AMX will be sold as democratically as possible.



We, American Motors, have over 2,300 dealers across the country who can sell more AMX's than we can make. And we will only make about 10,000 this year.

In other words, we're faced with a mini-Supply of AMX's and a maxi-Demand for AMX's.

In an effort to give everyone an equal chance to buy an AMX, we're resorting to the best solution we can think of.

Like the House of Representatives, we will try to send a fair share of AMX's to each state, based on its proportionate population.

For example, California, with a larger share of the people, should receive a larger share of AMX's.

New Hampshire, with fewer people, won't get quite so many.

It should all work out democratically.

What Is It?

The AMX is a 2-seater. For people who love sports

cars, but haven't the time or the money to take care of one.

Priced at under \$3,300, the AMX offers most of the advantages of a high-priced foreign car.

With none of the disadvantages associated with owning a high performance sports car.

The costly disadvantages of constant maintenance and special engine tune-ups.

In short, the AMX gives you the ease of maintenance associated with a family sedan, along with the sheer fun and maneuverability of a sports car costing thousands more.

The Engine. One Size Fits All.

The AMX body is made of steel. Which, while strong, is also heavy.

So we tried an imaginative technique for reducing the AMX's total weight.

We selected a lightweight engine block that combusts exactly the same power as a heavy block.

It worked.
The AMX engine cradle will hold any of three different engines:

Our 290 cubic inch.

Our 343 cubic inch.

Our 390 cubic inch. (Zero to 60 in under 7 seconds. One, two, three, four, five, six, sev—that fast.)

The incredibly *un*complex design of the AMX means that, once the 390's broken in, you could roll right onto a race track and be ready to do about 130 mph.

In pure stock form—without special engine modifications.

All three engines are V-8 configuration, and use similar engine blocks.

Which means you don't add excessive size and weight as you go from the 290 to the 343 to the 390.

And though there are cars on the road that are faster than the AMX, we hasten to add that beating other drivers isn't the AMX's main appeal.

Handling.

In the auto industry "handling" means how fast and how accurately your car responds to your personal driving technique.

And how easily.

It's the way the car reacts to you *as you drive*, not the usual dull split second later. You get out of the lane, pass the car in front and get back into lane in one sure motion.

The AMX offers one of the fastest steering wheel ratios of any U.S.-built car.

This means it turns, corners, follows your direction *simultaneously*.

You. The Layman.

If car advertising never tells you about engineering, it's only because you'd never understand.

Ahhhhh...but then again, maybe you would.

AMX standard equipment includes a 290 cubic inch V-8 with 4-barrel carburetor, rated at 225 HP, a short throw, all-synchromesh 4-on-the-floor, dual exhausts, fiberglass belted wide-profile tires, slim-shelled reclining bucket seats, 8,000 RPM tach, padded aircraft-type instrument panel with deep-set controls, energy absorbing steering column, heavy duty springs and shocks, large diameter sway bar, rear traction bars.

And more.

Are Two Seats Enough?

Yes.

There are 78,000,000 cars in this country with enough seating capacity to carry 450,000,000 people.

Or one-seventh the population of the entire world.

However, there are only 200,000,000 people in America.

Leaving 250,000,000 more car seats than people to sit in them.

Ask yourself if you really need more than a 2-seater. Your answer may surprise you.

AMX Inner Space.

While the AMX isn't much of a place to hold meetings, it will hold a lot of sport things because it is a sports car.

Back of the dual bucket seats is a fully-carpeted floor space.

It's not as big as a trunk, but we can verify that it will hold any of the following: 3 good-sized suitcases, a big TV set, 2 scuba-diving outfits, 4 parachutes, 3 electric guitars

and amplifiers.

Things of that nature.

Or, you can leave it empty.

And keep the space a space.

AMX Inner Space Part II.

If you need more space, the AMX trunk is where you'll find it.

It's a lot bigger than you'd expect a sports car trunk to be.

This is possible because we didn't fill the trunk with a big spare tire.

We gave you The Airless Spare.

When you need it, it "wwwwhhhhoosshh!" inflates.

The Airless Spare is something every car should have.

Because it doesn't take up trunk space with air that you don't need.

AMX Outer Space.

You might think that a car offering all of the luggage space of the AMX must be a pretty long car.

But the AMX is an amazing *five inches* shorter than the Corvette.

And the Corvette is pretty short.

Will AMX Number 14 Be More Valuable Than AMX Number 777?

When you buy your AMX, its production number will be set in the dash.

While this may mean a lot to collectors in the years ahead, we do want to point out that all AMX's are made with the same attention and quality.

And while possessing a lower number may have a sentimental or prestige value, it does not in any way make one AMX better than another.

Test Drive.

Before you rush out to buy the new AMX, you should know where to rush to.

The good old phone book has a listing for the American Motors dealer nearest you.

He'll arrange your test drive of the new AMX.

If he still has one.

American Motors

Ambassador • Rebel • Rambler American • Javelin • And the new AMX

American Motors Sales Corp.
Box 50-A
Detroit, Michigan 48232 Dept. M

Dear Sirs:

As a legal resident of the Sovereign State of _____
I would like to test drive the AMX before there are no AMX's left to buy.
While I am looking up the name of the American Motors dealer nearest me, please send me a copy of the AMX Story.

Name _____
Address _____
City _____ Zip _____

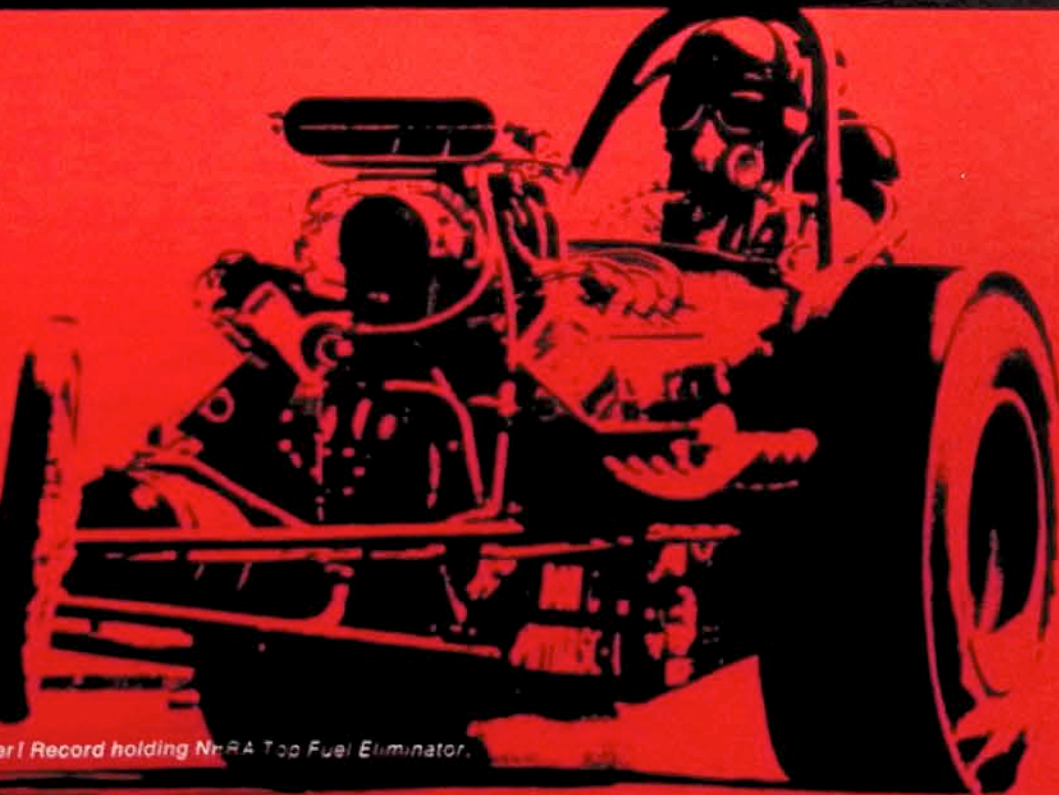
1. Based upon manufacturer's suggested retail price, federal taxes included. State and local taxes, destination charges, options, excluded.

All the Wynn's® sponsor money in the world won't make Don Garlits put Charge! in his dragster unless it works!

Don Garlits carries the Wynn's name on the side of his dragster because he knows Wynn's Charge! works. It provides the full compression, maintains the total power he needs to cover a 1/4 mile in record time. If it didn't — it wouldn't be in the crankcase of his Wynn's

Charger. Whether you drive a dragster or a family car, isn't it time you used Charge! in your engine?

Get a Garlits decal for your car and a catalog of Wynn's Racing Specialties. Write Dept. G, Wynn Oil Company, 1151 W. Fifth St., Azusa, California 91702.



Don Garlits and his Wynn's Charge! Record holding No. 1 Top Fuel Eliminator.

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OPINION & COMMENT

from the publisher

What Can You Do About Safety?

SAFETY HAS BECOME — and will continue to be — a popular issue, particularly for politicians who can do no wrong defending the Poor, the Innocent and Motherhood against the ogre of Big Business. It is unfortunate that it has become such a political football, in that much good has actually come out of the concerted efforts of many dedicated persons — regardless of any ulterior motivations they may be accused of.

It is widespread opinion in the auto industry that much of what has been forced upon them by outraged crusaders — and legislation — would have come about anyway. And it is also acknowledged that both the Congressional hearings and resultant legislation made safety a subject of wide public concern — much more so than what the industry might have been able to achieve by itself. (As an example of the frustration the dedicated safety people in the auto industry must have felt, all you have to do is look back at the '56 Ford products and see how they bombed out. They were loaded with safety features, from padded dashes and visors to "deepdish" steering wheels to seatbelts to impact-proof door locks.)

The concern for safety by many of those both within and outside the auto industry is not new. Many achievements have been overlooked in the rush to criticize (a popular pastime these days), as have many suggestions for safer cars, better highways and stricter driver licensing. MOTOR TREND has brought to the attention of its readers many safety problems.

Reviewing issues of the magazine 15 or more years older, you can find such articles as how to help you become a safer driver, the plumping for a nationwide uniform vehicle code and a worldwide uniform sign program, a projected design for a safe car interior, advice on how to check out your car from a safety standpoint, and an article detailing most of the changes that have since been made. These included: better seat supports, bucket seats, headrests, seat belts, an adjustable steering wheel with a collapsible column, better tires, better handling, better brakes, roll bars, doors that won't fly open on impact, more effective bumpers, thinner cornerposts and lower hoodlines (for better vision), and the removal of sharp outside projections. It was also suggested that a national bureau be

set up — "to consist of independent auto safety design experts, technicians in every phase of engineering, and physicians specializing in the human element of automotive safety" — to pass on and make recommendations for new auto designs from a safety standpoint.

With the wisdom of hindsight, it is doubtful if we would have suggested that a bureau of this type be set up on a governmental level, but since it has been — with Dr. William Haddon as administrator of the National Highway Safety Agency — it behooves everyone concerned to make that agency, and the President's Advisory Council, as effective as possible. First of all, we would suggest the employment of more of the types of experts as we originally outlined (above). Secondly, we would recommend that anyone with any reasonable suggestions for new safety approaches get in contact with one or more of the agencies concerned with highway/car/driver safety.

If, for example, you would like to receive a copy of the 47 new standards for cars produced after Jan. 1, 1969, and later that have been proposed by the National Highway Safety Bureau, you would write to:

National Highway Safety Bureau
Federal Highway Administration
U.S. Department of Transportation
Washington, D.C. 20591

You should ask for a copy of the "Federal Motor Vehicle Safety Standards Advance Notice of Proposed Rule Making (23 CFR Part 255) (Dockets Nos. 1-1 through 5-1 Notice No. 67-5)."

Unfortunately, with our long lead time in preparing material for a particular issue of the magazine, in most cases we cannot air new safety proposals issued by the bureau in time for you to comment on them. By the time we are able to bring to your attention the facts about any safety matter issued by the Federal Highway Administration, the date for receiving "comments from interested parties" is most generally past. It is therefore our suggestion that if you are interested in receiving future notices issued by the FHA that you write to the above listed address.

If you wish to comment specifically on the 3 dockets on which the time limit has not run out, you should direct your comments to the attention of the Rules Docket, Room 512 of the Na-

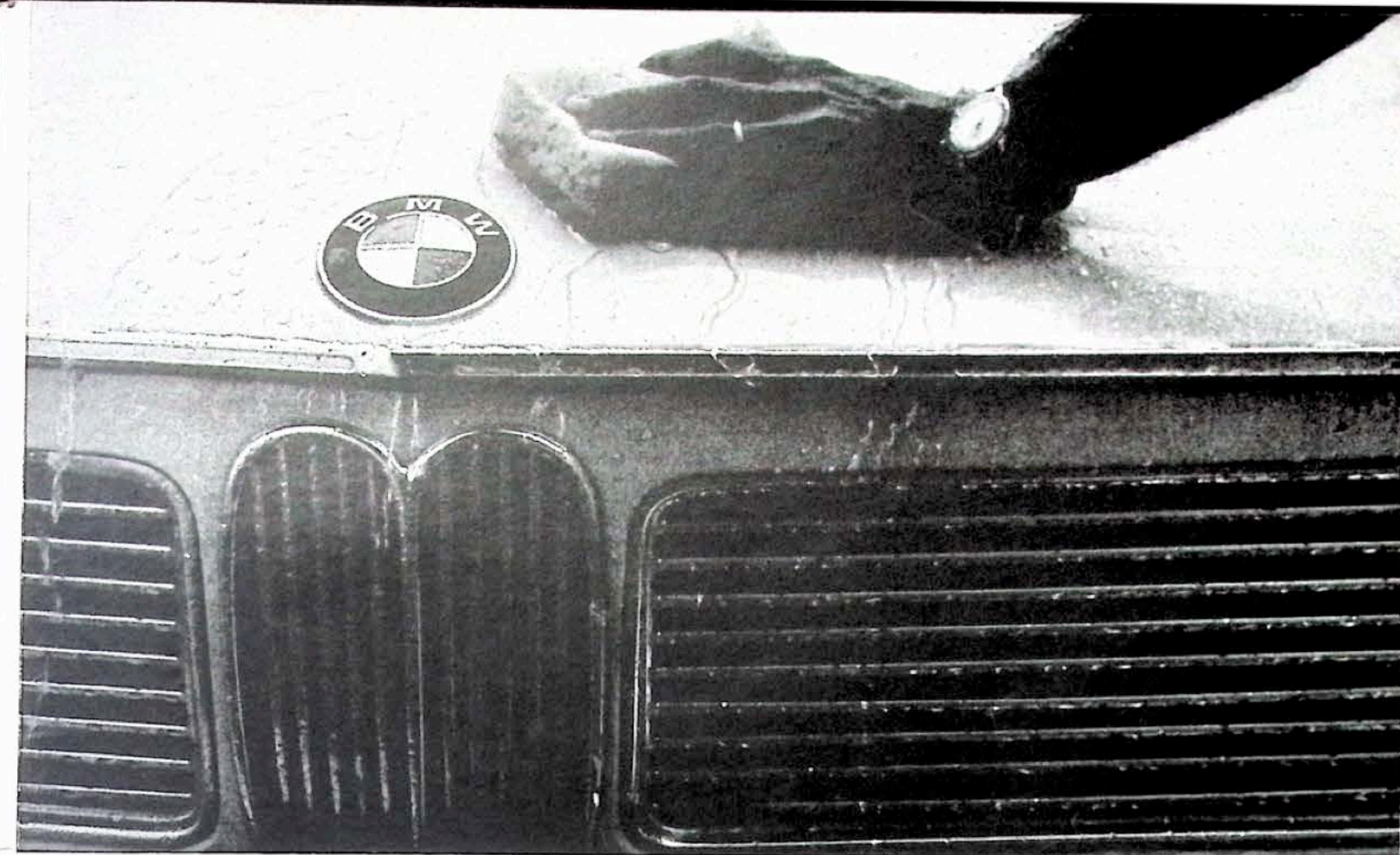
tional Highway Safety Bureau. They ask that comments "contain supporting statements and data to justify all conclusions and recommendations," that they "identify the individual docket number and the notice number and be submitted in 10 copies," (though comments less than 5 pages may be submitted in triplicate).

Two of the dockets (Nos. 2-7, 2-8) deal with specifying requirements to limit the amount of intrusion or penetration and to set rates of energy absorption and crush characteristics on exterior impact . . . of vehicle and other structures into passenger compartments of passenger cars, multipurpose passenger vehicles, trucks and buses. (Comments are due by July 22, 1968.) The third docket (5-1) deals with the consideration of which of the Initial Federal Motor Vehicle Safety Standards, issued Jan. 31, 1967, should apply to motor vehicles of 1000 pounds or less curb weight and how certain of those standards might be revised to apply to such vehicles. (Comments are due by April 15, 1968.)

As we have often said in these pages, there is much more to the safety question than the car itself — and the National Highway Safety Bureau acknowledged this when they set forth their 13 highway safety standards. At the recent NADA (National Automobile Dealers' Association) Convention in Las Vegas, Nev., Byron J. Nichols, V.P. of Marketing for Chrysler Corp. and Chairman of the Auto Industries Highway Safety Committee, addressed dealers and manufacturer representatives on this subject. He exhorted them to "appeal to our congressmen to give a high priority to highway safety and vote to appropriate adequate funds to get this program moving ahead." You, as an individual, can do the same.

Nichols placed particular emphasis on 4 of the 13 standards: 1. Periodic Vehicle Inspection. (" . . . Recent research has made it clear that states with such inspection programs have significantly lower death rates.") 2. Driver Education. (" . . . in Michigan, trained teenage drivers have only one-third to one-half as many accidents as their non-trained counterparts." "A law requiring driver education before obtaining a license should be on the books in all states." " . . . We would do well to

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Can a man fall in love with his car?

That depends.

If the car is a fickle, unreliable, attention-demanding shrew, he's liable to be a little short on affection.

But if she happens to be a slim, lovely thoroughbred that performs like a dream, asks little, and is always ready to give her utmost, well . . . a man is only human, isn't he?

Nowadays, a lot of men are discovering that one particular car can add a lot of spice to life.

The car is the brilliant new BMW

2-door sedan, built by the Bavarian Motor Works especially for the sportsman.

What's she like?

Dazzlingly fast. Actually cruises at 100 mph. In fact, in Germany, where high-speed driving is a national sport, BMW leads the pack.

Amazingly nimble. Features a fully-independent suspension for surefooted roadholding that makes her as safe as she is fast.

And charmingly well-mannered.

Priced under \$2600, delivers up to 30 miles to a gallon, and turns up her nose at repair shops.

Can a man fall in love with his car? If the car is the new BMW, how could he help it?

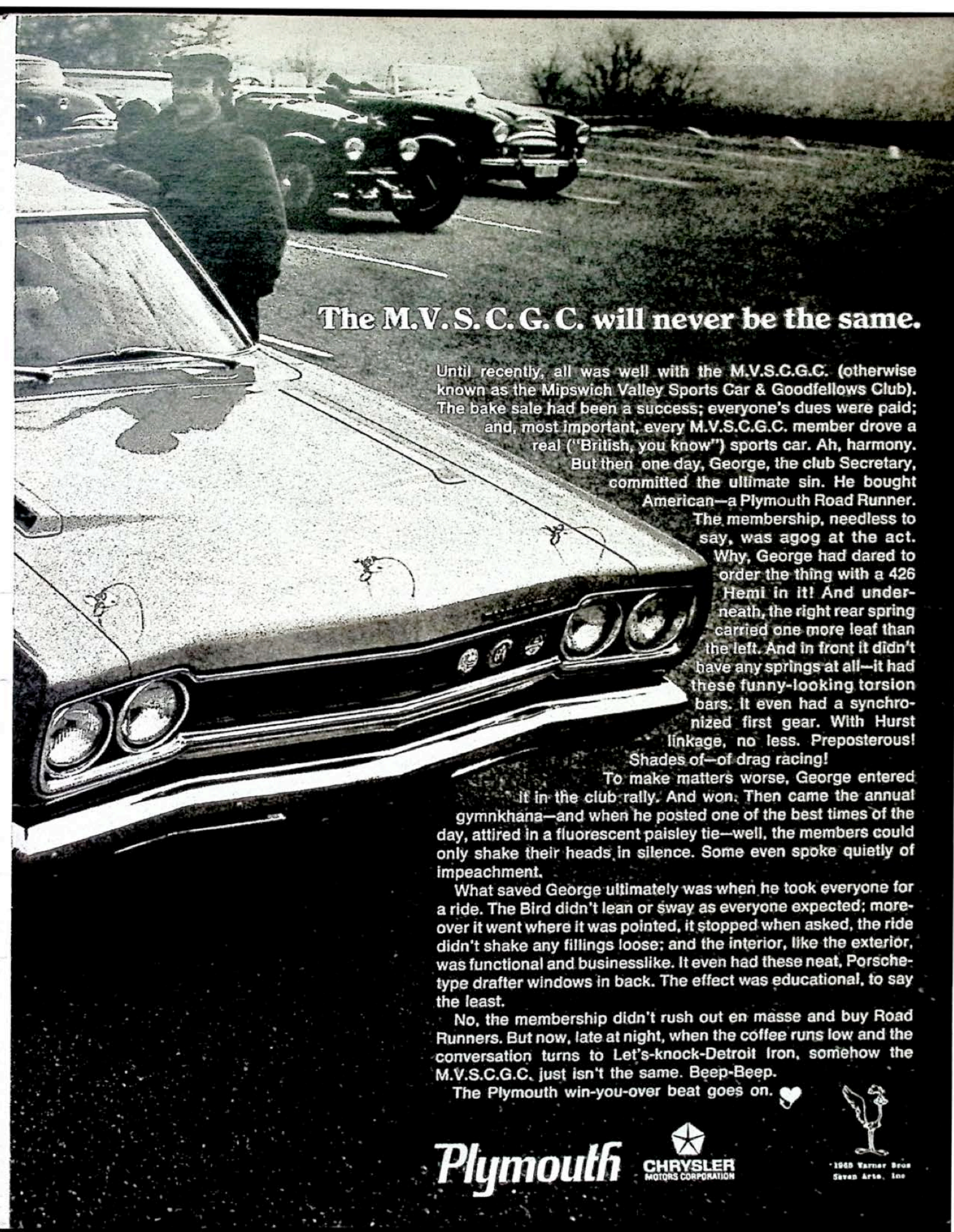
Drop in on your BMW dealer. He'd like to introduce you to a little beauty.

Suggested retail prices start at \$2,597 P.O.E. New York. U.S. Importer: Hoffman Motors Corporation, 375 Park Avenue, New York, N.Y., 10022. La Cienega Blvd., Los Angeles, Calif. Dealers coast to coast. Advantageous European Delivery Program. Write for free brochure.

Bavarian Motor Works



The Sportsman's Car



The M.V.S.C.G.C. will never be the same.

Until recently, all was well with the M.V.S.C.G.C. (otherwise known as the Mipswich Valley Sports Car & Goodfellows Club). The bake sale had been a success; everyone's dues were paid; and, most important, every M.V.S.C.G.C. member drove a real ("British, you know") sports car. Ah, harmony.

But then one day, George, the club Secretary, committed the ultimate sin. He bought American—a Plymouth Road Runner.

The membership, needless to say, was agog at the act.

Why, George had dared to order the thing with a 426 Hemi in it! And underneath, the right rear spring carried one more leaf than the left. And in front it didn't have any springs at all—it had these funny-looking torsion bars. It even had a synchronized first gear. With Hurst linkage, no less. Preposterous! Shades of—of drag racing!

To make matters worse, George entered it in the club rally. And won. Then came the annual gymkhana—and when he posted one of the best times of the day, attired in a fluorescent paisley tie—well, the members could only shake their heads in silence. Some even spoke quietly of impeachment.

What saved George ultimately was when he took everyone for a ride. The Bird didn't lean or sway as everyone expected; moreover it went where it was pointed, it stopped when asked, the ride didn't shake any fillings loose; and the interior, like the exterior, was functional and businesslike. It even had these neat, Porsche-type drafter windows in back. The effect was educational, to say the least.

No, the membership didn't rush out en masse and buy Road Runners. But now, late at night, when the coffee runs low and the conversation turns to Let's-knock-Detroit Iron, somehow the M.V.S.C.G.C. just isn't the same. Beep-Beep.

The Plymouth win-you-over beat goes on. ♥

Plymouth



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Seven Arts, Inc.

INSIDE DETROIT

New Smog Rules

Anti-smog regulations proposed for 1970 cars by the federal government may be harder to meet than the industry expected. Automakers are plainly unhappy with the rules and insist that some of them can't be met. The new rules are supposed to be the equivalent of 1970 proposed California regulations which limit unburned hydrocarbons to 180 parts per million, 1% carbon monoxide, and are designed to curb 80% of the evaporative emissions from the fuel tank and carburetor. Current standards are 275 ppm, 1.5% CO, and there is no evaporative requirement. The industry had already complained it couldn't meet the 180 ppm on all cars.

The Department of Health, Education and Welfare, which published the U.S. standards, complicated matters further by changing the method of measurement, from percentage to mass. The new regulations would limit exhaust emissions to 2.2 grams of hydrocarbons and 23 grams of carbon monoxide per mile. The government says this represents a 33% improvement over present standards, meaning the equivalent of the California rules. The new method of measurement is considered better than the previous system. But engineers after checking the rules for a few weeks said the industry would protest the standards as too stringent. The evaporative standard is set at 90%, even tougher than the proposed California requirement. "It's going to be very difficult to match these numbers," said one engineering executive. "We are going to have trouble with them," said a colleague. "I don't know why they did this—I guess they just like to keep the pressure on."

Get It Right, Jack

There was a big flap last year when word leaked out of a secret study of accidents in New York State which indicated small cars were unsafe at almost any speed. Now, it turns out, the study was based on incorrect data. Clerks went through accident reports and tried to classify the cars involved as compact or standard. State officials say the clerks were told that if they didn't know the classification of a car they were to list it as "standard size." The officials added that the comparisons indicated the small cars had a disproportionate share of accidents.

Ford Gets Brush

Ford made a lot of enemies when it aligned itself with the manufacturers of the Goldline Camper. Some competitive camper manufacturers are saying they will no longer recommend Ford pickups for their units. The deal Ford made raised speculation that Chevy would work out a similar arrangement with a camper builder. Chevy has been denying this rumor for several months. It says it won't align itself with any camper manufacturer—or build an integrated unit, either, for that matter.

Ford Hustles Hybrid

There are two approaches to the much talked-about hybrid car which would use both a battery-electric system and a gasoline engine. A true hybrid system would have the gasoline engine drive two wheels and the electric system two wheels. The systems could be used alternately. However, Ford is working on a hybrid system where gasoline power would be used to charge the batteries with a single electric drive. Its system is still in the test stand stage, however. This requires a battery that can take a rapid charge. Lead-acid batteries can't take the jolt. Ford's experimental sodium-sulphur battery might, however.

Ford, by the way, has developed a new electric drive system. It's still a DC system but it uses a pulsing current, providing sort of a cheap, sloppy AC system, as one Ford researcher put it. GM's electric cars have used an expensive AC system. Ford's researchers don't believe there's much merit in regenerative braking. They feel the charging system is too complex for a production electric vehicle.

Boyd Sings Sweet

"I know there have been a lot of complaints about cars smelling and producing smog," said Transportation Secretary Alan S. Boyd recently. "But you know, if we didn't have 70 odd million autos in this country we'd have 70 odd million horses. I like it better this way." The auto still has one friend in Washington.

Another Automatic Auto

The automatic car continues to fascinate inventors. Latest to come to light is a vehicle called the Starrcar. A small vehicle, which looks like a

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RUMOR MILL

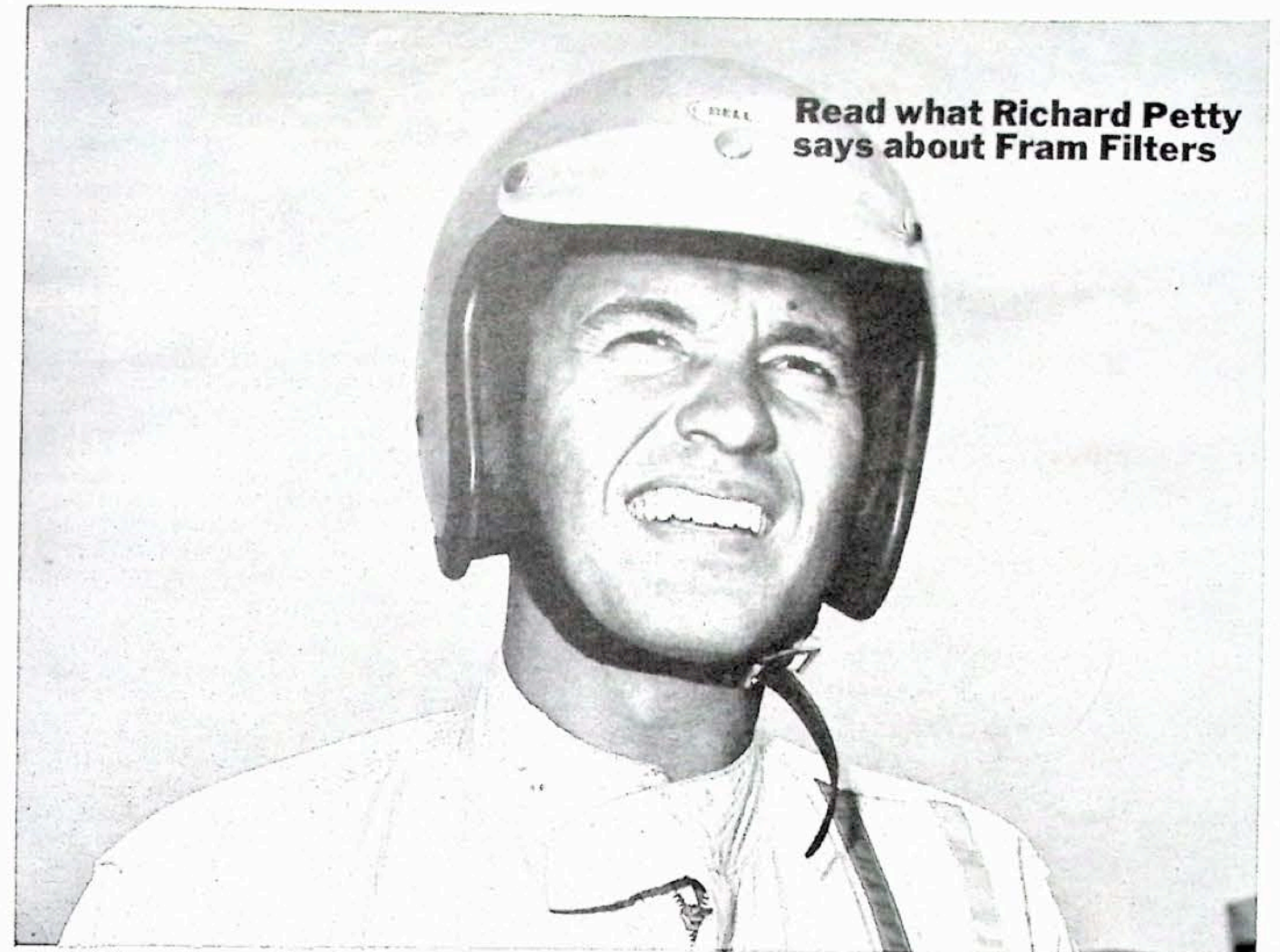
GM will build a small car in Canada... Possibly True. General Motors' officials hint that if they decide to build a small car to compete with the imports it might be assembled at a GM plant in Canada. It could be brought into this country duty free under the Canadian-American automotive trade agreement. GM is convinced that for the project to pay off, about 280,000 cars a year would have to be built.

U.S. to get better highway signs... True. Brighter road signs are in the works. Three dimensional and electric signs are now under study. Federal Highway Administrator Lowell K. Bridwell says accident figures show present road signs don't do a good enough job. He criticizes the "drabness and uninspired character" of the average road sign.

Pontiac's grille will be redesigned... Probably true. Pontiac's V-shaped grille may be on the way out. It looks too much like a battering ram for safety officials. And next year's safety standards will outlaw hood ornaments and other sharp protrusions on cars which serve just a decorative purpose.

General Motors is buying back some early model Corvairs... False. Although it's believed that at one time GM did attempt to recover some 1961-62 Corvair station wagons. But this wasn't because of the famous controversy over the suspension system on the early Corvairs. Rather, those early Corvair wagons, with the engine under the rear compartment, supposedly presented heater problems in the winter. One prominent supplier who had a private plane based at Willow Run, adjacent to the Corvair plant, recalls seeing "a lot full of those wagons when I'd take off." He says he personally knows of two Corvair wagon owners who were approached with offers to buy back the vehicles.

Ford will make disc brakes standard by 1970... Probably true. Ford President Arjay Miller dodged the question recently, saying "We don't discuss future products." This, according to automotive observers, is usually a good tip-off. Auto execs will deny things which aren't true but never admit rumors about future products which are in the offing. Thus, a "no comment" is taken to mean "yes." Anyhow, it's believed that most cars will have disc brakes as standard on the front wheels within a couple of years.



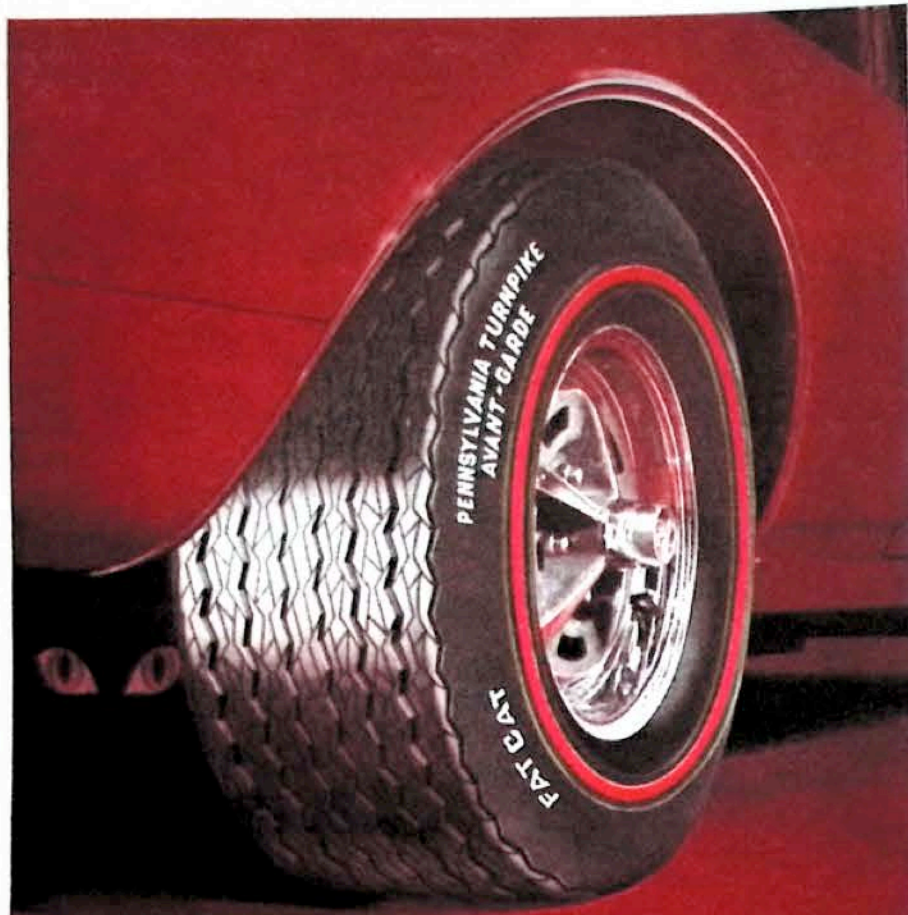
Read what Richard Petty says about Fram Filters

"Winning the NASCAR Grand National Championship meant driving over 10,000 miles... much of it at speeds over 150 miles per hour. That beats an engine worse than 100,000 miles of open highway driving. Fram oil, air and gasoline filters protected my Plymouth every inch of the way. Although they didn't make car 43 go any faster, Fram Filters sure helped me to finish!"

Richard Petty knows that Fram Filters give the best protection against engine wear that money can buy. That's because Fram Filters scientifically remove wear causing dirt. Keep precision engine parts frictionless clean. Next time you bring your car in for service, follow Richard



Petty's advice. Insist on Fram—the filters that prevent engine wear. They won't make your car go any faster, but they will help you to get where you're going. Fram Performance-Proven Filters. They work on the track. They work on the road. Fram Corporation, Providence, R. I. 02916.



FAT CATS

racing width tires from the pros at Pennsylvania

A special tire particular drivers choose to replace their original equipment. Drivers who take special pride in their cars right down to the rubber they roll on. Fat Cats are up to 2 full inches fatter for catlike traction and cornering. Extra low cord angles keep the Cats cool even at sizzling Sebring speeds. Trade-in your timid looking tires and turn loose a Fat Cat under your fender for a new dimension in driving fun. 4-ply double strength nylon cord. (Red or white stripes.)



PENNSYLVANIA
TURNPIKE TIRES

For FREE Reflective Fat Cat Eyes, write: Pennsylvania Tire Co., Box 377, Mansfield, Ohio

NEW MODELS — LOWER PRICE



AWHILE-A-WIPE

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OPINION & COMMENT

continued

support legislation requiring driver education refresher courses, in conjunction with stricter relicensing practices . . .")

3. The Drinking Driver. ("Statistics show that alcohol is a factor in more than half the highway accidents that result in death . . ." "We need . . . implied consent laws — in which a person applying for a license implicitly agrees to submit to a sobriety test if suspected of drunk driving . . .")

4. Compilation of Traffic Records. ("The accumulation of traffic records . . . must be fed into an integrated record system where they can be correlated with other relevant information . . . then be stored in one center in every state . . . readily available to police officials and other groups concerned with highway safety . . .").

We support the above — and most of the other standards — but it's going to take more than that to make them a fact of life. They have to be supported by YOU. As Nichols pointed out in his speech, "One thing all the requirements of the Highway Safety Act have in common is that they depend to a large extent on community action and support. It will therefore be essential, once Congress does appropriate the funds, for all of us to do everything we can to help put successful local programs into action." Further, "Our approach to the problems of highway safety must be balanced and carefully organized to deal with all three parts of the equation: car, driver and highway. We must concentrate on those areas we are best able to deal with. And we must all give the job our best efforts."

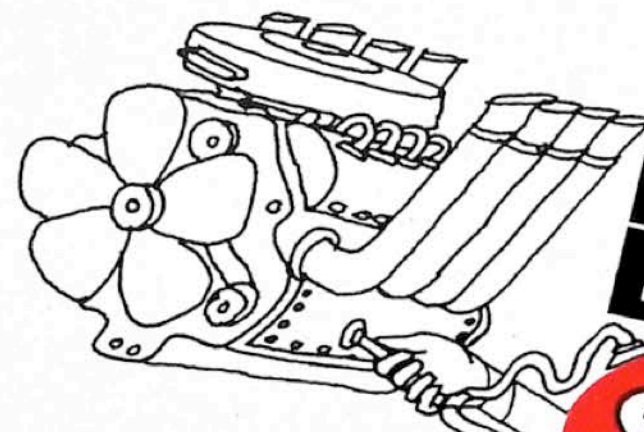
How to give the job your "best efforts?"

1. Write your congressman about any aspect of the safety problem. He'll listen; you're a vote to him.
2. Keep informed of new, proposed legislation in your own community, your own state and on a national level. Share that information with others.
3. Write to the National Highway Safety Bureau on any subject relevant to their highway safety standards.
4. If you're a dealer, keep in touch with the NADA's new Product Safety Committee (whose role is to review all safety regulations to determine their effects on dealers).
5. If you have a safety proposal and would like to submit it to the auto and related industries, write to the Auto Industries Highway Safety Committee, 2000 K St., N.W., Wash., D.C. 20006.
6. If you would just like to air your views among your fellow MOTOR TREND readers, address your comments to "Interchange."
7. Whatever you do, DO SOMETHING!

— Walter A. Woron

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INSIDE DETROIT *continued*

streamlined speedboat on wheels, it uses six, 6-volt batteries, but for long trips would ride an electric guideway—an approach similar to that mentioned recently by a Ford researcher. "This is the only alternative to the traffic that is strangling the cities," said the vehicle's inventor, William Alden, president of Alden Self-Transit Systems Corp. A lot of people in Detroit don't think this or other exotic forms of transportation will find their way into use in this century. William McConnell, head of Ford's scientific computer program, says, "I don't think there will be any dramatic change in transportation in the next 30 years. There will be lots of little gains... but when you talk about blowing people through tubes you are looking for a technological approach that doesn't exist." As for the automatic car, McConnell says, "That's a chicken-and-egg proposition. No one's going to buy an automatic car until there are highways where it can be used and highways aren't going to be built until we have the cars."

Knudsen Top Man at FoMoCo

It must have been a bitter pill for Bunkie Knudsen to swallow—losing out to Ed Cole for the prestigious job as President of General Motors. The

son of a former GM President, the late General William Knudsen, Bunkie acted like an army officer passed over for a promotion, and he resigned. Then came the next surprise—his election as Presi-



dent of Ford Motor Co. "I resigned from GM because I felt the corporation had decided on its corporate structure for a minimum of the next four years, and I wanted the opportunity of looking for another assignment." He said there was little doubt around Detroit that events last October determined his course of action.

Up until then, Cole and Knudsen

were executive vice presidents of GM. The GM board backed Cole to succeed James M. Roche as President. At that time Knudsen was given increased responsibility and a direct pipeline to the new Chairman, Roche, and although he didn't have to report to Cole—it apparently wasn't enough for Bunkie.

Henry Ford II figured Bunkie was available and sounded him out. Knudsen said he had already decided to quit GM and took the offer. Knudsen, 55, succeeded Arjay Miller, 51, who was moved to the newly created post of Vice Chairman of the Board.

It was one of the biggest job changes in the auto industry in a generation. For Knudsen the GM-Ford route has a familiar ring to it. His father was Henry Ford's Production Manager in 1921 when he left to head GM's Chevrolet Division and later the whole corporation. The younger Knudsen's appointment must have caused some resentment in the top echelon at Ford.

Lee A. Iacocca, 43, was regarded as a top candidate for the presidency. He's the father of the Mustang. What's more, when Iacocca headed Ford Division and brought out the Mustang, Knudsen was in charge of arch rival, Chevrolet. It went to Knudsen's successor at Chevy, Pete Estes, to bring out the Camaro—GM's answer to the Mustang.

While Knudsen could be criticized for his performance at Chevy, no one can find fault with his achievement at Pontiac. As General Manager in the late 1950's, he took a car with an "old lady's image" and transformed it into a pace setter for the industry. It wasn't done overnight. In fact, the only thing he did immediately was to remove a couple of long-cherished Pontiac symbols: the chief's emblem and the silver streak on the hood. Then he set out to change the image of the car by going racing—technically in violation of the Automobile Manufacturers' Association's Anti Racing Resolution—but with the full knowledge of GM's top brass. It was Pontiac's success on the stock car tracks that forced Ford back into racing. Pontiac sales zoomed, and the division has since held down 3rd spot in the industry.

Knudsen's departure set off a general reaction of promotion at GM. Ed Rollert, credited with rebuilding Buick in the early 1960's succeeded Knudsen as vice president in charge of everything except domestic car divisions. Harold G. Warner who served six years as head of Cadillac, succeeded Rollert as executive vice president in charge of GM's Operations Staff.

Whatever else Knudsen may think of the events that lead him from GM to Ford, he has one thing to thank Ed Cole

for—he can now go to the auto race tracks while Cole has to stay in the GM building.

No More Cars

The California Planning and Conservation League, a lobbying group for conservationists, has recommended and will probably ask the 1968 California Legislature to ban the sale of smog producing motor vehicles, with a deadline set for 1980. There is a strong push in evidence by conservation leaders for legislation to place the auto industry on notice that sale of autos which emit "damaging pollutants" will not be allowed after 1980. Frank Stead, retired chief of environmental sanitation for the State Department of Public Health, first proposed the 1980 ban on the sale of internal combustion engine equipped cars. Since his proposal in 1966, a renewed interest in electric cars has been evidenced by the major automakers.

Turbine Truck Delay

Ford's turbine truck project is four to six months behind schedule because of the United Auto Workers' strike last fall. Ford had hoped to begin fleet testing by mid-year but will now be lucky if it gets a few trucks on public roads by the end of the year. Ford's pressing ahead with the project, convinced it's in a race with General

Motors. The target date for production at both companies is believed to be late 1972—little more than four years away. The GM project is under the direction of its Detroit Diesel Division, aided by some Canadian turbine engineers it recently hired. "But we don't intend to be beaten," said one Ford man.

Safety Hits Electric Car

The first American vehicle to fall victim to the new federal auto safety standards was an electric car. Soon after the rules went into effect, Westinghouse Electric Corp. said it had suspended production of its Marketeer electric at its Southern California plant because the car couldn't meet the requirements of the safety bureau. It came as a surprise since Westinghouse had said when the car was unveiled a year ago that it would be able to meet the safety standards. Some were skeptical of this claim, however, in view of the fact that the four major companies were having trouble complying. Look for some other small producers to run into some problems, too.

Where's the Ash Tray?

Chrysler's made a running change on its 1968 intermediates to make the ash trays usable. Previously, the ash trays on the middle size Dodge and

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INSIDE DETROIT *continued*

Plymouths cars were virtually useless, even for those 100mm cigarettes. The reason was they had been deeply recessed into the center of the instrument panel because of the federal safety standards. Now they've been moved out a little, still complying, of course, with Washington's rules.

Driving Restrictions

If 20% of the nation's drivers lost their licenses, 80% of the accidents might be eliminated, according to some researchers. But rather than take this approach, a California researcher suggests setting up tight restrictions on licenses. For example, says Albert Burg, of UCLA's Institute of Transportation and Traffic Engineering, a person should be allowed to drive only under those conditions that allow him to see well. Thus, if visual tests show a driver has poor glare recovery, he should only be able to drive in the better-lighted urban areas at night. Burg also suggests that younger drivers be given shorter-term licenses.

What a Drag

The auto companies may wind up in trouble with the government again because of the way they are pushing high-performance cars for street racing. What angered suburban Detroit officials was a press conference statement by Ford's competition manager, Jacques Passino, that "Our new 428-cu.-in. street engine should get us back in competition in the Woodward Grand Prix." He meant North Woodward Ave., a famous name in racing lore. Too famous for those suburban officials who have recently passed beefed-up anti-drag racing ordinances. Dr. William Haddon Jr., director of the National Highway Safety Bureau, is known to be looking into the matter. And Everett Hutchinson, under secretary of transportation, says he's sure Haddon's agency has the authority to crack down if that's necessary.

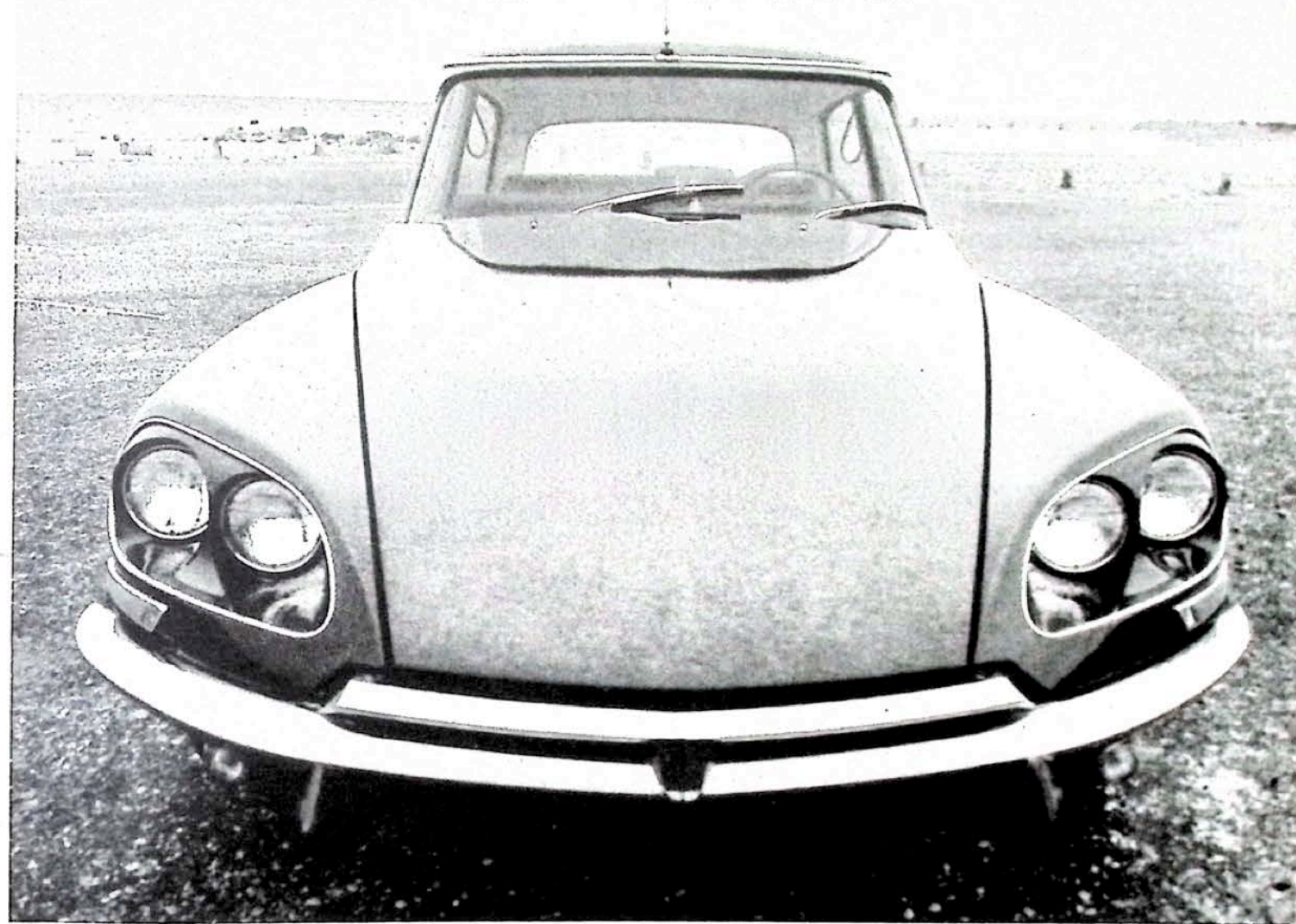
Psychedelic Highways

Colored pavements may make driving smoother and safer. Officials of the New Jersey and Ohio highway departments say surveys have shown that red, yellow or green colored pavement at intersections and freeway ramps can help daytime drivers make crucial decisions faster and more accurately. They are no help at night, though. The researchers found that with the type of night lighting now in use, colors are barely distinguishable to drivers—if at all.

They Never Change

For the past several years, a 3.2-mile stretch of Detroit freeway has been

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INSIDE DETROIT *continued*

fitted with TV cameras which are monitored from a single point. There are also centrally controlled overhead signals that indicate to drivers the proper speed and which lanes to use. How well do they work? Motorists tend to treat them as "advisory," according to researchers from Texas A & M's Texas Transportation Institute. They found that motorists don't reduce speeds as directed by the overhead signal unless they can see an apparent reason to do so. And during rush hour traffic, motorists don't always obey red "X" signs indicating that they are not to use certain lanes. The results of the study would seem to rule out any widespread use of this system on the nation's urban freeways.

Science in Driving

The first mass test of a scientific method for rating a driver's ability is being planned for 2000 students and faculty at the University of Pennsylvania. If it and other mass tests prove the value of the system it could be employed by government agencies in 5-10 years. The system is not new but it has

never been tested on the scale now envisioned. Called the Drivometer, it was developed in 1959 by Fletcher N. Platt, Ford's highway safety director, and Dr. Bruce Greenshields then on the faculty of the University of Michigan but now retired. Perfected since then, the latest model has been installed in a Mercury. It has a gold-plated steering wheel wired so that it can measure a person's pulse rate and amount of perspiration. It has a computer in the trunk. The whole thing is worth \$50,000. Other features include dials and counters located under the instrument panel to measure such things as the number of times a driver moves the steering wheel and the number of times he changes speed. Over the past eight years, the system has been used to conduct controlled experiments on about 800 drivers. The researchers concluded that poor drivers tended to change speed and turn the steering wheel more often than good drivers. "We have developed techniques to set standards for people being tested," Platt said. But before it can be used in licensing it will take more testing on a larger group of drivers. That is why Ford is going ahead

with the Pennsylvania experiment in cooperation with the Insurance Company of North America. The insurance firm wants to test students and faculty under a fleet insurance plan. "From the tests we will predict what accident experiences they will have," Platt said. "Then their records will be followed to see what actually happens. Two or three tests of this scale will be needed to make this attractive for driver licensing," Platt said. "It could lead to this in five years, but it may take longer."

Costly Smog Device

The Federal Bureau of Mines, part of the U.S. Interior Department, has successfully tested a new device designed to virtually eliminate automobile air pollution. The new device, developed by DuPont, is called an exhaust manifold reactor. It contains a series of baffle plates made with special stainless steel. It changes the chemical properties of exhaust fumes by mixing additional air with them. Hydrocarbons can be reduced to 70 parts per million, compared with the present federal maximum of 275 ppm. The device, however, would probably cost more than \$100 per car.

Fix Flats Fast

An emergency air pump has been developed by Pontiac to inflate tires on the spot. The mini-pump works off a vacuum fitting on the car engine. A hose runs to the deflated tire. Pontiac said when the engine is running at normal rpm the pump can build a maximum pressure of 32 pounds per square inch. The division said the pump can also be used to inflate bike tires, air mattresses, beach balls and other such items.

Ice Tester

Highway officials in a number of states already are making plans to install a new electronic sensing unit that will detect ice on heavily traveled bridges next winter. The unit, which can cost up to \$10,000 per bridge, is made by Holley Carburetor. A prototype for highway use has been tested for the past three years on an overpass on I-75 near Flint, Mich. Now, Michigan officials are planning to install the unit on two more bridges this summer. Officials in California and Illinois also are interested.

Steering Column Locks

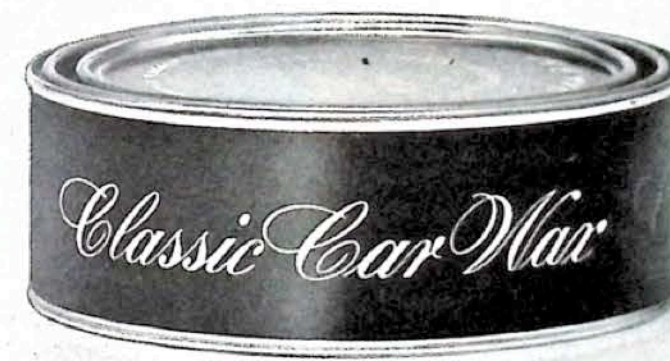
The next best thing to inventing something new is rediscovering something old. While that comment may be old, it was never truer than in today's auto industry. Look at the floor-mounted transmission, ventless side windows and the fastback style — all of which have staged comebacks in recent years. These changes obviously were made because they help sell cars. Other features are staging a comeback because of government pressure. A case in point is the steering column lock. After being discontinued in the 1940s, the auto companies are tooling up to install the column lock again because the government is going to require this as one of its safety standards for 1970 cars.

General Motors announced recently that all its 1969 passenger cars will be equipped with a device which locks the steering wheel and gearshift lever when the ignition key is removed. This is one year in advance of the federal regulation. Ford also has confirmed it will have a similar device on its 1970 cars. Actually, the companies have been building steering column locks for years on the cars they make in Germany, like GM's Opel and Ford's Taunus. They are a government requirement in Germany. Remember when cars used to have running boards? These haven't come back yet. But who knows what the 1970s hold?

Police Praise Steering

Ford's wrist-twist steering system has been given high marks by police in three states. Officers tested it in recent months in Missouri, California and

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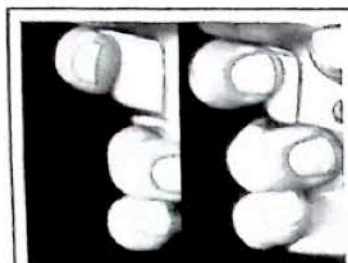
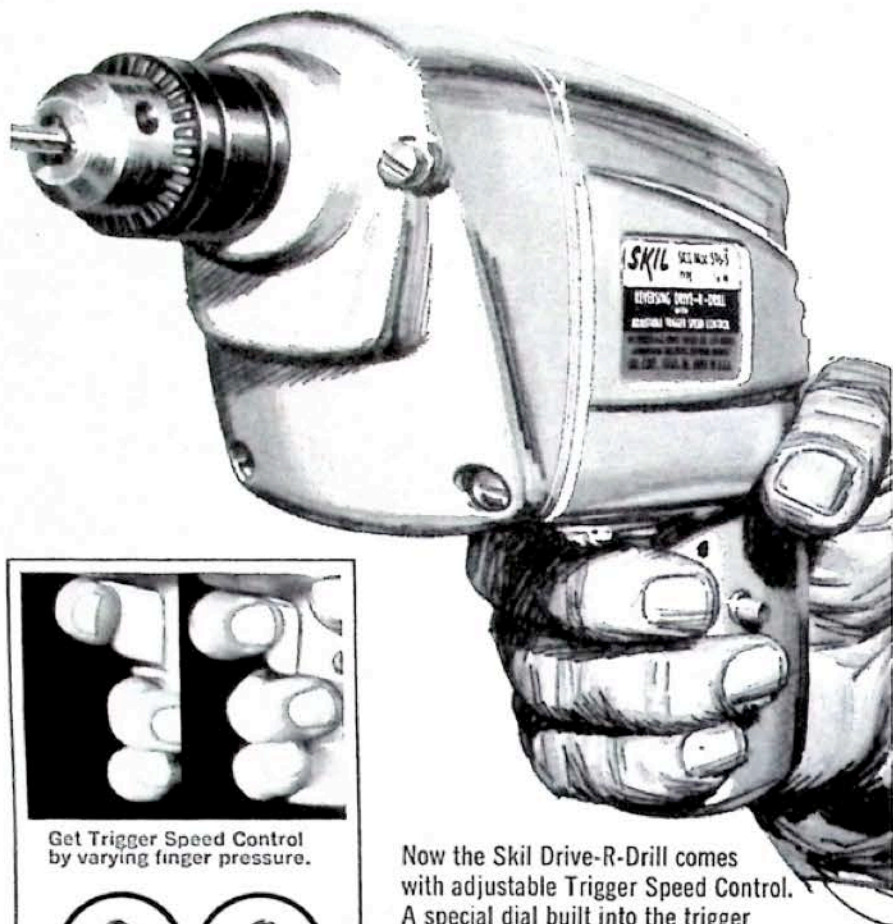
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INSIDE DETROIT *continued*

Washington "and generally regarded it as very effective," a Ford man said. In Washington police trainees are taught the art of "hot pursuit" by negotiating a tricky handling course. They were able to get around the course quicker with the wrist-twist steering than with a car using a conventional wheel. But there are still no signs that it will ever go into production.

Hidden Antenna

First it was disappearing headlights, then concealed windshield wipers. The next to go out of sight might be your car's antenna. Auto engineers have been studying various ways of hiding the antenna. One place might be the trunk lid. There is already a rubber seal around the trunk. The problem is how to insulate the hinges from the rest of the car.

Styling Prophecy

Often, styling changes in the General Motors intermediate lineup prove to be a tip-off on what to expect in the next major changes of the full-size cars. For example, the hunchback look on the station wagons first appeared on the middle-size cars, later on the regulars. The question now is whether the torpedo look of the new GM intermediates portends a similar change on the 1969 full-size cars. Comments a top official of a competing firm, "I don't expect they will be as 'far out' as the A-body cars. I don't see how they can go that far on their standard line."

Plastic Taking Over

Injection molded plastic instrument panels will be on all American Motors cars in a few years. They're now used on the Javelin and AMX cars. AMC officials believe "the industry is going this way, too." AMC already has injection molded plastic grilles on all its cars but the American. AMC officials say "they will give more in an accident than die cast zinc, which cracks easier."

New Grading for Rubber

Rubber industry observers expect a controversy over the federal government's plans to grade tires by quality. The National Highway Safety Bureau is expected to require such labels by next year and must issue the standards covering the labels by September. This could wipe out the current system of advertising tires with names such as "Super Premium" and the like. Maybe the Safety Bureau should borrow a page from the Agriculture Department and use labels like "Grade A Choice" or "prime."

/MT

People write to



Have a question about motor oil? Lubricants? Engines? Ask the Pennzoil experts...

Break-in Tip. Although I'm a firm believer in the use of detergent oils at all times, I've been told to use a non-detergent oil the very first time the oil is changed in our new Chevelle; and then to continue with a detergent oil after that. What is the reasoning behind this advice? Is it correct?

D. M., Tempe, Ariz.

Today there is no need to use a non-detergent oil for break-in. Though it was advised several years ago with chrome rings, now these rings are lapped in at time of manufacture. (Also, non-detergent oil will allow sludge and varnish to build up.) All car manufacturers use detergent oil as a factory fill and this practice should be continued for the life of the car.

Oil User. My 1964 car uses a quart of oil every 200 miles, yet the engine never smokes and the tail pipe remains good and clean. There are no oil leaks and on the road the exhaust is as white as snow. What's going on?

F. M., Oklahoma City, Okla.

Since your engine doesn't smoke, our guess is that the oil consumption is due to external, rather than internal leakage. Remember that one drop of oil every 300 feet can result in oil loss of a quart in 800 miles.



Unadvisable Advice. I have been advised not to use a detergent oil in my '63 6-cylinder Rambler... but a heavy duty regular oil. Can you straighten me out on this?

F. S., Medford, Mass.

We feel, perhaps, that your "advisor" should be straightened out. A heavy-duty oil and a high-detergency oil are one and the same thing.

Self Improvement. The 144 cu. in. 6 cylinder engine on my 1960 Falcon has recently been overhauled. Do you have any hints as to how I could improve the performance of this engine? Also what oil would be best?

K. S., Van Nuys, Calif.

There are many modifications that can be made on an engine, but often they will simply cause other engine problems. Unless the car is to be used for racing, we suggest you leave the engine alone and follow reasonable maintenance schedules. For your area, we recommend Pennzoil Z-7 SAE 30.



Blow By? When I lift the hood of my '65 car, I find a steady stream of smoke coming out the oil filler hole on the valve cover. I've been told this is "blow by." What is blow by? (Incidentally, my plugs are clean and I only use one quart of oil every 1700 to 1800 miles.)

I. K., Long Island City, N.Y.

Blow-by is the result of combustion gases passing by the rings and contaminating the engine oil. It's due to ineffective sealing of the cylinder by the piston rings. Since you report very little oil consumption, your condition is probably not serious. Better check your car's ventilating system.

Switch? The engine in my 1955 buggy runs good, but it burns oil like it's going out of style! I think the problem is bad rings but I don't want to replace them unless absolutely necessary. I've been using SAE 30 oil. Do you think if I used a heavier weight, it would slow down the oil consumption?

G. R., Westminster, Md.

Generally, a switch to a heavier SAE grade oil will be helpful and should control some of your car's oil consumption.

But if this engine is using oil "like it's going out of style," probably nothing short of an overhaul will be effective.

Lubricant Colors. I recently bought a five pound can of your Pennzoil Multi-Purpose Lubricant 705, and noticed it was white. Is this any advantage over other solid lubricants of different colors?

G. E. F., Hammond, Ind.

Actually, the color of the lubricant has no bearing on its performance. The advantage of Pennzoil's #705 lubricant being white is that contaminants can be more readily detected.

Quick Change. I know that the experts say you should have your oil drained about every 2,000 miles. But, since I drive very little — only about 150 miles per month — can I run my car longer between oil changes?

H. C. H., Upland, Calif.

Actually, you should do just the opposite! With the kind of driving you do, moisture condensation and fuel dilution build up very rapidly in the crankcase. As long as you drive only 150 miles per month, we suggest drains of 600 miles or four months.

WE'RE OPEN TO QUESTIONS about motor oils, lubricants, engines. But, you can tell us a few things, too. Maybe you have discovered something interesting about motor oils or lubricants. Or you have a special reason for being a Pennzoil fan. We would like to hear from you. Write to: Pennzoil Company, Research Department, P. O. Box 808, Oil City, Pennsylvania 16301. Note: sorry no pictures or material can be returned. Letters chosen for publication are subject to revision necessary for publication requirements.

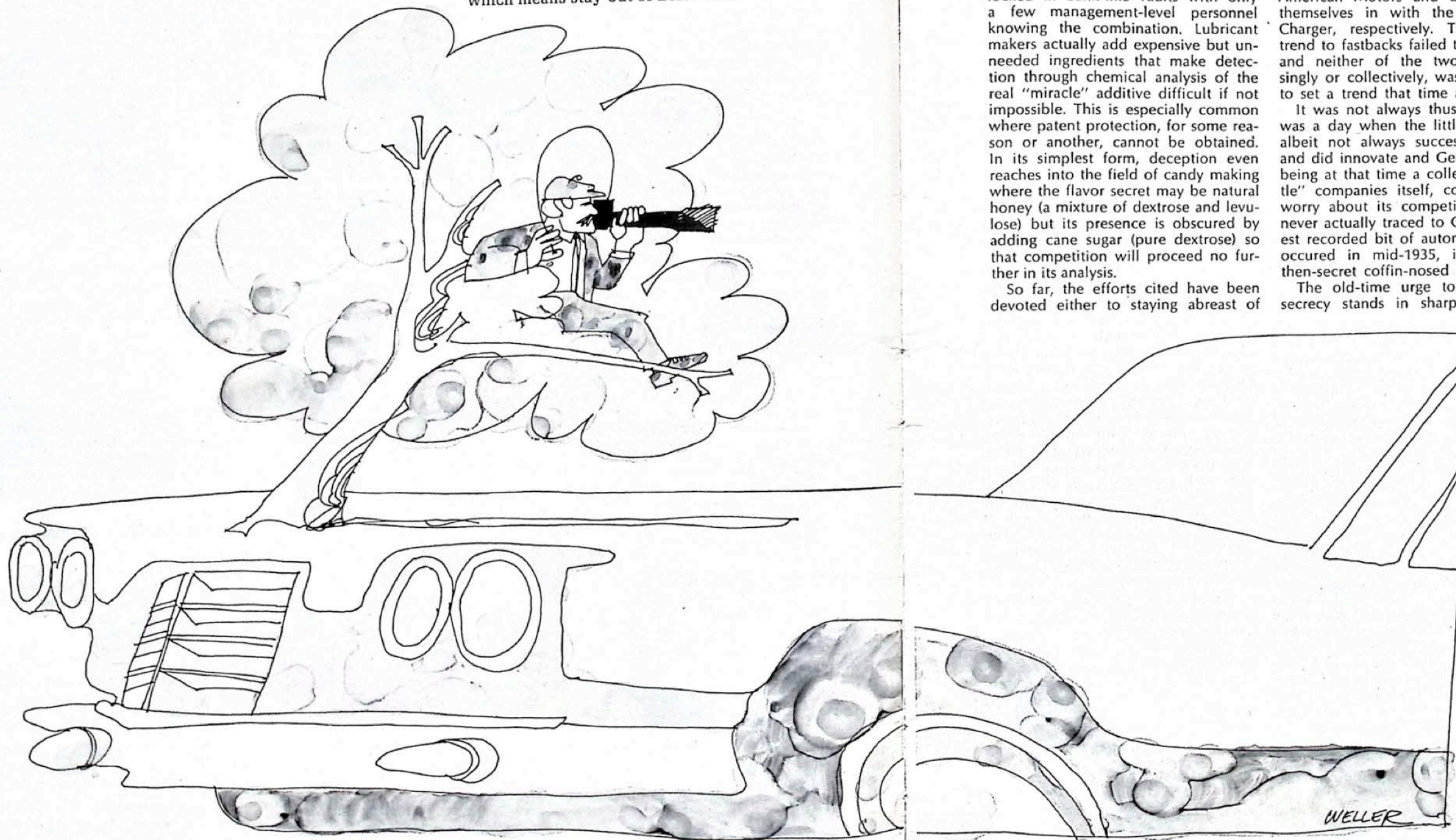
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The reason is SOOLF — which means stay-out of Left Field!



Spies Shooting Pictures from trees has proven

more satisfactory than from air planes.

by Don MacDonald

Industrial espionage is a harsh fact of life faced by commercial enterprises ranging from toy makers to ethical drug houses. Agents are planted, premises are trespassed upon in surreptitious searches for plans, and normally loyal employees are fed wine and sometimes even women by the opposition in the hope that they will be momentarily indiscreet.

Tire companies keep the formulae for their latest rubber compounds locked in bank-like vaults with only a few management-level personnel knowing the combination. Lubricant makers actually add expensive but unneeded ingredients that make detection through chemical analysis of the real "miracle" additive difficult if not impossible. This is especially common where patent protection, for some reason or another, cannot be obtained. In its simplest form, deception even reaches into the field of candy making where the flavor secret may be natural honey (a mixture of dextrose and levulose) but its presence is obscured by adding cane sugar (pure dextrose) so that competition will proceed no further in its analysis.

So far, the efforts cited have been devoted either to staying abreast of

competition or conversely, if ahead, to protect the secret of that leadership. In the auto industry, however, spying nowadays is actively practiced for quite a different set of reasons. Company "C" is concerned about what companies "F" and "G" plan to do—not so much from an urge to ferret secrets, but to be sure that its own plans will not lead it into the limbo of "left field." Left field is Detroit jargon for the kind of situation that, say, American Motors and Dodge found themselves in with the Marlin and Charger, respectively. The predicted trend to fastbacks failed to materialize and neither of the two companies, singly or collectively, was big enough to set a trend that time around.

It was not always thus. There once was a day when the little automaker, albeit not always successfully, could and did innovate and General Motors, being at that time a collection of "little" companies itself, could and did worry about its competition. Though never actually traced to GM, the earliest recorded bit of automotive spying occurred in mid-1935, involving the then-secret coffin-nosed Cord.

The old-time urge to innovate in secrecy stands in sharp contrast to

today's conservatism in the auto industry. For example, the lack-luster fortunes of Mercury's top-line Monterey and Park Lanes might be quite different had the Division dared to field a design planned for 1965. This had a bull-nosed front end even more pronounced than the current Mark III Continental, and was described by a stylist close to the project as "kind of a vertical Cord." The theme applied to a lower hood line can be seen on the original T-7 concept for the Cougar, (MT, Feb. '67). The higher hood on the planned Mercury, though, was functional as it was needed to clear a turbo-charger. Also planned in conjunction with the design was a unique cross-flow radiator, using sirocco fans to duct air in from one wheel well and out the other. Most FoMoCo stylists liked the package but management at the last minute chickened out, feeling that Mercury was in no position to be controversial. Whether left field would have paid off in this case or not will never be known. The conventionally grilled 1965 Mercury that ultimately appeared sold pretty well, so management basked in what it felt to be the right decision.

It's not just the little fellows that worry and here, left field can take on a double meaning. Not the most recent though perhaps the most ludicrous example occurred early in 1958. Both Chevrolet and Ford were committed to what was up to then the most major styling changes in their respective histories. Ford's 1959 model was relatively conservative; Chevrolet's, on the other hand, incorporated a radical gull-winged rear etched in automotive lore by the famous cartoon showing a small boy running from the family garage, crying: "Mama, something's eating my bicycle!" Though it is hard to imagine, then Ford Division head Robert S. McNamara, when he saw some surreptitious pictures of the Chevrolet, is remembered by an associate still with Ford as being "absolutely panicked." FoMoCo board chairman Ernest R. Breech promptly staged a series of viewings for certain members of the press on an off-the-record basis, and for Ford vendors. Nobody had anything bad to say, with Breech attributing this to politeness in the first instance, trepidation in the second. The facts were that everyone who saw the 1959 Ford liked it, but Breech wouldn't believe them.

Meanwhile, in the opposition's camp, then Chevrolet head and now GM president, Edward N. Cole, saw some pictures of the Ford and panicked in his turn. Was he the one out in left field? To find out, he took his winged monsters to private and very

Illustration by Don Weller

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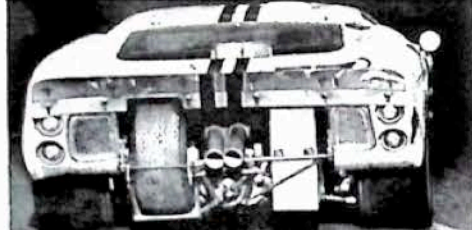
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Detroit Spies *continued*

secret "VIP" shows in Atlanta and Miami. Though McNamara et al never had the comfort of knowing it until later, Cole soon realized he had a problem on his hands. Spectator comments picked up by hidden tape recorders in the 1959 Chevrolets on display made it unmistakably clear that the car was a "turkey" but it was too late to change anything. Thus, the model was launched right from the start on a "fire sale" basis and even with this, the Ford outsold it handily that year.

The gum-shoeing becomes most intense when one of the Big 4 learns that another firmly plans to enter a new segment of the marketplace. To illustrate, it will be remembered that Cadillac's front-wheel-drive Eldorado appeared as a 1967 model. Its direct competition, Continental's Mark III, is just now appearing in showrooms. Yet, FoMoCo strategists knew all about the Eldorado, then code-named "La Salle," as early as 1965 and they also had pretty much finalized their own entry, so why the delay?

There were two reasons involved here, according to a source in Lincoln-Mercury Division's product planning department. One was the pragmatic fact that a car called the Cougar had first priority. No single automaker has either the money or the manpower to launch two all-new models, particularly specialty items, simultaneously. The other was elementary caution. The closest guidepost about to be marketed was the upcoming Toronado, and its initial acceptance hardly accelerated plans for the Mark III. It did, though, prompt FoMoCo to scrap an alternate front-wheel-drive configuration, a layout to which the Eldorado was already firmly wed. At this point in time—about December, 1965—a lot of money had been spent designing the Mark III, but the vastly greater sum required for tooling had not been committed. In other words, the project had not yet reached what Detroit calls "the point-of-no-return." At this stage, it seemed wise to wait for market reaction to the Eldorado. That, of course, was unequivocally favorable, so the Mark III was given the green light on a crash basis.

By now you may wonder how pictures, specifications and marketing information changes hands so readily a year or more before a new car appears on the streets—and, of course, if it wasn't available this early, the information would be of little value to anyone. The sources are neither simple nor in most cases, obvious.

One is vendors to the automotive industry. Human nature being what it

is, they talk—and they've overheard. This could be a bragging remark over the second luncheon martini or more likely, something the auto industry's own emissaries pick up at a trade convention. All of these gatherings are faithfully attended. For example, at one of the many elbow-to-elbow social hours characteristic of these events—this one the annual affair staged by the Society of Automotive Engineers in Detroit two years ago—a man from one of the few universal joint manufacturers capable of supplying the constant-velocity or Rzeppa type needed in front-wheel-drive was overheard moaning that Ford wasn't even taking bids. The eavesdropper from Chrysler knew immediately from this that the Mark III was committed to rear drive. Now, the information was of no immediate value to the Chrysler man because his company hadn't pursued its luxury-specialty offering much beyond the proposal stage. It was, however, a pretty nifty bauble to trade off in the circles within which he moved.

The Chrysler man was a relatively junior engineer assigned to his company's "competitive data" department. The name of the operation differs in each company, but the function is the same. This is to keep the product planning operation advised of competitive intentions far enough in advance so that the need to push the panic button is minimized. Years ago, these men in their common need evolved a peculiar protocol. They actually meet with each other whenever it is deemed necessary. So, to turn the fruits of his eavesdropping into something of value to him, the Chrysler man sets up a lunch date with his counterpart at General Motors Styling. His mission: trade the drivetrain information for a sketch of the Mark III, for at this point his management is far more interested in whether the car will be sporty or formal than in how it is driven.

Except for the actual leak at the SAE meeting, the above paragraph is fiction based closely on fact. It illustrates the protocol. The two never discussed their own forthcoming products; they dealt only with their mutual competition. The next day, in another set of luncheons, the characters and companies involved might be different, but the protocol would be the same.

More romantic, and actually the source of many of the surreptitious photos and sketches that constantly circulate in Detroit, is the exchange that goes on in the plush hangouts of upper echelon auto executives. They all belong to the same clubs and see each other constantly. In many instances, the exchange is deliberate. It's a warning that says "this is what we're doing, just in case you had something like it in mind." In others, it's an urge

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Detroit Spies *continued*

to show off, as basic in every sense as the compulsion of the average man to pull out a picture of his fiancée or new baby.

Still another valuable source of information is, or could be, the "public opinion" showings that automakers feel are essential for decision making. General Motors and others for years got away with displaying prototypes, wired to record spectator comment, at auto shows without competition being the wiser. The Corvette, Nomad and original Eldorado all started life this way. More recent examples include Dodge's first Charger, the Marlin and the AMX. Pontiac's Firebird, then called Banshee, was slated for year-ahead showing but was withdrawn literally at the last moment. It was taken off the stand at the 1966 New York Auto Show one night before opening, a first indication that professional observers were finally connecting show cars with actual prototypes. The current crop of show cars, you will note, are way-out sports-type vehicles that please the crowds without giving away any styling trends.



We used the qualifier "could be" (a valuable source of information) because sometimes the industry's spies are woefully obtuse. An example of this involves the Mustang. Two years before its introduction, a plaster model of it was being carted around California for showings to statistically selected "average" citizens. GM and Chrysler were well aware of this activity and, of course, their agents arranged to penetrate the showings. What fooled them was the almost universally bad reaction of Mr. Average to the car. So, they reported back to their companies that Ford couldn't be serious about this one. Ford, fortun-

ately and unpredictably, ignored its own survey — and history has recorded the result. The Mustang took off like a bomb and competition took two years to catch up.

Another boner occurred when Buick inexplicably chose to test consumer reaction to its prototype Riviera in Chicago concurrently with but not actually in that city's annual automobile show. All competition had to do was to leak this bit of information to the automotive press, which attends that show en masse, and then sit back to read all about it in the papers. The Riviera was soon located and Buick just as hurriedly packed it into a van and moved out. The invited guests got rain checks for their cocktails.

Detroit sleuths have another bit of protocol when their activity requires actual legwork. This may take them into the vicinity of proving grounds, prototype shops and the outdoor viewing areas of the various styling studios. They do not, however, trespass upon these properties because if one were caught doing this, his employer would deny knowing him. In any case, it's not really necessary. Ford, for example, still does not seem to realize that certain rooms in the Dearborn Inn, a hostelry open to anyone with the wherewithal, overlook one of its proving grounds. One reason for the large and accurate amount of publicity given to Ford's abortive Cardinal small car project (the car later became a German Taunus model) was the unusual number of Saabs observed from these windows buzzing around the track. It didn't take much acumen to deduce that these cars were being used as test beds for the Cardinal, which in turn meant that it was to be a front drive. In fact, the testing was so thorough that when the V-4 engine finally became available, Saab adopted it as a production option.

At the GM, Chrysler and American Motors installations, there are any number of trees outside the fences into which one can climb, suitably equipped, of course, with telephoto lenses, and shoot pictures of prototypes at will. This has been found to be much more practical than hiring an airplane. Federal regulations forbid flying under 1000 feet without a special permit, and all of the companies maintain a constant "air raid" watch. A word of warning from the guards' walkie-talkies and the test cars scurry for cover. Actually, proving-ground watching, from a time standpoint, is only productive when a project is under surveillance whose mechanical configuration, like the Toronado, can give it away. Styling prototypes are seldom seen on proving grounds early enough to be of value to industry spies.

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Opel Rallye Kadett. Manufacturer's suggested retail price: \$2325.26, includes Federal Excise Tax, suggested dealer delivery and handling charge. Transportation charges, accessories, optional equipment (chrome wheels on model shown below \$52.30 additional), state and local taxes additional.



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Tour d'Europe
September 1-10, 1966
1st in class—Beck
2nd in class—Lambart

Rallye dei Fiori
February 22-26, 1967
1st in class—Beck/Heuser
2nd in class—Lambart/Vogt

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September 4-16, 1967
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Detroit Spies

continued

If pictures of the early clay models can't be obtained through the normal executive channels at the Detroit Athletic Club, the best, although painfully slow, method is to piece the shape together either from memory or Minox photos of the male and female body dies taking final form in the many independent shops that do this kind of work. The spies have access to these because the shops most often are working for more than one automaker at a time. It takes a highly trained eye, but it can be and is done. In fact, security or the lack of it is the main reason why GM went to the expense and inconvenience of building its own captive tool-and-die facility at Grand Blanc, Mich.

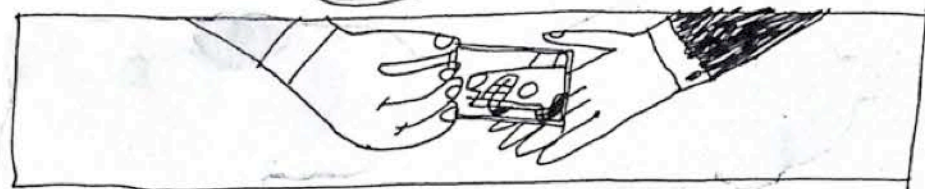
The most logical of all source of information is the one that is the most sparingly used. This, of course, is interrogating stylists and engineers who switch from one company to another. The actual hiring of a man for his specialized knowledge of competition's secrets is very rare and only resorted to when an isolated situation is extremely serious. Elwood P. Engel's move at the vice presidential level from Ford to Chrysler a few years back was not for this reason. However, a certain GM transmission engineer who knew the secrets of making an automatic work in the Chaparral race car was hired away by a desperate Ford performance team.

A stylist who has had previous industry experience will invariably and unwittingly disclose some of his former company's thinking in the design portfolio he must show to obtain his new employment. It will also inevitably influence his initial work for his

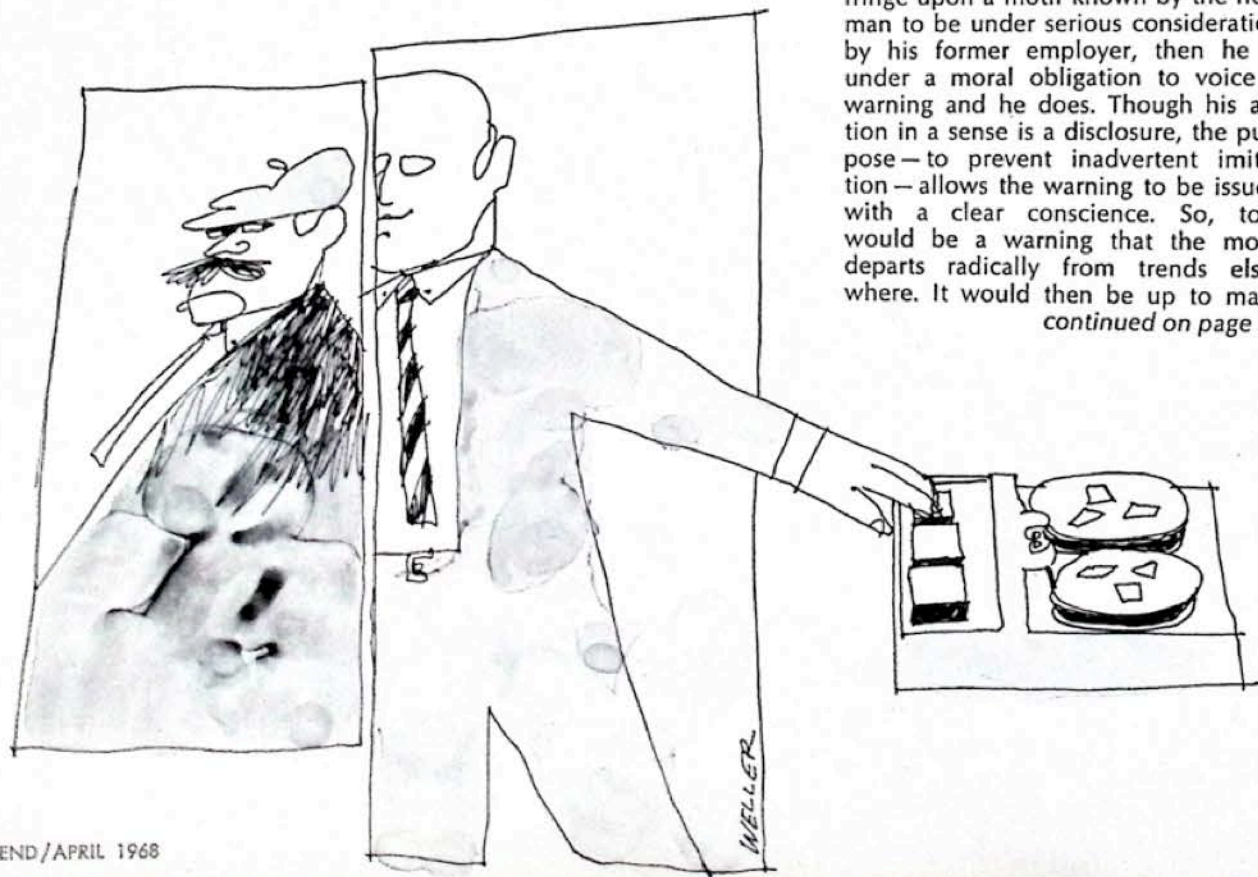
new employer. However, there will be no interrogation as such. It is quite sufficient to include the new man in routine skull sessions held by the styling staff to determine which advanced designs should be presented for management approval. If any of them infringe upon a motif known by the new man to be under serious consideration by his former employer, then he is under a moral obligation to voice a warning and he does. Though his action in a sense is a disclosure, the purpose—to prevent inadvertent imitation—allows the warning to be issued with a clear conscience. So, too, would be a warning that the motif departs radically from trends elsewhere. It would then be up to man-

continued on page 35

They all belong to the same clubs.



Often, the exchange is deliberate.



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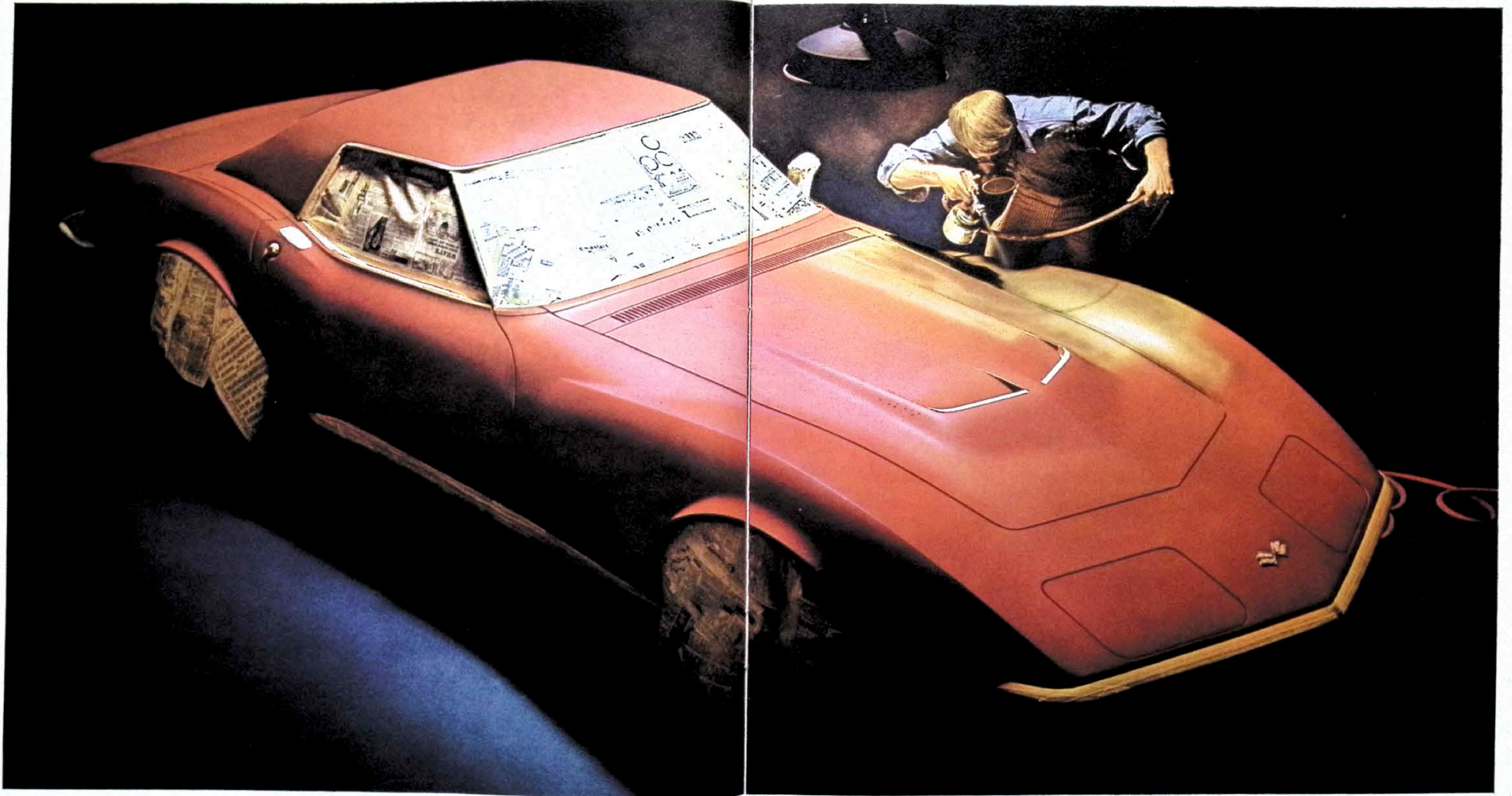
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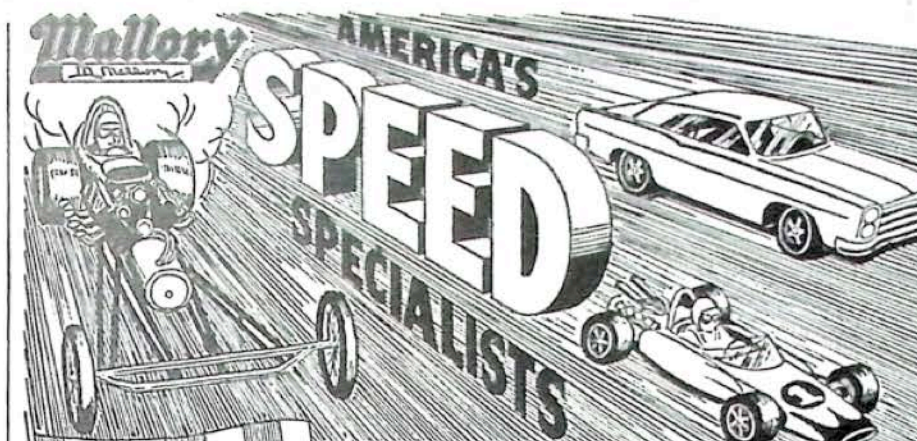
Detroit Spies *continued*

agement to determine if this means "left field" or not. The important point here is to make clear the fact that transferees are under no duress. Actually an unwritten agreement between auto companies inhibits talent raiding. An engineer or stylist wishing to switch almost always has to act on his own initiative.

There will always be disgruntled employees who seek revenge by offering to sell or even to give confidential data and photos to the competition. However, no company has a budget set up for such payments and it would be extremely difficult if not impossible for a product planning department to process a check for such an individual. For one thing, the big auto companies don't spend a dime unless it's covered by a purchase order. The writing of this would bring the purpose of the payment to the attention of accountants and auditors who have been rendered moral indeed by the pressures of state and federal laws covering bribery, invasion of privacy and restraint of trade, to mention just a few of the possible pitfalls. Still, it happens, usually with the help of a janitor or guard who is tempted by the relatively small sums that can be hidden by a spy in his expense account. A ring involving two guards and a city policeman at the GM Styling Center was broken up some years back with the help of marked money, a rather dirty trick in a sense because the party that blew the whistle on the cops had the photos in his possession long enough for them to serve his purpose.

A clear distinction must be drawn between the kind of information that is of value to the industry and the kind that now customarily leaks out a few months ahead of introduction time in automotive and general publications. In our auto-oriented society, news and views of upcoming cars is of great interest. Though auto companies are beginning to take this annual advance publicity in their stride, it would be foolish to pretend that they look forward to it eagerly. Their concern, however, has to do with marketing, not security problems. There will still be a number of unsold '68 models on showroom floors this coming June when all the publications will be printing sketches and sneak photos of the upcoming '69s. Dealers more so than Detroit are the ones who feel that such disclosures might hurt sales of current models.

The car buyer's enthusiasm over next year's models is a natural, healthy thing. Isn't this, in the final analysis, what those Detroit spies are really concerned with...?



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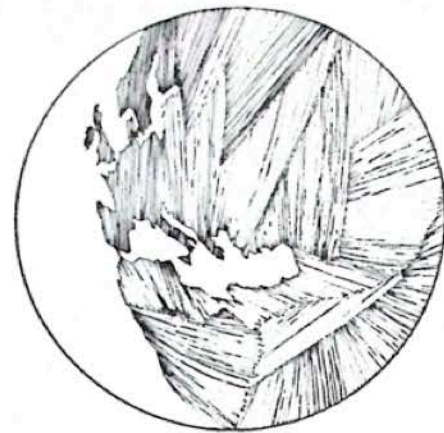
TYPIFYING THE SPIRIT of cooperation and exchange that is developing within the Common Market, Doorne's Auto Fabriek, or DAF, the Dutch auto manufacturer has introduced a new car, the Type 55, that has a Dutch body, chassis, belt-driven automatic transmission and a French engine. DAF has signed an agreement with Renault to use the French firm's R10, 1100cc engine that is rated at 50 hp at 5000 rpm. Engine is located up front with the Dutch "Variomatic" automatic belt-driven transmission, which Renault helped develop and differential located at the rear. Disc brakes are used in front and drums in the rear. Renault will deliver 40,000 engines to DAF to tide the Dutch company over until it can set up its own facilities to make the engine under license.

With a general appearance similar to other European cars in the small, economical class, the Type 55 has a plump friendly look. Overall length is 167 inches, wheelbase is 88.5 inches, and weight is a reasonable 1820 pounds. With a top speed of 83 mph, the new DAF is said to be thrifty on gas. DAF expressed interest in trying anew in the U.S. market with this car, but not until 1969 at least. Wim Van Doorne, president of DAF, thinks many more European companies will share engines in the future in order to comply with tightening U.S. smog regulations.

PRESIDENT JOHNSON'S call for a voluntary restriction of travel outside the western hemisphere and a subsequent tax decision has thrown auto importers into a mild tizzy. It is mild because delivery of cars in Europe to Americans takes a poor second to sales inside the U.S. with virtually every importer. In its broadest terms, the tax decision takes some of the economic desirability out



(Above left) DAF's new 1100cc Type 55 engine, a Renault R10 engine with a 50-hp rating. (Above right) The DAF 55 has a nice plump, friendly look. (Below right) Cutaway of new DAF 55 shows engine up front, transmission in rear.

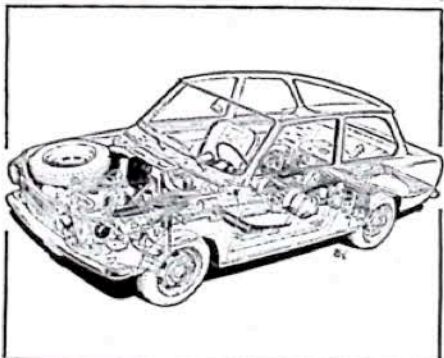


EUROPEAN HOT LINE

of picking up your car at the European factory because you no longer can bring it back as a used car (except if it is, in fact, a used car with prior owners), and then you must pay new-car excise tax.

U.S. Volkswagen dealers sold about 11,300 cars under their Tourist Delivery program in 1967. The percentage of cars delivered overseas is higher among more expensive models. For instance, Mercedes-Benz, Porsche, Citroen, Jaguar all have had a thriving overseas delivery program as have Triumph and British Motors. American travelers overseas have spent about \$1 billion more than foreign travelers do in the states each year, and part of this has been taking delivery of import cars. No one has an official figure but one industry source put the figure at about \$100 million a year.

"I think repurchase plans will be



more popular henceforth," said a Fiat spokesman. And, other importers agreed. Under the repurchase plan, you "buy" a car for use over there and you use it until you are ready to return stateside. Then the company buys the car back from you at a previously guaranteed rate less any extra damage you may have inflicted. It's like leasing, and in most cases is cheaper than renting.

At this writing the tax ruling was so new that many companies were reluctant to comment upon it. However, all it will mean to some companies is more cars to sell in the states. This is because vehicles sold for overseas delivery are taken out of U.S. importer's total allotment of cars. Volvo is a case in point. For the past three years U.S. dealers have sold every car delivered. That fact may be a boon to the man who has no intention of going overseas but wants his Volvo 144 in time to go fishing or sightseeing in the States.

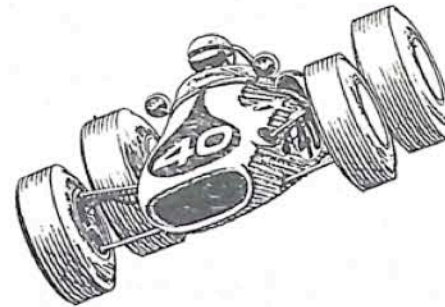
The president's call for voluntary curbs met with sympathy among the importers but little else. Everyone expected business as usual. A spokesman for Leyland (Triumph-Rover) declared, "Our duty as a British automaker is to sell as many cars as we can, both here and for overseas delivery."

If you are still thinking about buying a car for overseas delivery, check out all the figures carefully. Emphasize that word "all." Compare alternate transportation costs over there and in comparison, remember the great amount of mobility your own car gives you. Ask your dealer about taking delivery in one of the several duty-free ports scattered about Europe and how that affects costs. Also check alternate shipping to the States via Iceland, for instance. Sometimes the sheer convenience still outweighs the fact that you will save less than previously.

That's exactly what Mercedes-Benz and Jaguar are counting on. A spokesman for M-B said, "We expect tourist deliveries to continue to be an important part of our sales, even with the excise tax. The savings still go up as the price of the car goes up and there still is the attraction of having one's own car while in Europe." Jo Eerdmans of Jaguar made it even more explicit as follows: "Due to our '68 model price reductions following devaluation of the British pound, we are still able to offer net savings of \$500-\$700 to Americans who buy Jaguars abroad through our Overseas Delivery plan."

Summing it all up is SAAB's Ralph Millet: "We do not expect a decrease in our sales since we are able to offer free delivery from Sweden to New Haven, Conn., in our own ship, and, with Sweden's switch to driving on the right, we expect many more tourist

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prospects. The convenience of having a car in Europe outweighs all other considerations."

PEUGEOT'S 1968 model Solex carburetor has been modified by what looks like another adjusting screw just above the water inlet tube of the engine. This screw is for a factory calibrated Econostat jet and must not be altered when performing normal maintenance. Incidentally, Peugeot sent the 404 which passed the California smog board tests on a 50,000-mile good will tour of the country before returning it to France; the company claims it delivered 25 mpg the entire journey and required nothing but an oil change and a new set of plugs.

SOME OF THE BIG rental outfits like Hertz and Avis are in the rental and leasing business in Europe, too. This makes for great convenience in ordering cars for use in Europe, but reports indicate that the rental car is a different breed along the Thames, the Seine, the Rhine and the Po... aside from the fact that it is fabulously expensive. The key point is to check the car over before you leave the confines of the big city because you are on your own after that.

One classic tale of woe details the poor American whose car, with French license plates, broke down just outside Rotterdam. Unable to speak Dutch and tell the eventual policeman that Hertz Paris had put him in the driver's seat, he might still be over there had not a friendly German tourist happened along. The German, who spoke English and Dutch, got Hertz to come and rescue our American. He got another car with apologies, but when he checked his bill back home he found he had been charged for the rescue. If the Avis girl winks even once, this man will come arunning. But then we have heard stories about Avis, too....

NEXT TIME you go to Sweden, you'll see trailer trucks up to 80 feet in length which may have three separate trailers hooked together. Incidentally, some of them might be British since UK and Sweden just signed an agreement to permit each other's trucks free access, providing they are carrying out international transportation operations. It's part of growing containerization movement.

CITROEN AND MASERATI have joined forces to produce sports and competition cars aimed at world markets. First product likely for 1969 model year is a new DS model with a 2.8-liter ohc engine. The agreement goes beyond engine exchange, providing for close cooperation in every field, from designing cars to their fabrication and sales. This means that France,

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EUROPEAN HOT LINE

continued

which hasn't had a true sports or competition car for at least 15 years, now may have three. Besides the Citroen-Maserati, there's the Alpine Renault and the Matra.

One of the last of the independent car companies, Citroen spent much of 1967 strengthening its competitive base. It is producing, with NSU, a relatively inexpensive Wankel-engined model. Unfortunately, it may never see U.S. shores because of anti-pollution laws. This car will be made under the Citroen nameplate, by 1969, we hear. For Maserati, this means fresh money in exchange for stock. It may also mean that eventually Citroen will completely buy out Maserati.

Citroen has very heavy investments in Michelin Tire Co. and has made plans to beef up its "participation" in the U.S. auto and tire markets. The DS series has passed all U.S. regulations.

IT WILL BE **Pirelli Tire Corp.** now instead of Pirelli Sales Inc. The change in name for the American subsidiary means an expanded operation in the U.S. to market Cinturato CN 72 wide-section radials, 98% of which are exported to the U.S. Pirelli also has formed a new distributor, Pirelli At-

lantic, to go with Pirelli West (in L.A.) and Pirelli Pacific (in San Francisco). The CN 72 radials were developed expressly for American car suspensions, according to Giampiero Zanni, president of the American operation.

MOTOR TREND'S European counterpart, "Car of The Year," sponsored by the Dutch automotive magazine, "Autovisie," has been won for 1967 by the NSU Ro 80. Forty-four journalists from 12 countries selected the Ro 80, giving the car 197 points out



of a maximum of 220. Second place went to the Fiat 125 (133 points); 3rd place to the Simca 1100 (94 points); and tied for 4th were the Honda 600 and the Opel Commodore with 22 points each.

The 1967 award marked the 5th year of the "Autovisie" contest. In 1963, at its inception, the award was won by

the Rover 2000. Rover was followed in 1964 by the Austin 1800 and in 1965 by the Renault R16. The Fiat 124 won in 1966.

Members of the 1967 committee selected the Ro 80 on the basis of its unique chassis, roadholding and comfort qualities and the silent, vibrationless NSU/Wankel rotary piston engine. Aerodynamically developed body design, that makes no concession to fashion trends, was also given recognition by the selecting committee.

RENAULT CONTINUES to deny any plans in the U.S. for either the R16 or the R4, but the rumors persist. We spoke with a South American contact and think we can clear up at least the R4 part of it (the R4 is Renault's mini-car). It seems that this vehicle may be the main wedge in a new drive to penetrate Latin America. In fact Mexico, where Renault is helping design and build that country's first roller bearing factory, is a prime target. R4 is a rugged little car and cheap enough to undersell many cars in its size category, feature for feature.

Renault is also remaining very close-mouthed about its fuel cell research for a true electric car. The company, however, appears convinced that fuel cell cars are coming since it was reported in a technical magazine that its budget for such research has risen.

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Runnin' the little ones

By Steve Kelly

Stout, roomy and hot. Current crop of "compacts" are smooth fill-ins between sporty cars and intermediates.

Since their birth nearly a decade ago, the compacts have gone full circle. Current offerings are roomier, better looking, more powerful and higher priced than their ancestors. There's also been a couple of makes that removed themselves from the "compact" area, such as F-85, Comet, Tempest, etc. So the field is now smaller than it was in 1960, but really a lot more competitive. The little cars have been pressured by the sporty models, and the low-priced intermediates. But we found the compacts—in their deluxe trim—much more appealing, usually, than the sporty or low-priced intermediate cars.

Performance in a small package became an industry trend four or five years ago, kicked off primarily with the Falcon Sprint. Other compacts had V-8s before the Falcon, but none had performance in mind. The unfortunate news now is that the Falcon has been passed up by the others, probably because of Mustang dominance in



the "hot" scheduling at Ford. Our 4-car compact test placed emphasis on performance and handling in the Chevy II Nova SS, Dodge Dart GTS, Ford Falcon Futura and Rambler American Rogue. The Plymouth Valiant wasn't picked up because of its near-identical makeup with the Dart. Out of all this we found more than just performance to be a virtue in these little ones. Lots of driving revealed their roominess and comfort, something sports-personal cars don't always have.

We spent two full days with the cars on a long-distance run, kicked off by a morning session at Orange County International Raceway where we conducted acceleration tests. The Dart began to show its stuff here, clocking quarter-mile times of 14.5 seconds with two aboard and a full load of fuel and test equipment. It continued to excel after we left OCIR and headed down Interstate 5 to San Juan Capistrano, over route 74 to Elsinore, down through Temecula and Anza Paradise Valley to Palm Desert and then into Palm Springs and Gene Autry's Ocotillo Lodge for our night's rest. The virtues it revealed were performance and handling, but it fell short of the others in comfort.

Our second day's journey carried us to Yucca Valley in Southern California's high desert, Joshua Tree National Monument, through Lucerne Valley and on to Roy Roger's Apple Valley Inn (we're big on cowboys). From Joshua Tree to Apple Valley, we hit every kind of road condition possible from smooth 4-lane roadways, to potholed narrow lane hardly-paved desert roads. Speeds ranged from 55 to 75 mph, and we only slowed for camel-back surfaces which would throw the cars' wheels out of contact with the road.

We left Apple Valley for home, passing through Phelan, Littlerock, Palm-

dale, and the San Fernando Valley enroute to Hollywood.

Nothing broke in our 500-mile test — not even the people — which amazed us after our last overnight hop ("The Most Grueling Test of All," March MT).

Our trip pointed out many travel tips as well as car evaluations. Such as: it pays to have a lot of credit cards when you find out halfway through the trip that everyone else failed to bring any money; that having all the credit cards gets you all the attention and care from your mates and head waiters alike.

Powertrain & Performance

DART—Since the Dodge came up quickest, we'll discuss it first. This particular car came with a 340-cu.-in., 275-hp V-8. Hooked behind this was a 3-speed Torque-Flite automatic, driving to a 3.55:1 rear axle. We can't imagine a sweeter combination or a more potent "sleeper." Looking at the time clocks after our first quarter-mile run caused pure disbelief. Couldn't be! That's as quick as a pure stock street Hemi we ran a year or so back. Second run brought about the same results, and a drag between the Dart and Chevy II left no room for doubt. It just put it to the Chevy by about 10 car lengths at the finish.

It's quiet too. The engine operates noiselessly except at full throttle or idle. The idle noise is a product of the free flowing exhaust system, and the full throttle noise is due to the low restriction air cleaner not fully dampening out air going to the 4-bbl. In between, it's perfect.

It is the smoothest of all cars tested at any speed. Every part of the powertrain works in perfect coordination with its counterpart. Shifts are best accomplished manually. Allowing it to

stay in drive for acceleration blasts, the box upshifts at 4500 rpm. It'll easily stand 6000 rpm speeds, and this is where we took it. You've got to anticipate shifts by 300 rpm, so the lever must be moved just as the needle passes 5500.

The 340 isn't destined to win any economy contests. Our first highway mileage tank delivered 13 mpg — hardly a compact description. We finally nudged 16.5 mpg, but not after driving at maximum legal speeds.

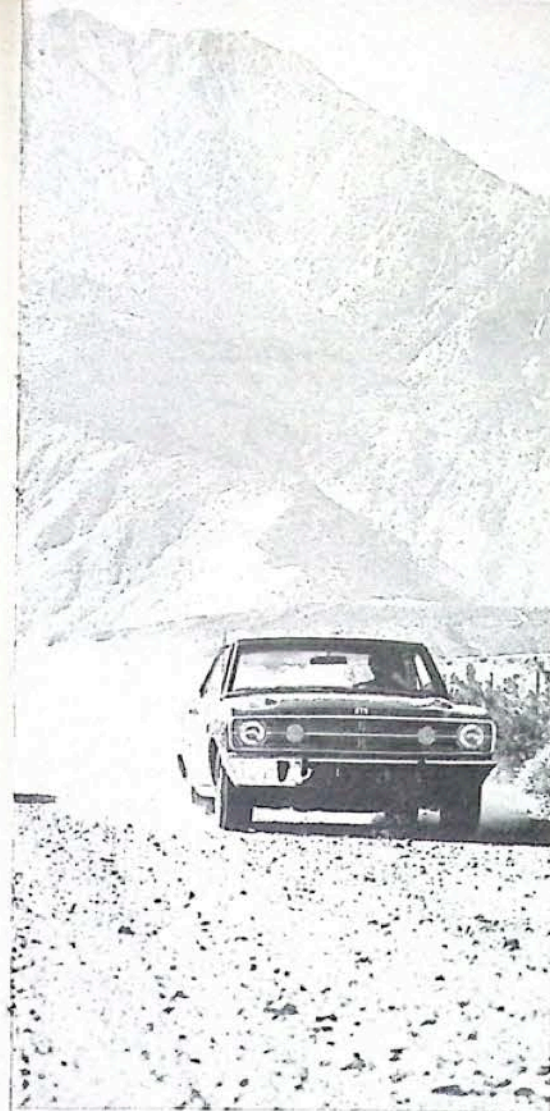
CHEVY II—We expected greater things from this car. It was equipped with a 325-hp, 327-cu.-in. V-8, and 4-speed wide-ratio transmission. Rear axle ratio was 3.36. Try as we could, it would never get below 15.9 seconds in the quarter, and it tended to overheat rather quickly. In fact, after five rather successive quarter-mile runs, it was just too hot to run any further without a 30-minute cooling period. The Dart suffers from heat also, but only to the extent that a better insulating gasket is needed between carburetor and intake manifold. The Chevy II merely pegs the temperature needle all the way over and doesn't want to run.

Operating the Muncie shifter on the 4-speed takes patience and a lot of luck. It is stiff to move, usually hitting extra detents or such when moved between gears. The throw is a bit long, but it's the rough movement that is bad. Power shifts take guts. The shifter is just as prone to hang-up between gears as it is to move to the next slot. And all the time, the driver's foot is held to the floor over the gas pedal.

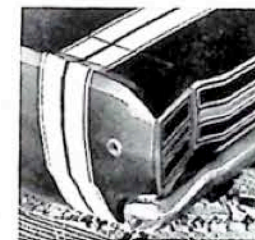
Engine operation is quiet, and the only noise heard is at full throttle when the Rochester carb is pulling full volume. Exhaust noise is at a minimum.

Runnin' the little ones

Photos by Gerry Stiles & Randy Holt



Dart GTS is at home on the drag strip as much as it is out there in Marlboro country. The high-revving, lightweight 340-cu.-in. engine is the perfect combination for a compact of the GTS' ilk, making the largest of supercars work harder than they would against their peers. Suspension, handling, ride and fine disc brakes, are designed for the adventuresome and give it plenty of control on any road. Unfortunately, getting there is not the best of experiences; seats aren't designed for western travelers.



By the time this report is printed, word should be out on a new engine for the Chevy II. At present, the 325-hp small block is the second biggest, but a mid-year offering will be Chevy's 396-cu.-in. "semi-hemi" V-8 in 350-hp form. This should put the troops back in action at the drags, as well as on Woodward Avenue and other sites of "community meetings." We've already driven one in prototype form, and cut high 14-second readings with the engine all buttoned up, 3.31 rear axle, and street tires used.

Mileage with the 327 was exceptional. The car pulls very good in high gear, negating lots of downshifting for passing or speed increases. Our best was 18 mpg and lowest was 14 mpg.

ROGUE—It's no secret anymore that American Motors is out to get at the performance market. Our year-long run of a Rogue as a Project Car revealed that very little need be done to get the American running. Our test car came equipped identical to the "Rogue Runner" (see MT June & Sept. '67, and Feb. '68 issues), but it pointed out to us that the relatively minor things we did to the project car, need to be applied to any American before it will really perform.

The test '68 American was sent with a 290-cu.-in., 255-hp V-8, mated to a 4-speed gearbox and 3.54:1 rear axle. Our best elapsed time was 16.0 seconds for the quarter — full loaded of course. At this, it proved very good. Considering the Chevy II's time with a

hundred more horsepower wasn't that much better, we'd say the Chevy II needs more engine tuning than the Rambler.

Ordinarily, Americans are prone to excessive rear wheel hop. We made a concession to the "stock" nature of the test and installed a set of rear spring traction bars on this car. Without them, it'd be nearly impossible to perform any type of acceleration tests, and every owner should follow the same route. Actually, the factory should do it as it is a 100% problem on this car and they can't expect full owner satisfaction until they eliminate wheel hop.

The 4-speed linkage is much better on the '68s than on the '67s. It is smooth between gears, with its only drawback being a long throw. The sharp pointed reverse lockout has been replaced for '68 with a simple ring on the stick. The engine will continue making back-to-back runs as long as the clutch will hold out, and unfortunately that isn't long. Five or six runs will reveal loss of adhesion and phenolic smell. A short cooling period of 10 minutes or so is all that's needed to put it back in action.

Mileage could be better here, as we averaged 15 on the road and 14 in town. Not much of a spread, but that 3.55 rear gear is cause for this. A somewhat higher (lower number) would build mileage.

FALCON—The lead in hot-compacts once belonged to Ford, but they gave it up in favor of the Mustang — not a bad move on their part. But this left the Falcon without much for performance. Introduction of the 302-cu.-in. V-8 was a shot in the arm for '68 Falcons and may help recover some sales losses.

Our Futura (actually there were two) had a 302 4-bbl. V-8 with 230 hp. Transmission of power was via a 3-



speed automatic gearbox. It drove to a 3.00:1 final gear. We also ran a 289 2-bbl., regular fuel burning V-8 with an automatic in a 4-door sedan and thoroughly enjoyed it. Operation was quiet, performance was adequate, and mileage was great.

The 302 comes on stronger though, and can be made to run very good with a few over-the-counter-parts. The Autolite air-valve carburetor could stand some refinement, and replacing it with a Holley might be the way to go. The Autolite surges a lot. The air valve system delivers fuel/air mixtures rather slow so there's a lag between the time the foot throttle is pressed and the engine reacts.

Engine operation is extremely quiet and smooth, without any strain or vibration. The 302 comes up on rpms rather slowly and objects to much more than 5000 rpm. A lower rear axle ratio might help this cause, but that's not available from the assembly line.

Overheating isn't a problem with the 302. Starting after long periods of running requires more than usual starter-cranking, and high altitudes (3000 feet or more) give the engine fits. Some carburetion recalibration is needed for prolonged high-altitude driving.

Our mileage figure was good on both the 289 and 302 V-8s. The 289 being smaller, took less fuel, and delivered 20 mpg as a high, and 15.5 as the low. The 302 managed a best of 18.9 and a poor of 14.1 mpg.

Handling, Steering & Stopping

Each car came equipped with special handling suspensions, of the H.D. nature. They all performed well in this department, nearly overshadowing their sporty car counterparts.

DART—A true twisty road machine. No corner seemed too tough for this car. Lean was at a minimum and the wide-tread tires affixed to the wide rims stayed glued to the asphalt. Oversteer was noticed, but this was more a result of the steering—power assisted variety—being too light. Feel is at a minimum since the power steering leaves very little effort left to the driver. It will oversteer rather quickly, and without much notice. When held in a constant radius turn, and minus any tail-end drifting, the wheel can be set in one place and just held there. Earlier MoPar's had a bad habit

of needing constant readjustment through such a turn.

Stopping the Dart is a pleasant task. Disc brakes were on the front of this car with power assist. All stops were relatively straight, with only minor lockup on the front wheels. The discs, though, allowed steering during stopping—if this action was needed. We had occasion to bring the car down from 60 to 30 mph repeatedly, and never incurred brake power loss.

CHEVY II—Our Nova Custom coupe felt extremely solid in all sorts of twisty maneuvers. The front end wants to plow a bit, though far less than a big car. We noticed this condition most after driving the Dart and Rogue, which didn't suffer from this malady. The tail stays in line without objection. Understeer is more predominant than oversteer, which we like. The power steering only helps out when needed, and there's more front wheel "feel" accorded the driver.

Stops are accomplished easily, though the tail end wants to get out of shape, and we had front power assisted discs on this car for extra value. The staggered shock multi-leaf rear suspension eliminates all wheel hop on deceleration, which used to be a problem on Chevy IIs. The brake pedal position could be lower to the floor. As it is, one must lift his foot more than an inch off the gas pedal and then over to the brake.

ROGUE—This car is really a surprise in the handling bit. All our test crew kept jumping to it for mountain road driving, even more so than the Dart. After all Chrysler's had good handlers for years. Rambler doing it makes an impression.

The car goes through corners post-haste. No fooling around with oversteer or the like. In fact, it's practically neutral; very predictable, very smooth. We did find that the addition of the rear spring traction bars causes the front end to dip or raise more than normal in a long turn, since the bars stiffen up the rear suspension more than stock. This didn't aggravate handling prowess or lack of it, merely gave a different sensation. We'd say that should the bars be used on serious competition cars, stiffer front springs

would, without a doubt, be mandatory.

Braking the car was a bit of a long distance trip. But when you're under 150 feet, you're still in the ballpark.

Position of the brake pedal to gas pedal was perfect. Almost straight across, providing immediate access, as well as good heel-and-toe ability for the sports car breed.

FALCON—What impressed us most about this car was its smooth ride when outfitted with the performance handling package. Usually the H.D. underpinnings are accompanied by ride harshness or at least noticeable bounce from hard dips. The Falcon is engineered with a suitable compromise between good handling and good ride. From outside, the car seems to be doing a great deal of up and down action, or side to side swaying. From within though, this isn't the least bit evident, and the driver retains ease of control.

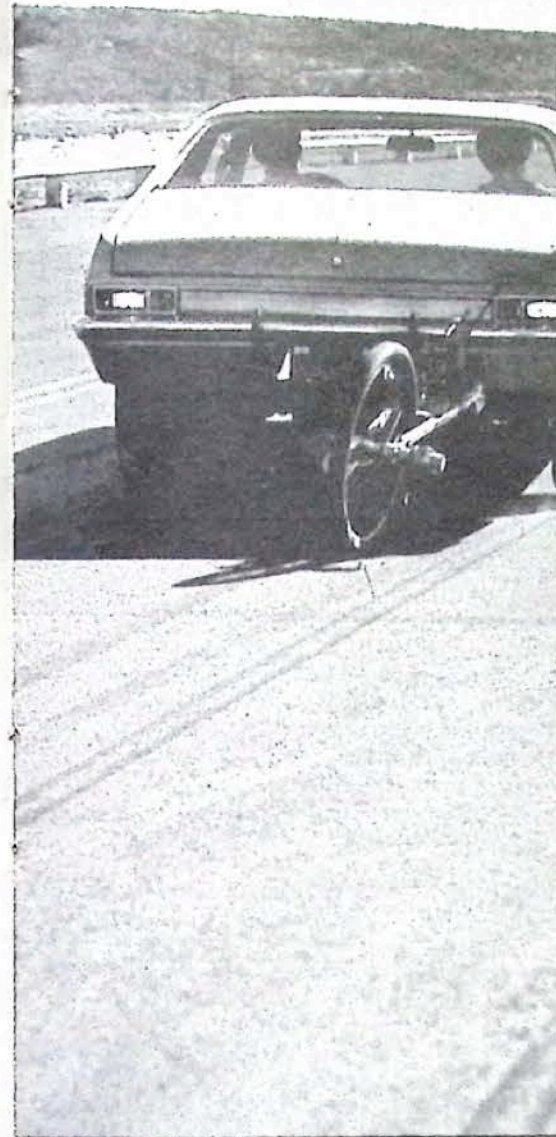
Our test cars both had power steering, and these are the first two FoMoCo products we've had this year that didn't exhibit "rubber-band" steering linkage. The Falcon setup is taut, and quick to react. The front end wants to roll under slightly, but less so than in the Chevy II.

Our drum-brake equipped 4-door sedan performed wonders in the braking test. Not only did it stop quicker than the disc-brake equipped compacts, but did it without varying one inch from a straight line pattern, and showed very little lockup tendency. Of course, it's lighter, and there's more weight over the rear wheels since it is a long roofed sedan. But these are only reasons for the Falcon's prowess, and not excuses for the other car's shortcomings.

Comfort, Convenience & Ride

No matter how small each of these cars may seem, they each display more comfort and convenience than sporty cars. Trunks are large enough to accept large items, and will hold enough for a trip of more than just one night's duration. Getting in and out is simpler than with sporty models, and intermediates as well. Headroom is more generous, but we noticed on the Chevy II and Falcon, the rear seat bottom cushion is noticeably short.

Bannin' the little ones



Beauty does not contaminate the Chevy II's performance. The 327-cu.-in. engine is very smooth and flexible, and handling approaches road race quality, although pedal arrangement is poor for quick manipulation. Though there are several peccadillos in ride and comfort, it excels in general over the other cars tested. Legroom for the driver is good, and seats fit posteriors properly.

DART—Seats are comfortable for short trips, but not for long ones. The flat pattern upholstery doesn't "breathe," and it's not long before perspiration shows up on trousers and shirt. Because of this same flatness, the seats get hard after more than an hour of driving.

Steering wheel position is too high for constant comfort. This could be remedied with an adjustable column, but it isn't offered in Darts. It seems like every Chrysler Corp. car we've tested in the past couple of years had this same problem, but nothing's been done to alleviate the condition.

Rear and front seat legroom is good. The front seatback latch has been hidden at the bottom, requiring a MoPar engineering background to find it.

The car gives out a comfortable ride at all speeds, especially high ones. No float, no drift, just stable cruising. Bottoming out never occurred—even on the most severe dips—even with full passenger loads.

Trunk space is super large, and there's very low lift-over height. The spare is kept below the trunk floor, giving a nice flat carrying surface.

A padded rib extends the length of the bottom edge of the dash for occupant protection in the event of a crash. It has an added benefit of being a perfect spot for depositing cigarettes or sunglasses while driving.

We washed the windows nearly every time we went for the lighter. Reason being that the wiper/washer control is to the right of the steering column, just where you'd assume the lighter would be. Not so. The lighter's way over on the right, almost in front of the right front passenger.

CHEVY II—The Falcon and Chevy II

could almost be twins inside. Dash design is very similar in each, but better in the Falcon. This new Chevy II dash clusters everything in front of the driver, which we like, but seems a bit crowded by comparison.

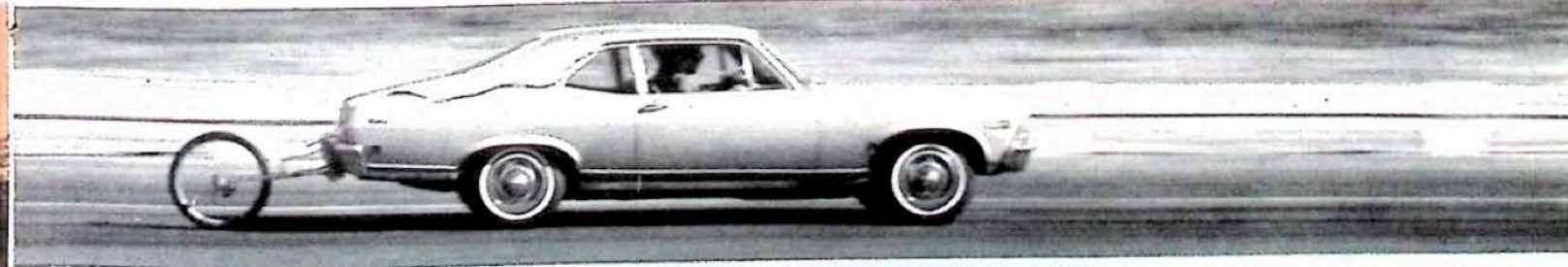
The ash tray is tinny, not having a stable track to roll on, and fell off more than once. The Nova SS is equipped with full instrumentation on the console. We couldn't think of a poorer place. Since all four instruments look identical down there on the floor, a bit of scanning is needed to decipher what is what. When you're making it along at 88 feet per second (60 mph), a lot of scanning isn't desirable. Kind of reminds us of when Chevy put the SS 396 tach below the ignition key in '66, just forward of the driver's right knee, facing upward.

Seating comfort in the Chevy II is better than in all the others. Reason for this is the soft, pleated type upholstery. After several hours' driving, very little numbness is felt through one's posterior.

Rear seat entry is easy. This is a feat accomplished by shortening the rear seat cushion, so there is an advantage to this design. Average size adults will jamb their knees against the front seatbacks, and since they're not padded, may resent it.

Trunk access isn't all that good. The lift-over height is rather high, and fitting regular sized suitcases is work for a capsule design engineer. But it beats the Camaro for room by several cubic feet.

This car definitely needs an adjustable steering wheel, but none is offered. The wheel attitude is much too flat—relative to driver position—and needs to be angled down for more comfortable touring. *continued*



Runnin' the little ones

Ride virtues of this car will really impress many first-time pilots. Our Nova was equipped with H.D. undersides, and this is the way to go. It is always solid riding, but not to the extent of ensuring weakened kidneys. We prefer the Chevy II's general ride characteristics over the balance of the compacts tested.

ROGUE—This car seems much more like a suitable family car than the others. No attempt has been made to disguise the American as anything but a comfortable car for riding and driving. It fills this bill.

Entry and exit is easy. Both front and rear armrests are placed properly, meaning that your arm can rest there. The trunk space is huge. Usable luggage capacity is 12 cubic feet. And you can use it all. We loaded it to the top with gear for our trip, and still had room for more.

Instrumentation is fairly adequate, and the standard gauges are fitted directly in front of the driver. The only optional instrument is a tachometer, and it too reposes in clear view. We don't like the dash panel finishing on the '68 as well as we did on the '67, but that's safety standards for you.

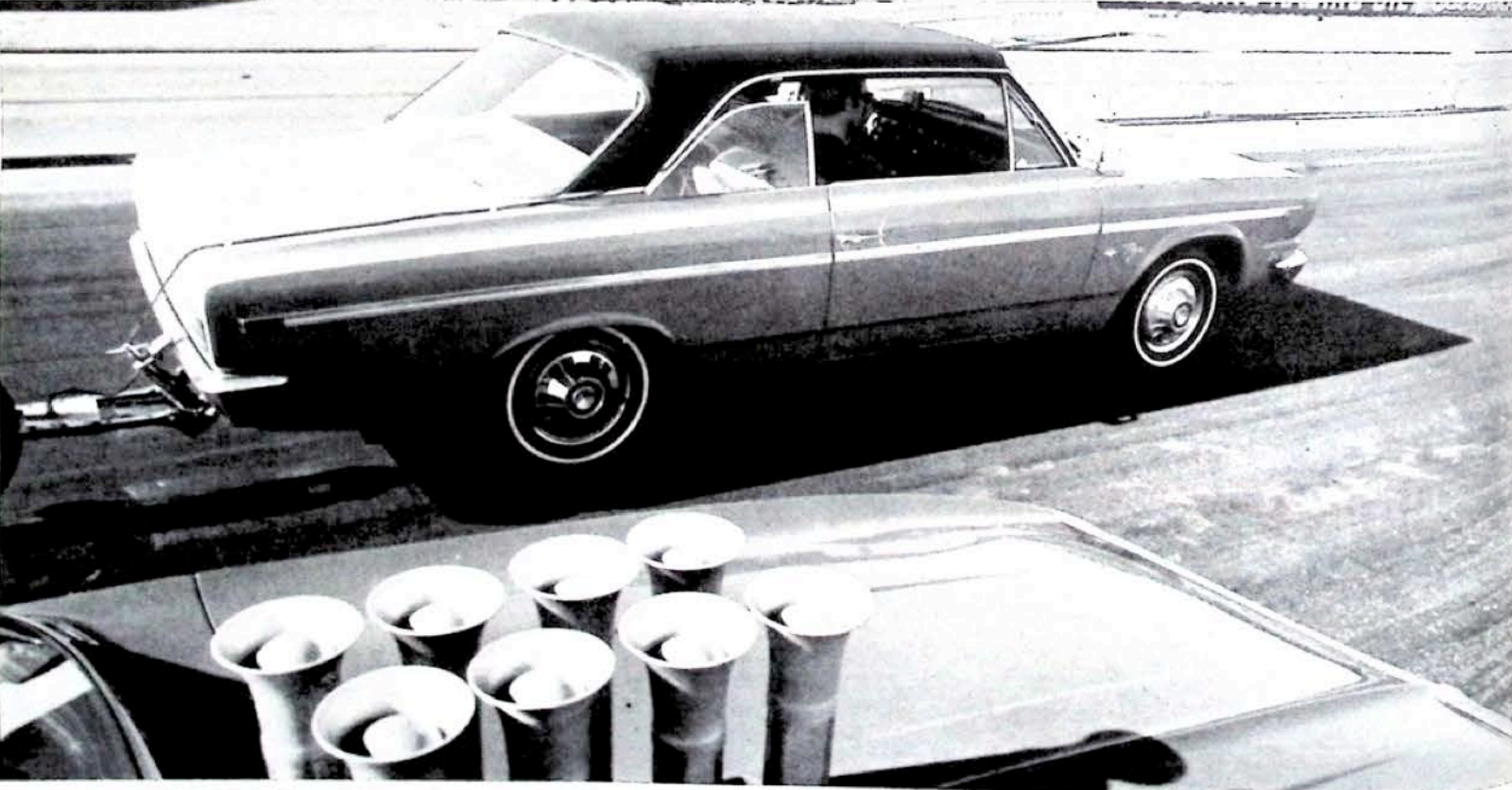
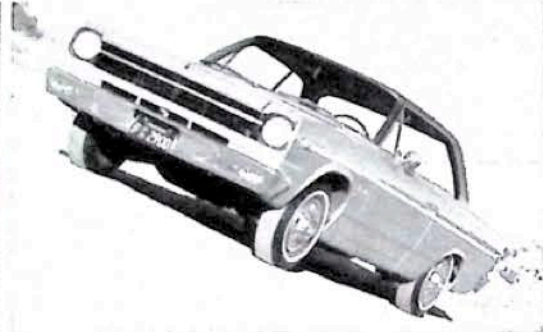
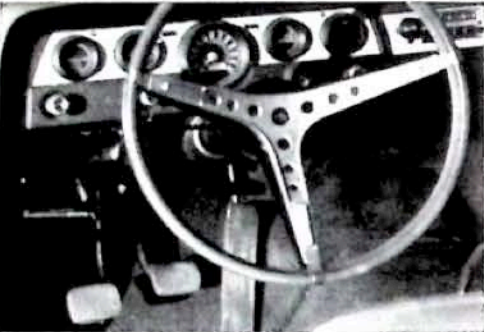
Reclining seats are standard in Rogues, and we made good use of them. While they are standard in the Rogue, they can be optionally fitted to the other American models, and this is more than can be said for the other compacts.

Ride is a bit "bouncy" with H.D. suspension. Enough so that undulating surfaces reveal themselves well. The car rolls over them handily, and little of the bounce is filtered through to the front seat. Rear passengers will notice it most.

Seating is comfortable at all posi-



Dash of Rambler American Rogue conveys the car's purpose — Business and Fun, not beauty. Instrumentation is complete and right where you expect it, not covering somewhere in the distant recesses of remote consoles. Even the roughest roads and longest legs of the trip didn't accumulate too much discomfort for the driver. Reclining seats and adjustable steering wheel help a lot. The comparatively small engine performs impressively, and needs little modification for good times, though wheel hop is still bad.



tions — we never felt uncomfortable after many hours of driving. Wheel and pedal position is excellent.

FALCON—Here again, this car gave us a surprise. The new for '68 dash treatment is beautiful. All heater controls are lighted, and the controls are strategically placed. Never had trouble finding any of them. The safety-padded steering wheel was far enough away for comfortable arm position, a point we've griped about in other Ford products. If we were selling Fords, we'd sure tout this car much more than is presently being done. It exhibits more all-around driving flexibility than the Dart or Chevy II, and comes in evenly with the American. Performance isn't everything, especially when you're commuting in rush hour traffic.

The 2-door is the way to go for easy entry and exit. The 4-door openings are too narrow for quick ins-and-outs. We hit the door pillars in the front every time.

A 3-suitcase lays down perfectly in the Falcon trunk, and falls low enough for another one to be laid on top. Then there's plenty of room for small bags to go all around. Only trouble then is that the spare is buried behind all the luggage.

The Falcon ride is a smooth one. The car feels exactly like a big car should. It is a very deceiving machine. You tend to easily forget the car is a compact, because of its solid feel and pleasant road behavior.

We have to point out how solid our 4-door test car was. Not one squeak or rattle developed. The doors closed like a vault, and stayed tightly sealed. Interior noise was at a bare minimum, and road noise was so low that we always kept the radio volume at the same level. Like we said, we'd sure do a lot more talking about this car if it were ours.

Plus & Minus Features

Both the Dart and Falcon tended to spill gas from their left fender fill points on hard turns. The Chevy II and Rambler Rogue have this problem licked with center fill points.

The Dart carburetor leans out severely on super-fast turns, but never during street-type maneuvers. A center pivot float carburetor would help,

More a family car than the other three tested, the Falcon was surprisingly comfortable and fatigue-free. Rarely — almost never — do we receive a test car rattle-free and devoid of irritating noises, but the Falcon was an exception. We got the wrong model to complete our hot set, but its virtues made up for it.

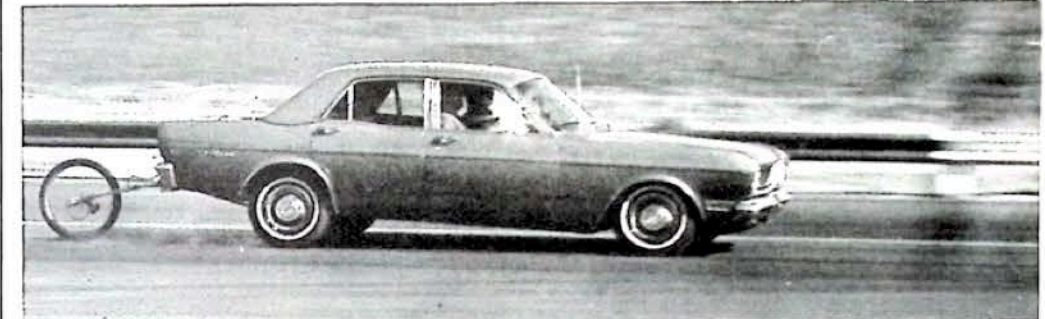
but probably would be no advantage for ordinary driving.

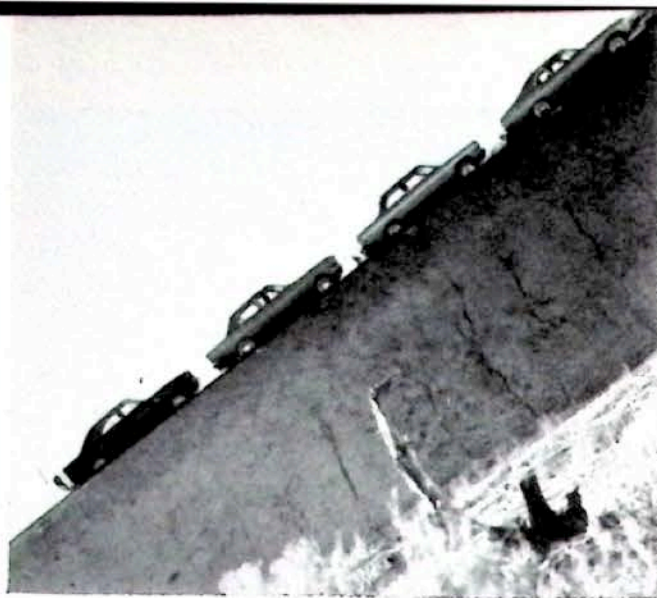
Four-speed linkage is good on the Rogue, and bad on the Chevy II. Both, though, would benefit from the installation of good accessory or after-market shifters.

The Dart is by far the best performer. It does this at the expense of gas mileage, so it's a matter of how much you're willing to spend.

Body construction from low to high, rates lowest on the Dart, with much wind noise and rough spots evident. Minor quality detailing would conquer this, but unfortunately, this has been relegated to the dealer. The Falcon rates highest here, and the Chevy II and Rambler are about equal in second position. Actually, the top three are very close and far above the Dart in overall quality detailing and comfort.

Utility or access, whichever term suits, is best on the Dart. It allows easy trunk access and has plenty of space. Second highest here is the





Runnin' the little ones

Rogue, then the Falcon, and then the Chevy II.

We dig the Chevy II styling over all. The Dart follows, mostly because of its brutish appearance as well as clean lines. The Falcon shows good design, more so than the American which is cute, but not the styling rave that the Chevy is.

Chrysler Corporation's key light feature has been thoughtfully incorporated in the Dart. When you open the door, an indirect light pops on over the ignition key slot. It stays on for a period of about 30 seconds, allowing the driver to find the position easily at night. In this day of hidden and recessed dashboard fixtures, every maker should follow this route.

We've made mention of our particular gripes throughout the article. None of the cars tested revealed any serious design drawbacks, and we never objected to driving any of the four. They're all very closely matched, making it rather difficult for the buyer—as well as us—to show a hands down vote for any one model. The "performer" of the bunch is the Dart. No question. Things may be different after the Chevy II hits the scene with a 396-cu.-in. V-8, but 56 more cubic inches ought to make a difference!

Rather than make any conclusions, we've laid out the facts as we find them. We do suggest that buyers check the compacts over carefully before deciding on something else. We'd been away from them for some time ourselves, and put a lot of time in other size cars in the interim. We were pleasantly surprised to find them upgraded considerably during that time. Our test crew's consensus was that unless sporty styling was the prime buyer reason for picking a new car, then the compact type car is the way to go. Hope you sporty car people still like us. /MT

	Chevy II	Dart	Falcon	Rambler
PERFORMANCE				
Acceleration (2 aboard)				
0-30 mph	2.7 secs.	2.5 secs.	3.7 secs.	3.0 secs.
0-45 mph	5.0 secs.	4.1 secs.	5.8 secs.	5.2 secs.
0-60 mph	7.7 secs.	6.0 secs.	10.1 secs.	8.2 secs.
0-75 mph	12.5 secs.	8.8 secs.	13.9 secs.	12.0 secs.
Passing Speeds				
40-60 mph	3.5 secs. 256 ft.	3.2 secs. 234 ft.	4.8 secs. 341 ft.	3.8 secs. 278 ft.
50-70 mph	4.3 secs. 378 ft.	3.4 secs. 299 ft.	6.6 secs. 580 ft.	4.1 secs. 360 ft.
Speeds in Gears				
1st ... mph @ rpm	46 @ 5500	45 @ 5500	50 @ 4800	41 @ 5000
2nd ... mph @ rpm	60 @ 5500	79 @ 5500	85 @ 4800	51 @ 5000
3rd ... mph @ rpm	78 @ 5500	111 @ 5500	122 @ 4800	73 @ 5000
4th ... mph @ rpm	112 @ 5500			106 @ 5000
MPH per 1000 RPM	20.5 mph	20.2 mph	25.6 mph	21.3 mph
Stopping Distances				
From 30 mph	32 ft.	37 ft.	29 ft.	33 ft.
From 60 mph	162 ft.	148 ft.	126 ft.	146 ft.
Mileage Range	12.6-15.8	11.0-15.6	12.4-20.4	12.0-18.2
SPECIFICATIONS				
Bore & Stroke				
Displacement — cu. in.	4.001x3.25 in. 327	4.04x3.31 in. 340	4.00x3.00 in. 302	3.75x3.28 in. 290
HP at RPM	325 @ 5600	275 @ 5000	230 @ 4800	225 @ 4700
Torque: lbs.-ft. @ RPM	355 @ 3600	340 @ 3200	310 @ 2800	300 @ 3200
Compression Ratio	11.0:1	10.5:1	10.0:1	10.0:1
Transmission	4-speed man.	3-speed auto.	3-speed auto.	4-speed man.
Final Drive Ratio	3.55:1	3.55:1	3.00:1	3.54:1
Carburetion	1 4-bbl	1 4-bbl	1 4-bbl	1 4-bbl
Steering Type	Semi-reversible recirc. ball & nut	Recirculating ball	Recirculating ball & nut	Recirculating ball & nut
Steering Gear Ratio	17.5:1-power	15.7:1-power	16.0:1-power	17.5:1-power
Turning Dia. — Curb-to-Curb	38 ft.	38.7 ft.	39.8 ft.	36 ft.
Wheel Turns — Lock-to-Lock	3.5	3.5	3.5	4.5
Tire Size	7.35x14	E70x14	6.95x14	7.35x14
Brake Type — Std.	Drum	Drum	Drum	Drum
Brake Type — Optional	Front Disc; power drum	Front Disc; power drum	Power front disc.	Front Disc; power drum
Fuel Capacity — Gals.	18	18	16	16
Curb Weight — Lbs.	3445	3120	3145	3193
Body/Frame Constr.	Comb body/frame	Unit	Unit	Unit
Wheelbase — Ins.	111.0	111.0	110.9	106.0
Front Track — Ins.	59.0	58.1	59.26	56.40
Rear Track — Ins.	58.9	56.3	58.96	55.27
Overall Length — Ins.	189.4	195.4	184.5	181.0
Width — Ins.	72.4	69.7	73.0	70.84
Height — Ins.	54.1	52.8	55.0	53.36

	Chevy II	Dart	Falcon	Rambler
OPTIONS & PRICES				
Mfg.'s Suggested Retail Price				
	\$2390.00 V-8 (Nova coupe)	\$3163.00 (GTS 340 V-8 coupe)	\$2541.57 V-8 (Futura coupe)	\$2350.20 (Rogue V-8 coupe)
Engine Options				
	275 hp, 327-V-8 92.70 325 hp, 327-V-8 198.05 295 hp, 350-V-8 210.65 (incl. as part of Nova SS pkg.)	300 hp, 383 V-8 35.40	200 hp, 289 V-8 105.63 230 hp, 302 V-8 171.77	225 hp, 290 V-8 45.35
Automatic Trans.				
	174.25	185.15	189.66	189.65
4-speed Trans.				
	184.35	179.15	184.02	184.25
Limited Slip Diff.				
	42.15	42.35	41.60	38.80
High-perf. Tires				
	31.35	89.65 std. w/GTS	not offered	55.45
Special Instruments				
Tachometer				
	94.80 incl. above	not offered	not offered	not offered
H.D. Suspension				
	4.75 std.	51.10	not offered	48.05
Custom Wheels				
	31.60	not offered	not offered	not offered
Front Disc Brakes				
	100.10	72.95	64.77	97.15
Power Steering				
	84.30	80.35	84.47	84.40
Adj. Steering Whl.				
	not offered	not offered	not offered	not offered
AM Radio				
	61.10	61.55	61.40	61.20
AM/FM Radio				
	not offered	not offered	181.36	not offered
Air Conditioning				
	347.60	334.60	360.30	310.80
Rear Window Defroster				
	21.10	21.30	21.27	not offered
COMMENTS				
We Like	Styling ... good power potential ... firm handling ... bucket seats.	Fantastic performance ... taut handling ... great stability ... clean styling ... roominess ... ignition key light.	Great body soundness ... good "average" driving comfort ... stopping ability ... tasteful and functional interior ... quiet ride ... good brakes.	Good performance from small engine ... 4-speed shifter ... comfortable seats ... good visibility ... trunk room ... surprising handling.
We Don't Like	Sticky 4-spd. shifter ... loud smog control ... poor rear quarter visibility ... high lift-over to trunk ... instruments on floor console ... steering wheel location.	Hard seats ... high steering wheel location ... gas spillage ... interior noise from wind and road ... minor quality infractions ... radio controls that get hot.	Lack of proper performance options ... gas spillage from left fender fill point.	Rear wheel hop without traction bars ... slow steering ... too close ratio of 1st and 2nd in 4-spd. box ... boulevard ride with H.D. suspension ... short clutch life.

What about those Low-Volume Cars...? by Bob Fendell

Does "limited production" necessarily mean "more unsafe"? The Avanti/Super, newest of the marked victims, makes a representative case-in-point to refute the charge.

The first glow of dawn was lighting the horizon when I saw the big trailer truck start to weave in front of me. I was driving a new Avanti/Super down the New Jersey Turnpike en route to the American Road Race of Champions in Daytona Beach, Fla. Both the truck and I were on the speed limit.

As a precaution I slowed a little, tapping the disc brakes of the Avanti/Super. The deceleration caused the big 2 1/2-inch dual pipes to rumble like a mildly annoyed Goliath.

Suddenly the double axle truck slammed to a panic stop, its air brakes screeching. I had no time to think; it was almost instinctive. I pushed the accelerator to the floor and steered for dear life.

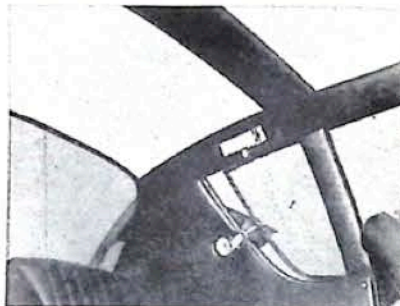
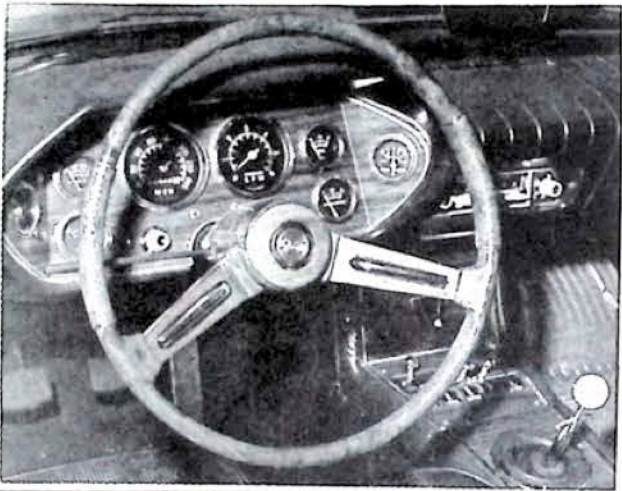
The supercharger cut in, whistling. The fiberglass car seemed to squat as the wide Pirelli radials grabbed the road, pulling it around the edge of the trailer. It seemed like I cleared by inches but it probably was at least a few feet.

As I left the truck in the distance, the brakes soon slowed me down to speed limit again. After I had calmed down, I reflected about the irony of the incident. I had been saved by a car which does not conform to the Federal Safety Standards!

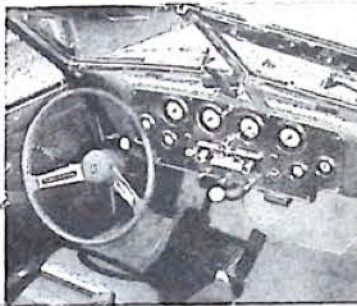
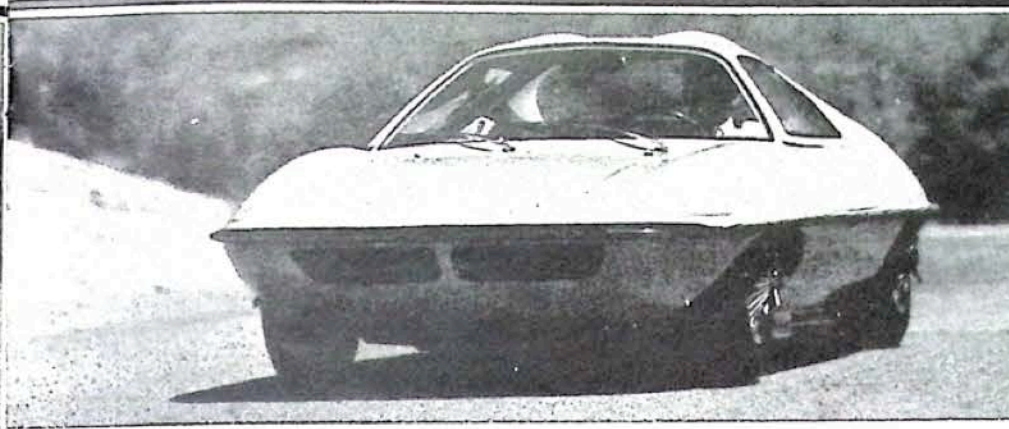
The Avanti/Super is a new supercharged version of the Avanti II built by Nathaniel Altman's Avanti Motor Corp. in South Bend, Ind. Total production of this hand assembled luxury sports-tourer is likely to be under 100.

It is an arch example of the kind of vehicle which would disappear if the Federal Safety standards were applied strictly now. Some others are Ferrari, Cobra, Excalibur SS, the reproductions of the Ford Model T by Classic of Florida and imports like the Morgan and Maserati.

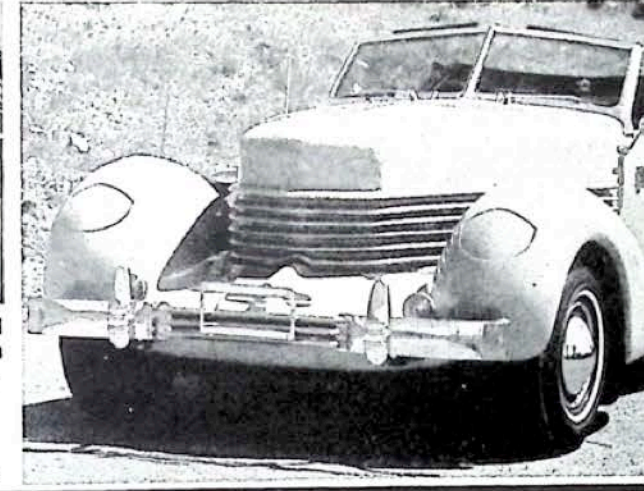
Senator Birch Bayh (Dem., Ind.) introduced, and the Senate passed, an amendment to the law giving manufacturers who sell 500 or less units annually up to an extra two years to comply with 200 Series safety regulations (like crash tests, collapsible steering wheel) at the discretion of Dr. William Haddon, federal safety administrator. This, however, does not exempt any of them from anti-pollution regulations . . . a lesser problem in most cases because the domestics use Chevrolet or Ford power plus the al-



(Top) Avanti/Super as it appeared as official car at Daytona Speedway. (Left) Recessed radio and dash. Steering wheel has no crash pad. (Above) Padded roll bar traverses plastic waffle ceiling.



(Top) The Piranha has proved so tough, that one survived an end-over-end flip at 135 mph. (Right) New Cord is a replica of original. (Above) Although Corvair components are used, dash is same as original Cord.



luxury car to his Corvair and Oldsmobile modifications.

"There is pressure in the legislature to outlaw any change from the original car," he warned. "That will put a lot more than small car makers out of business. It would outlaw speed and custom car shops."

AMT Piranha, of Phoenix, Ariz. has a unique solution to the entire safety

part of the old Studebaker plant and some of its best personnel to produce Avanti II, a revised version of the original with a Corvette powertrain and redesigned front fenders and hood.

The Avanti/Super is one evolution further with a special hood-scoop and other detail modifications. Its whole approach is different from anything the Big 4, or anyone else, offers.

bile, the Mercedes SSK. It will steer and stop better than most safety law approved vehicles."

So the question seems to come back to the merits of the particular car. Sometimes it takes a trip from New York to Florida to truly discover these merits and some deficiencies, too.

The most unique things about Avanti/Super remain the styling and the fiberglass body. Conceived originally in 1963 by Raymond Loewy, the styling has not been altered except for the changes detailed, yet the vehicle attracts admiring attention everywhere it goes. It therefore hinges on the classic. The hood scoop is a functional necessity allowing room for the Paxton blower but it turned out attractive.

The fiberglass body, however, is a better reason for preserving this particular non-conforming car. This body remains more advanced than any production car body in terms of material. Fiberglass, of course, never can rust out and—even in the thickness to get required rigidity—remains far lighter than steel.

This is not a hand layup molding job. This is a body created on huge presses by matched metal die pressure molding at Molded Fiberglass Body Company, Ashtabula, Ohio. The result is a much stronger body than the handmades and a body which could be mass-produced in any quantity at about a 15% cost premium.

That the car, which obviously has been driven hard before I took it to Florida, was completely rattlefree was due partly to body construction. Unlike a steel car, the entire underbody is one piece and the whole body is sealed together out of far fewer individual components before it is mounted on the steel X-frame chassis.

The built-in roll bar—which no American car of its size has yet—is anchored to the X-frame and padded. It acts to give good rigidity without interfering with torsional flex. Fiberglass has an excellent flex strength.

The body contributes directly to the performance by keeping the shipping weight of this 192.5-inch long car down to 3181 pounds even when equipped like a luxury sedan. That makes the 300 hp at 5000 rpm mean much more. The supercharger cut a full 2 seconds off the 0 to 100 and 1.3 seconds off the 20-70 times we got in a stock Avanti II. The A/S did a respectable 14.89-second 0 to 100 clocking, its best in three runs down the back straight at Daytona Speedway. Its worst was 15.32 when I let up momentarily on the accelerator, frightened by a dive-bombing sea gull.

The key question here, however, is not performance but safety. Actually, like the pre-regulation Citroen ID and IS, while containing many safety fac-

continued in page 74

ready approved anti-smog systems on these engines.

Nor does it exempt them from safety regulations on lights and on windshield wipers.

The Bayh amendment, unopposed by the Big 4 automakers, seemed certain to be passed quietly in the House thus giving the specialty car makers an extended lease on life. Aside from the speeches about choking off the little guy and stifling ingenuity and diversity in automobiles, however, there is a valid question whether any non-conforming car should be allowed on the highway if one accepts the premise of safety regulations. (Competition cars already are exempt from all regulations as long as they are used just on the race track). Who gets blamed if some non-conforming feature of these cars causes accident and injury to others?

It should be noted that there already are discretionary exemptions to one or

another of the safety regulations for cars classified as dual purpose vehicles, like the 4-wheel-drive Willys station wagon, for cars built on truck chassis and cars narrower than 68 inches, or weighing less than a half-ton.

And some small manufacturers, like John Fitch of Lime Rock, Conn., have held off production completely, feeling that the Bayh amendment itself should be amended.

"It won't be any help," the racing great declared. "A small manufacturer has to project production over five to 10 years and here we have not only old regulations but many new ones which were to be commented upon by Jan. 1, 1968.

"What it amounts to is sudden death after two years. The real problem is driver screening and, therefore, I would hope Congress would question the whole safety act," he added. Fitch even is worried that the safety law will reach beyond his proposed Phoenix sports

question: it sells its car in kit form only. "We are primarily a toy company and the Piranha primarily has been a competition car but there's no reason it couldn't be brought to street use," says Stephen Whitfield, company spokesman.

"It was a marketing decision to sell the car complete to the turbocharged Corvair engine but in kit form. However, since it is a racer we don't have to consider the safety regulations and we've had no contact with the people in Washington," he added.

The original Avanti was a last gasp effort by Studebaker Corp. to pump some excitement into its car line. Unfortunately, the excitement didn't rub off and Studebaker went on to oblivion as a car maker but prosperity as a diversified corporation.

Altman, a South Bend auto dealer, liked the Avanti so much he put up his own money to keep it alive, forming Avanti Motor Corp. and taking over

On one of those forlorn stretches of highway cutting through a historic section of an old Spanish land grant area between Los Angeles and Las Vegas, you suddenly discover yourself alone on the highway in your Omega. Devoid of even a local "speedwriter" with you as the object of his affections, the timing is perfect. Dotted highway lines are drifting by rapidly, reflected beautifully in the fender mounted racing mirror as you tuck the 4-speed into 3rd gear. Rpm's climb slowly from the transition, and then WHOM!, you bury your foot in carpet and open up the Holley 4-bbl. while watching the tach head for 7-grand. Drop into 4th and hang on for a moment more before realizing legality must be regained. But wouldn't it be groovy to see if the 180 mph speedometer is accurate? No. Resist temptation, pal!

A light tap of the toe on the brake pedal sets the power-assisted spot brakes to work, but this time you're 'gonna let 'er just drift down nice and easy.

How did this happen? A nice average guy like you running a GT coupe at century mark speeds and coming up with excuses to run between Vegas and L.A. every week or so. Gee, you used to be so happy with that sedan and all, and then this. Well, read on Walter Mitty.

A lot of people made it all happen — Burt Sugarman for one. He runs Ghia of America in Beverly Hills, and also sells Excaliburs and Ghias. He's not the typical car entrepreneur and he doesn't handle typical autos either. Taking on the West Coast Distributorship for Omegas puts them within easy grasp of "sunshiners," providing you come up with the \$8500 or so required. Business has boomed for him in the last few years, and the pace is quickening.

Omegas aren't hard to spot, but there aren't many around to see as yet, so we'll give you some background. Bodies are built in Torino, Italy by Carrozzeria Intermeccanica. The steel body panels are hand hammered over a wooden buck, and then the complete unit is welded to a 4-inch square tube frame. They then go across the water to Charlotte, N.C., and into the Holman and Moody shop at the Municipal Airport. Complete Ford engine and driveline is then installed as well as some accessories. This brings about an almost total "Americanization" of the Omega, at least enough so that parts and service are very nearby.

Powertrain & Performance

Only two engines are offered, both 289-cu.-in. V-8s, and we were fortunate enough to sample both. The basic engine is a 225-hp model with a single 4-bbl. and hydraulic lifters. There are some modifications applied which may raise output by a few hp, such as low-restriction exhausts and high output ignition, but not enough to mark any significant difference. This engine comes hooked to a 4-

speed gearbox, and drives a 3.25:1 rear axle in the Ford rear end.

It performed flawlessly for us, delivering 15 miles of travel for every gallon of gas at the minimum, with a high of 19. Engine noise isn't the least bit evident, and it runs without overheating.

The 4-speed is of course synchronized in all forward gears, has a good ratio spread and is the standard transmission. Other than that, its pluses are sadly lacking. The linkage is far from good, having a too widely separated gate, and being placed too high for handy reach. Investment in a smooth linkage setup by the maker would be a very wise move and help complete the GT "feel."

Starting up the 271-hp, optional 289 V-8 engined coupe gets your blood warm enough to send you straight to the race track. The near-to-the-ear exhaust exiting point sends that sweet tone right through you. Throttle response is excellent, another bit of Holman-Moody magic we're sure, and acceleration is smoothly executed without any missing notes as you climb through the gears.

High gear action is exceptional. At any engine speed short of 2000 rpm, the engine pulls without objection. We like this in any car.

Quarter-mile times hover right around 15.0 seconds flat in the big engined car, and we picked up a best of 14.74 at 95 mph. The car isn't destined for strict dragging action, and neither is the clutch. We missed a few gears after several runs due to the clutch warming up. But on a road course where power shifts aren't as common, and you're moving up and down the gears, the standard clutch works adequately.

Handling, Steering & Stopping

Weight distribution is 50/50 front to rear with the driver in place, and this can get "Joe Average" mixed up in a vigorous cornering exercise. The tail will come about if he's not careful, and there's little warning beforehand.

Oversteer isn't there until the rear end is loose, but correction is fast through the quick working steering. Providing the driver has as much sense as it takes to play it safe, anyone can handle the Omega without fear. That's how we played it, and we're still here to tell about it.

We came away happy with the results of an afternoon of twisting around the road course at Orange County International Raceway. The car holds true in a constant radius turn without readjustment of the wheel. The Firestone 500 Super Sports tires take lots of sideplay, grip well in stops and work exceptionally well in the wet.

Stopping ability is on a par with any GT car we've had. Repeated stops bring out no fade or pedal reduction. Girling spot brakes are fitted at each wheel, and a power assist is used. The stops were all

in a straight line from whatever speed we chose and rarely did we incur any lockup.

Comfort, Convenience & Ride

If the old arthritis has been acting up lately, shy away from folding into the driver's spot in this car. Some deft work is needed to fold down and in, and miss the protruding rear fender door post at the same time. Door openings are very wide, so feet and legs make it okay. Just the overall height of 46 inches precludes non-limbered people from enjoying their egress and ingress.

The wood-grained wheel reposes just far enough away for comfortable reach, and the seats are leaned back for head clearance and restful position. Seat cushions are thickly padded, and there's sufficient frontal padding to support thighs.

Full instrumentation is fitted to the businesslike dash panel in very obvious order. Those on the nicotine kick will find the tunnel mounted ash tray a bit difficult to use since it's mounted on the floor tunnel between shifter and console.

Both passengers have good leg room, and the door armrest is positioned in excellent fashion. The 7-cubic-foot trunk gives plenty of room for a pair of 2-suiters and maybe a camera bag. More than that you'd better send on ahead or invest in a trunk rack.

There's a stiffness to the ride, not at all uncommon in well built GT cars, but harsh by comparison to the average domestic auto. We stayed aware of it for only a short time, and then forgot the matter. Rebound isn't good, and the

driver may find himself pulled tight against the seat belt after hitting a sharp dip. That in itself should be a good reason for belting in, if you can't find any other. We mentally reacted to the stiffness only on finding dips or quick bumps in our path, and enjoyed the rest of our journeys. Control is a factor more closely associated with stiffness than softness, and we're all in favor of retaining control of our cars.

Plus & Minus Features

If viewed as a regular use car, we could find much to gripe about, such as poor access to interior from curbside, low on luggage space, and so on. But the car has a particular destiny to provide driving enjoyment to anyone who "digs" cars. At this it fulfills the task well.



PERFORMANCE

Acceleration	
0-30 mph	3.0 secs.
0-45 mph	4.6 secs.
0-60 mph	6.7 secs.
0-75 mph	10.0 secs.

Passing Speeds:

40-60 mph	3.2 secs. 234 ft.
50-70 mph	4.1 secs. 360 ft.

Standing Start 1/4-mile: 95.74 mph., 14.74 secs.

Speeds In Gears:

1st	44 mph @ 6000 rpm
2nd	63 mph @ 6000 rpm
3rd	90 mph @ 6000 rpm
4th	125 mph @ 6000 rpm

MPH Per 1000 RPM: 20.8 mph

Stopping Distances

from 30 mph	30 ft.
from 60 mph	126 ft.

Mileage Range: 12-15 mpg
Average Mileage: 13.8 mpg

SPECIFICATIONS

Engine: Ohv V-8. Bore & Stroke: 4.00 x 2.87 ins.

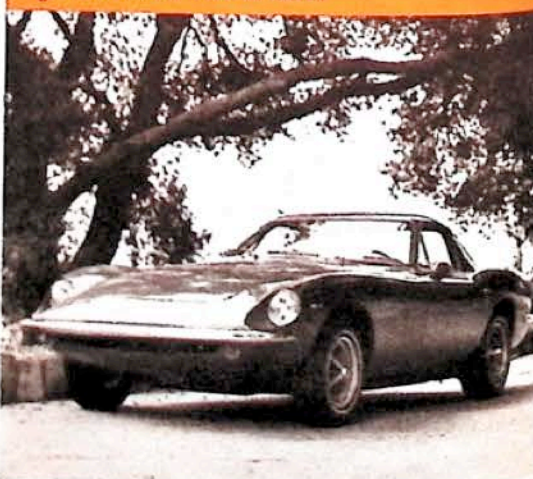
Displacement: 289 cu. ins. Horsepower: 271 @ 6000 rpm. Torque: 312 lbs.-ft. @ 3400 rpm. Compression Ratio: 10.0:1. Carburetion: Single 4-bbl. Holley. Transmission: 4-speed manual, floor mtd. shifter. Final Drive Ratio: 3.25:1. Steering: Rack & Pinion. Turns Lock-to-Lock: 3.75. Turning Diameter: 3.75 ft., curb-to-curb. Tires: 185 x 14 Radial ply, standard. Brakes: 4-wheel Girling disc, servo assisted, integral power. Suspension: Front; Independent. Unequal control arms, coil springs, anti-roll bar. Rear: Ford semi-floating rear axle housing, equipped with upper and lower radius rods. Panhard rod, coil springs. Body Frame: Single unit; body welded to ladder type 4-inch tube frame. Dimensions, Weights, Capacities: Overall length: 175.6 inches. Overall width: 175.5 ins. Overall height: 46 inches. Wheelbase: 94.5 inches. Front track: 58 inches. Rear track: 57 inches. Curb Weight: 2598 lbs. Fuel Capacity: 18 gallons.

OPTIONS & PRICES

Manufacturer's suggested retail price: \$8250. High-performance 271 hp, 289-cu.-in. V-8 engine: \$500.00. Air Conditioning: \$595. Wire wheels: \$600. Special tires: \$96.00.

8GS and four wheels

Or how to justify leaving your wife for a car.



By Steve Kelly

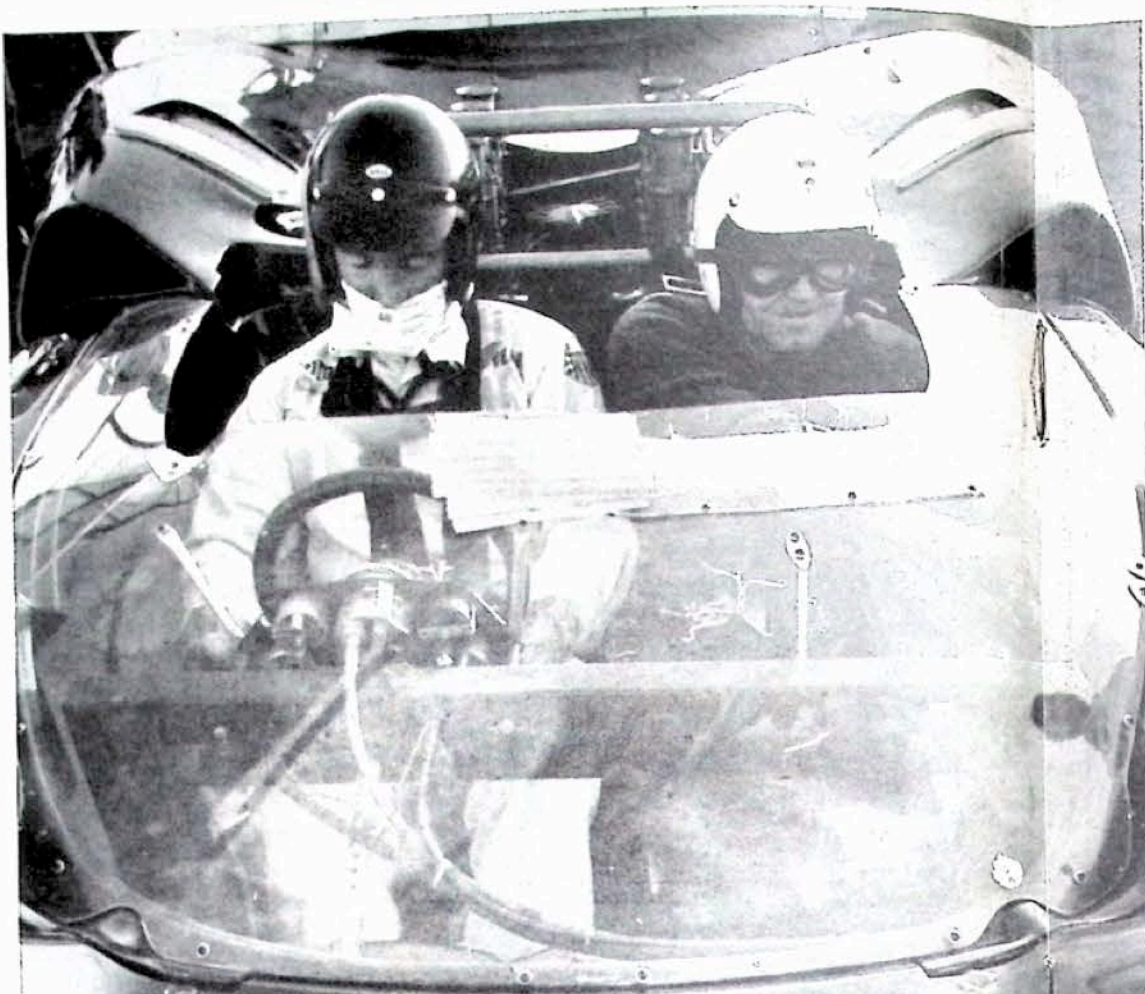
Shark-like front end seems designed to a different theme than squared-off tail, but two go well together. License plate frames cause interference with body when tilting plate down for access to gas filler. Engine compartment room is excellent, even with air-conditioning. Forward opening hood is outfitted with small shock absorbers for opening and closing assist. Optional wire wheels complete the sports car bit much better than the standard custom steel discs.

Photos: By Gerry Stiles



It's all coming back to me now, Doc, but don't let me out. This unborn calfskin, early Vienna, mother-soft couch is my womb . . . has been forever, and that's the way it's gonna stay. And no amount of transference or free association or any other of that academic windfoggery will convince me it wasn't a nightmare.

Well, it seems George and I had just turned ninety-something-or-other with a little Dart GTS at Orange County Raceway, and that was our thrill for the day, when the call came. Dan Gurney was waiting at Riverside with his Group 7 Lola . . . you know, the one that holds the track record? Damn. Why didn't he forget? After all, he had just won his fifth out of six Motor Trend 500 races there two days before under the onus of that jockstrap of auto racing — NASCAR, where men, by God, are Men — and he continued to devastate all other organized attempts at The Sport a couple of months earlier by a superlative victory in the Rex Mays 300, so couldn't he have been busy signing autographs or making commercials or something sane like that? Besides, he had already given me two hairy laps around Riverside the day before the race in his Gurney-Weslake-engined Cougar XR7-GTE-MX5-Apollo-Nike-96R or whatever — the only one in the world — which must be the only everyday-type automobile made anywhere that comes complete with a full coat of indumentum. Besides, think of the sacrifice. This was his car, not Henry the Second's, and if he broke it because of me, why . . . Well, I says to George, "Look, it's about an hour's drive, but if we play it right, maybe six or seven martinis, we can get there late, just when he's leaving, see? Then all we have to do is apologize. You know, kind of a 'Gee, that's too bad, Dan. Maybe some other time, huh?' " Well, you know George. Typical photographer-graphics-enthusiast type. No danger. Just stand in the middle of the track with a car coming at him at 185 mph, and push a button. "Gotta have some pictures," says George. Damn enthusiast. Shoulda put him in the car. "We'll fake it, George," and we headed for Riverside, 45 mph in the right lane. Surreptitiously, I took a clover-leaf for San Francisco three different times, but the sun was up and George is a pretty sharp guy. He even snapped a couple shots of my guilt-ridden, panic-stricken face, my gelid, whey-faced stare, and the freeway signs blaring the incriminating message, "San Francisco-482 miles." Damn blackmailer. May the bird of paradise do something to his Hasselblad lens. The trip was a lifetime. Thucydides was right . . . moments of agony, *in saecula saeculorum* . . . times of fear endure. Coupe de grace — Riverside's gate was



A day in the life of Dan Gurney may be lost forever from the memory of one member of our staff.

My Wild Ride with Dan Gurney

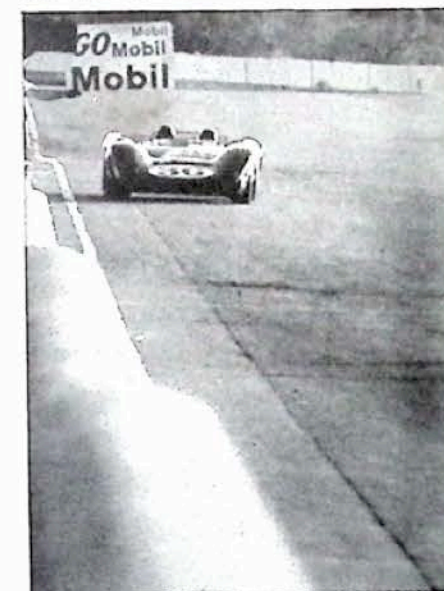
BY JULIAN G. SCHMIDT

visible, and there stood Jack The Security Guard in all his blessed omnipotent forbidding authority, and I muttered a quick prayer that his renowned sense of megalomania would, at this moment, reach its absolute zenith. "Uh . . . you won't let me take a few laps with Dan Gurney in that dangerously fast Group 7 Lola of his, will you, Jack? After all, he gets around that track faster than anyone in the world, and his car is approaching Turn Two at about 170 mph and it does 185 down the back straight and I don't even have a helmet or goggles or a

handkerchief to wrap around my mouth, or eyes." It worked. His reverberating "No! You're not! I won't let you!" was Brahms Lullaby, Respighi's "Pines of Rome" and every song Julie London ever sang, all rolled into one. A voice from deep in my soul, conditioned through ages of civilization and generations of Christian humility, and cowardice, claimed Jack as my eternal friend. But, Doc, I think I really started to crack when George pleaded, "We've been cleared, Jack, and we have the equipment, so it's all right." Damn interloper. There was still hope — we

were 45 minutes late. Unfortunately, so was Dan. Worst of all, he's the original Nice Guy. There's not a nicer guy in the world. And at this period in his life, he's also one of the busiest, yet he was about to see to it that, come hell — which at the moment seemed most likely — or high water, I would have a rare experience. The machine was squatting there, looking very ready to conquer more territory than Atilla the Hun, in about one millionth the time, though it was only about the same size as the average piece of Samsonite. Several months, and even more races, had passed since Dan Gurney had wrapped it around his long lean body, so he wanted a couple laps to become accustomed to its volatile, precarious performance after 500 miles in a comparatively brutish, clumsy stocker. For the first time in my life, I watched the machine circulate. I mean, I *really* watched. That was a mistake. "Nobody in the world can go around that track as fast as that man." Over and over, I repeated it to myself. Suddenly my spine turned to tapioca. Instead of the usual explosion from the Gurney-Weslake echoing off the Turn Nine wall, the engine relaxed, swerved into the pits and several pairs of sadistic arms hirseled me toward the Throbbing Thing. It was too late. Me and My Big Mouth. From now on, Materials Editor for the Northern California Furniture Upholsterers' Journal would be just fine for the remainder of my career, if fortune were suddenly to caress me. Dan Gurney has an uncanny understanding for the novice's inexperience and lack of knowledge concerning the performance of such a machine, and, even as perhaps The World's Supreme Driver, his respect of the ultimate vehicle is of the very highest. In fact, even with him, it's awe. Damn. Just my luck. No, he couldn't leave my ignorance well-alone as bliss. Instead, says he, "These cars are so fantastically potent. Especially compared to stock cars." Thanks, Dan. I was there Sunday, and I saw how fast those stock cars went. "And this engine is twice as responsive as the 4-cammer. You must remember that it's been a long time since I've driven this thing, so it will take a lot of time to get some really good laps in. It's such a responsive engine that just a little too much loss of traction and a little too indelicate a toe, and you will have 2000 rpm too much before you even know it. Also, the track is quite dusty right now and it's slipping and sliding badly in some of the turns, and the front end is losing adhesion occasionally, so there are times when I can't tell exactly where it's going to go. If you *really* want a few laps, you can have them. *I wouldn't do it myself, but if you really want to*" . . . !!! Well,

Doc, I don't remember too much about the next few seconds, except that someone yelled, "Shut him up, we can't hear the engine," and they had to install two more sets of seat belts for my arms and legs, and you'll also notice, Doc, that they collected eight inches of blue paint from under my fingernails. The starter ground painfully . . . and ground . . . and ground. Wouldn't it start? A faint smile graced my lips, then fear, as a bellowing shriek ripped my brain. Dan slipped the clutch gently and I glanced at the tach. 2000 rpm. Great. He's going to take it easy the first lap, inure me gradually. But my body felt the engine scream, the tach was no longer at 2000, my helmet was pressed into the roll bar crossbrace, and I weighed at least 4000 pounds. It was for real . . . throw me in and let me swim. I tried to breathe, but my lungs were flattened against the seatback. I tried to think, but it was impossible to relate to reality. I was only aware of more motion and noise and sensation than I ever thought possible. I convinced myself to adapt quickly and tried to recall the previous ride in Dan's Cougar, in which he narrated his negotiation of the course. But, even though the Cougar had been near the limit, he was just too smooth. There was no



PHOTOS BY GEORGE POON

comparison. We had started from the pits, which means that the first turn we hit was the one normally referred to as Turn Two, a right hander. According to Dan, "you slow yourself easily so you don't knock yourself out of line," since in this car, at speed, you are traveling at about 170 mph when approaching it. His foot stayed down and the Lola jerked violently to the right. Momentum carried us directly toward the tire markers on the right. They had to be under the car now, ripping it apart and flinging us helplessly toward Hawaii, but I couldn't

hear nor feel them. How did he do it? My harnessing tore into the left side of my body, and my grip on the door was eternal. Disneyland's Matterhorn sleds are on rails, but they don't hold like this thing. We must have been resisting two Gs laterally. Another 100 mph would make no difference. We would go before the car did. Since The Beginning, Man has been trying to locate the laws of physics. Well, baby, here they are. Each one of them is controlled by His High Emperium of Gravity sitting right here beside me. He can turn 'em on or off at will. " . . . As you leave Turn Two you are at the far outside corner, yet just about the time it's all over, you must turn left and begin the esses" — Three, Four and Five, finishing with a tight right-hand Six, which, in turn, never stops for 180 degrees. Wham! We jerked left, and again the tire markers, this time headed right under me, but still I don't feel anything. Then right, left, into a slight dip and right again, up a grade. Somehow I sensed Dan Gurney was a busy man, doing a thousand things with the gearbox and pedals. But I would wait to think about that. His right foot did something and I swore we hit a wall. There must be no other way short of that in which you decelerate quicker. When the brakes were applied it was such a blow that I was sure my head had been removed by the cowl. The harnessing stopped my abdomen. I can't say the same about the rest of my body. Another left, right, and the straight was before us. The scream grew louder, and in a split second, it seemed, it was over as we dived into Turn Nine. They claim we reached 185 mph. I couldn't tell. At that speed it's merely on-the-job training in the Fitzgerald Contraction. Unreal, man. Absolutely unreal. I couldn't believe the violence of it all. Dan Gurney is the smoothest there is — in a stock car he can win the race using 4th gear through the esses — yet speeds in the Lola are so intense that any deviation from a straight line and/or constant velocity has a severe impact on the human body. In turns your body is strained through the harnessing like boiled potatoes through a sieve. Braking is like being hit by David Deacon Jones. Acceleration is the sustained equivalent in the other direction. Wham! You accelerate. Wham! You turn. Wham! You stop. Dan was on it — really on it — through Turn Nine and it had to be impossible for the tires to continue their grip. There was more centrifugal force than a Beckman centrifuge, and yet we had nothing to tie us to an axis. Only the pliant, fleshy epithelium of Goodyear Sports Car Specials. Approaching us was a wall — that same formidable, lethal wall on

continued on page 90

Motor Trend 500: IT'S GURNEY AGAIN!

Dan and the Wood Brothers put it together to make it No. 5.

By Bill Sanders

Dan Gurney of Costa Mesa, Calif. and the Wood Brothers of Stewart, Va., are old business partners, even though they live several thousand miles apart. So, on a warm, sunny day in January they decided to hold a reunion at Riverside, Calif. Every reunion should have a reason for being, and their reason just happened to be the sixth annual MOTOR TREND-Riverside 500. Gurney-Wood Brothers-Riverside. Vegas odds makers wouldn't even give you the time of day on that combina-

tion. And, as every die-hard Dan Gurney fan could have told you, they were right. Dan won going away. He finished 36 seconds ahead of David Pearson, who was 2nd, and 46 seconds ahead of Parnelli Jones, last year's winner, who finished 3rd. And therein lies a tale.

Last year, Gurney, who had won all four previous MT 500s and compiled one of the most remarkable unbroken series of wins in racing, left Ford and the Wood Brothers to drive a Mercury.

Jones on the other hand, wound up with the Wood Brothers, after the car they were crewing for Cale Yarborough was wrecked in practice. The rest is history. Jones won it easily, Gurney didn't even finish.

Gurney didn't make the same mistake twice. Results of this year's MT 500 are proof positive. Driving a '68 Ford Torino, Dan went through the MT 500 record book like Haley's Comet. Setting an incendiary record average speed of 100.598 mph, he

finished the race in 4 hours, 57 minutes, 55 seconds, the first time it had ever been run under 5 hours. The old speed mark also belonged to Gurney—97.946 mph—and had stood from 1966. New records were set on nearly every lap, except those run under the yellow flag.

Before the race we asked Gurney what his strategy would be, as he had won the pole position with a fast lap time of 1:27.59, or 110.971 mph—also a new track record. "I hope to get out in front and conserve the car as much as possible. After several laps, the race becomes a series of races, and it's difficult to maintain a steady pace when you get involved with another car. When someone like Jones goes by and thumbs his nose at you there's a terrific temptation to really put your foot in it," he had said. At the time he probably didn't realize

how prophetic his statement was. Several times during the day he and Jones went sparring, dicing hard and heavy with a lead-footed determination to be in front. They often changed the lead several times in one lap until one or the other seemed to sense the futility in punishing their cars in a personal vendetta, and would back off.

Riverside exacts a heavy toll from the 4000-pound stockers. Unlike the ovals where most of the NASCAR Grand Nationals are run, the 9-turn, 2.7-mile Riverside road course requires as many as 1200 gear shifts through 1660 turns in a 500-mile race. Every driver must keep those facts in mind if he hopes to go the distance. At times, both Gurney and Jones appeared to fall prey to that "put your foot in it" temptation. Their extravagance was costly. Half way through the race, Jones experienced an elec-

trical fire and was forced to rip out his dash wiring, leaving him without a tach or instruments.

Speed was always a factor. Pearson hopped into the lead with the green flag, but was passed by Jones on the

MOTOR TREND 500 RESULTS

Pos.	Driver	Car	Laps
1	Dan Gurney	68 Ford	186
2	David Pearson	68 Ford	186
3	Parnelli Jones	68 Ford	186
4	Bobby Allison	68 Ford	185
5	Cale Yarborough	68 Ford	184
6	Al Unser	67 Chgr.	182
7	Bobby Isaac	67 Chgr.	182
8	Dave James	67 Plym.	171
9	Scotty Cain	66 Ford	167
10	Richard Petty	67 Plym.	163
11	Jim Cook	67 Olds	162
12	Henley Gray	66 Ford	160
13	Clyde Lynn	66 Ford	148
14	Clyde Prickett	67 Chvle.	140

Photos by: Lester Nehamkin/George Callaway/James Kennedy/Petersen Photo Department



1. "Very interesting. What magazine is this?"



2. No, it's not a new Yoga exercise, just Leonard Wood making some last minute corrections on Gurney's car.



3. Author (left) discussed driving strategy with Gurney prior to race.



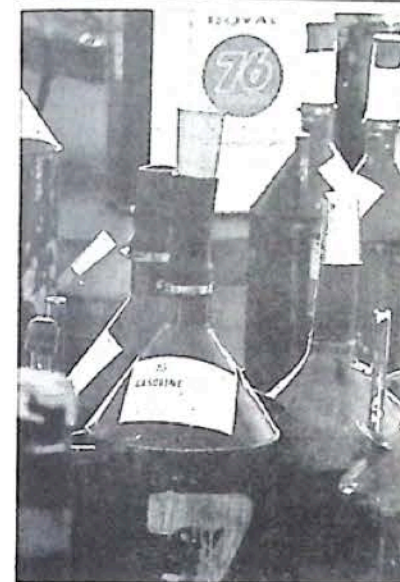
4. Jones looked apprehensive; Gurney had his winning pit crew.



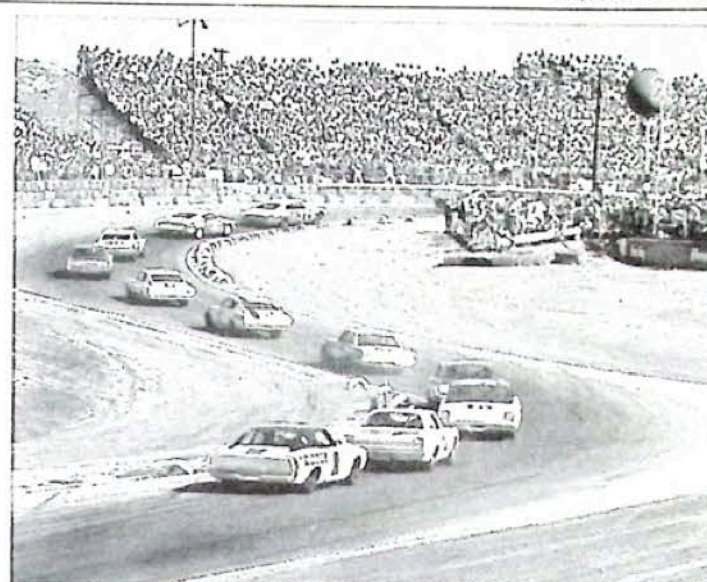
5. Pearson looked happier after he finished.



6. Pre-race pit area was a confusion of feverish activity as tense crew members waited for the green flag.



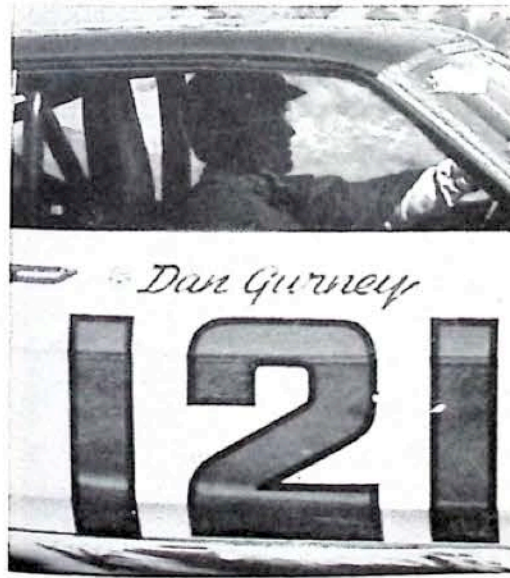
7. Impounded gas cans looked like robots ready to march.



8. With the race underway, several notable casualties occurred before the first lap was partially completed...



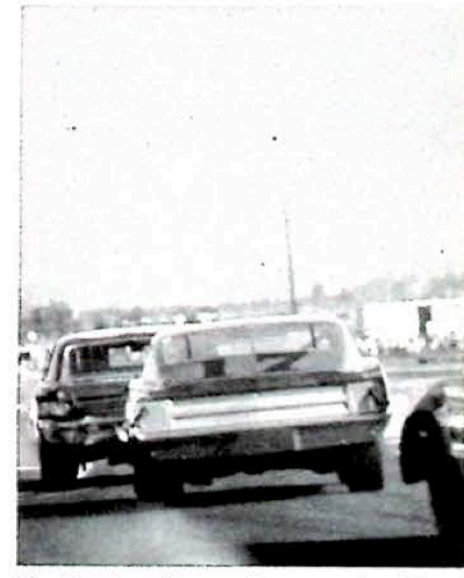
9. Among them, A.J. Foyt, who blew his engine at turn 4.



10. The man who "owns Riverside" demonstrates his skill at the wheel in the corners.



11. Third-place finisher Jones drove a hard race and kept Gurney honest most of day.



12. Number 2 man Pearson, caught in traffic going into turn 1.

GURNEY AGAIN!

1st lap. One of the favorites, A. J. Foyt, didn't even make it that far. He blew his engine on turn four of the first lap and called it "fini." Speed at the end of 10 laps, with Jones leading and Gurney in 4th spot was 105.767 mph, way over Jones' 1967 mark of 102.639 mph.

Only two yellow flags marred the day. The first came out on lap 41, when Johnny Steele went through a brick wall in turn one and totaled his car. All the leaders pitted, and when the yellow flag went in, Jones was leading. Another favorite, Mario Andretti, retired early, on lap 42, with a broken rod. The second yellow flag was waved on lap 73 for a spectacular accident in turn four, involving Jerry

Grant and Harold Hardosty. Grant's car was also totaled in that contact. Green was waving at the start/finish on lap 80 and on the next round, a tremendous dice developed for the lead between Pearson, Gurney and Jones. All three were running within a second of each other. Both Jones and Gurney passed Pearson and continued their fender bending duel for 10 more "burn 'em up" laps. Pearson and Richard Petty, all-time NASCAR money winner, then began an uptight duel for 3rd spot. With alternating pit stops, 2nd place began being passed back and forth between Jones, Pearson and Petty. And so it went, on through the afternoon.

On lap 138, with 47 left to go, Gurney made what was supposed to be his last scheduled pit stop. He had stretched his lead to 1-minute 30-seconds, over Pearson. That stop, for

two new tires and fuel, took only 19 seconds, one of the fastest tire and fuel stops of the day, and a classic example of why the Wood Brothers are revered with such great approbation and must be given considerable credit for the win. Despite his stop, Gurney still had a 50-second lead when he returned to the track.

Seven laps later, and still in the lead, Gurney rounded turn nine with smoke pouring from the left rear tire of his car. He headed for the pits. Debris on the track at the start of the high-speed back straight had sliced up the tire. By the time he reached the pits the tire was in shreds, and was so hot the Wood Brothers crew had trouble getting it off. It amounted to 1-minute, 25-seconds worth of trouble. In what must have seemed like an eternity to Gurney, the crew worked frantically with the tire. All he could do was sit

and watch first Jones and then Pearson pass him. When he got back onto the track he was in 3rd place. Once again the man who "owns Riverside" began making up time clipping seconds off every lap. Finally, by lap 154, both Jones and Pearson had pitted and Gurney was out front again. But, Gurney was to know the pangs of one more pit pause before it was all over. On lap 158 he was called in for fuel, a 9-second stop. Out on the track again, there was only a 1-second difference between Jones, who had taken the lead again, and Gurney. On the 160th lap Gurney passed Jones in turn nine and that was it.

With 15 laps left, Petty, who was still in the running, spun out at turn six, putting a hole in his pan, which eliminated him for good.

Parnelli didn't fare much better. With the \$9550 2nd-place prize money sewn

up, his crew beckoned. Only 4 laps to go and they called him in for fuel. He was only in 8 seconds, but that was all Pearson needed, and he slipped into 2nd spot. That was the way it ended. Gurney won \$21,250 in prize money out of a total purse of \$86,000. In winning five of the six MT 500s, Gurney has earned more than \$87,000 take home pay, for driving time of a little over 25 hours.

After the race Gurney was asked what had been his key to winning. "Beating Parnelli for one thing," was his answer. Then, he said, he had to figure out how tough his car was and how fast he could drive it and still keep it together. He must have found out. During practice, before the race, he used four transmissions one day, two engines the next, and several clutches. During qualifying, Jones, who rides on Firestones and is a Firestone distribu-

tor, accused Gurney of setting his new lap qualifying record on "gumball" tires, tires that would give faster times but wouldn't last more than several laps during a race. Gurney, who rides on Goodyear products, and all the Goodyear men, denied the accusation vehemently before and after the race. Jones too stood by his guns. So the feud will likely continue on that score until someone switches to Dunlop or Sempirite, but don't hold your breath.

Thirteen cars were still running at the end. A '67 Chevelle driven by Clyde Prickett was the only Chevrolet to finish. His finish took real guts. Early in the race a rear end change cost him a dozen laps. A spin-out cost him a couple more. No chance to win, he could have quit. But, out of 44 cars, he was still rolling and took the checkered flag along with Gurney, Pearson and Jones. /MT



13. Not the Hollywood Freeway at 5 pm, but turn 4 on the 43rd lap when Jerry Grant, car 14, blew his engine and Harold Hardosty, car 18, who spun, added to the wreckage.



14. Only Chevy running at finish was Prickett's Chevelle.



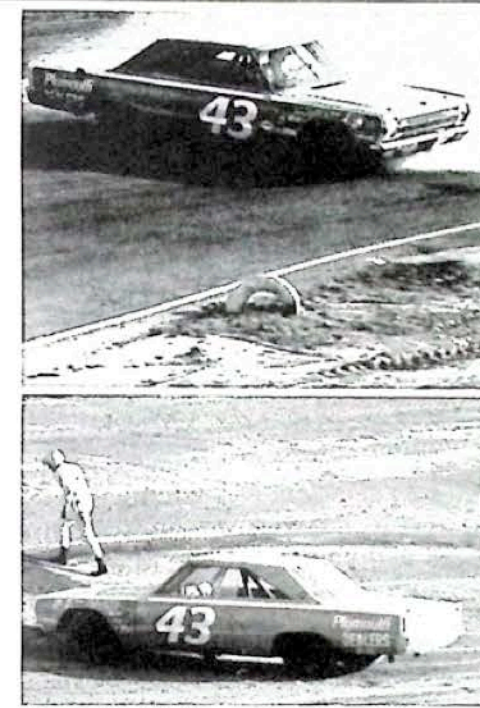
15. Several drivers running Firestone tires complained of interference at turn 7, but Goodyear felt their charge was just a "bag of hot air."



16. Jones, Gurney were dicing hard and heavy on more than one occasion.



17. On lap 145, tense crowd watched smoking Gurney pit with shredded tire. Unexpected stop took 1 minute, 25 seconds, moved Dan back to 3rd spot.



18. Petty hit the wall at turn 6 in spectacular spin; then retired, dejected.

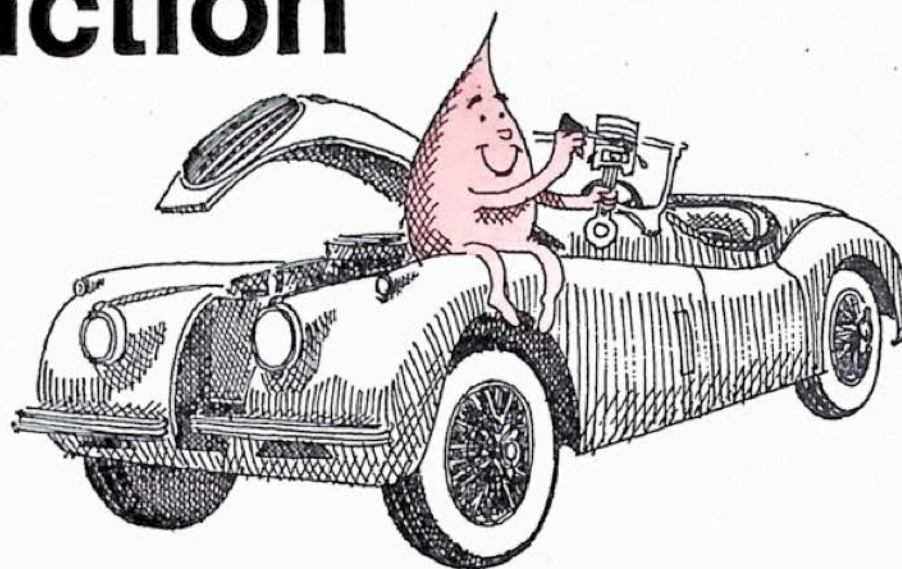


19. Jones pitted for fuel with 4 laps to go, lost 2nd place to Pearson.



20. Gurney wins! Happy Wood Brothers ride to victory lane and Dan samples champagne spray as Bob Petersen, race queen watch.

The Lubricating Function



Let's begin with a few basics. The engine of an automobile, whether intended for pleasure, sport or "just transportation," is a brilliantly conceived piece of machinery. Its operation involves several hundred precision parts, most of them moving through their cycles thousands of times a minute, performing under extremely adverse conditions created by *heat, chemicals, friction and inertia*. Two factors are essential to an engine's operation. The first is a supply of fuel and air. The other is an *adequate and properly directed supply of lubricant*. If operation is intended to last for anything over one minute, both factors are of equal importance. The reason is this: just as fuel is required to make an engine run, proper lubrication is imperative to keep it running.

Lubricating oil performs four basic functions in an internal combustion engine: it lubricates, it seals, it cools and it cleans.

Totally, these functions add up to what is commonly called protection. If an engine oil fails to perform all of these functions adequately the engine will eventually fail for lack of proper protection. Each of the four is important, but let's examine just the lubricating function of motor oil for

the moment. (The other functions will be discussed in detail later in this series.)

No matter how glossy they appear to the naked eye or smooth to the touch, metal surfaces are rough. Under magnification, even the most finely machined finishes reveal jagged peaks. Allowed to contact each other, such metal surfaces on the moving parts of an engine would wear away in a rapid and ruinous fashion. In other words, an engine must be lubricated by maintaining a continuous film of oil of sufficient thickness to keep moving parts separated. It is difficult to believe that this oil film, in many critical areas, is frequently no more than 40 millionths (0.000040") of an inch in thickness. This is about 1/100th the diameter of a human hair. The life of your engine hangs on this film. The thickness of the film is dependent upon the oil's SAE grade and its ability to resist thinning at high operating temperatures.

It is a well-known fact that oils thin (become less viscous) as temperature increases. It is not as well known that all oils do not thin to the same degree under identical conditions. Those which thin least with increasing temperature are known as high Viscosity Index oils. The base oil, the building block from which the finished lubricant is produced, must possess this naturally good viscosity-temperature relationship. Under severe, high temperature operating conditions, this Native

High Viscosity Index (VI) is the only thing that can be depended upon to provide the life-giving lubricating film that is required. Pennsylvania crude oils naturally produce base stocks with these desirable characteristics. Base stocks from other crude sources with a comparable VI obtained artificially will not produce comparable performance because the artificial Viscosity Index is lost with use. The oil film will thin out at high temperature. As the oil film thins out, engine wear increases. If it thins too much catastrophic wear and failure occurs. We believe it makes good sense to assure minimum wear and longer engine life through the use of a lubricant which provides a tough, temperature-resistant oil film of adequate thickness to protect vital parts.

Other foes of the lubricating function, such as contamination and foaming, are effectively held in check by additives. But despite such chemical reinforcements, an engine oil must gain its basic ability to lubricate from the native characteristics of the crude oil from which it is made. Under the hard use an engine oil encounters in any kind of driving, proper lubrication is best maintained by those oils which gain their superiority from a properly refined, rich crude oil. In the final analysis, the reputation of the refiner is your best guide to an oil's ability to lubricate. For this reason, an engine oil refined from premium graded Pennsylvania crude oil assures the most complete and enduring protection.

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By Julian G. Schmidt

The supercar: second generation

Like its predecessor, it does not appear to be anything different. Unlike its predecessor, it is.

If you are hit with a few pangs of guilt when you read this, you deserve them. The basic package has been around all year, right there on your order blank, but if you blew an extra grand just for frosting, don't blame us. Blame Madison Avenue. They were the ones that captured so much of your volition that now you don't buy unless you have their assurance that the desired product is, in fact, a product.

Nevertheless, the Tempest Bobcat is

here, and to restore your credulity in Mad. Ave., they are now advertising it as such. It deserves it, because as a new entity—a kind of Son of GTO—its Daddy is now going to have to brush up on the fundamentals of discipline in order to whip Junior properly.

Created and nursed by Milt Schornack and Dave Warren, performance experts in the swinging service department of Royal Pontiac, Royal Oaks, Mich., the Bobcat has emerged as the

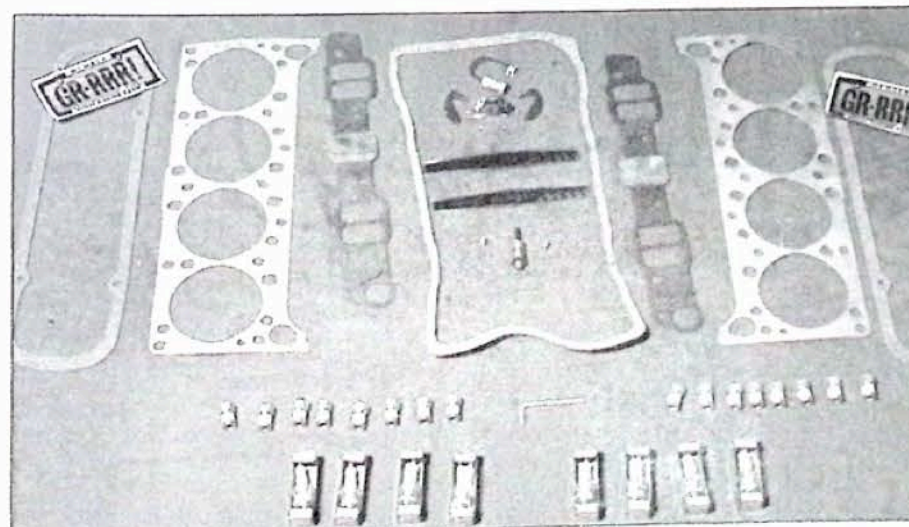
pride of Pontiac's dragstrip, much to the dismay of established supercars.

The first stage of Bobcat-ing is straight from the paper—350 HO, 4-bbl. V-8, 4-speed or heavy-duty 3-speed floor shift, Safe-T-Track rear axle with 3.91:1 ratio, hood-mounted tach, wood-rimmed steering wheel, heavy-duty clutch, front disc brakes, ride and handling package with Super-Lift rear shocks, and G70 x 14 wide oval tires. With this combination you have a potent street racer that lists, as is, for approximately \$200 less than its famed and fast adversary, Plymouth's Road Runner.

When MOTOR TREND drove this car in Detroit last winter, the Bobcat's function and purpose was clear; namely, to set a more honest standard for cars that are passed off as performance machines. Either they fulfill that promise in totality, or they renege their position and join the sedans as nonentities. That's the way it should have been all along.

The first, and only the first, GTO was a bona-fide supercar, and there haven't been any unadulterated ones since, with the dubious exception of the Road Runner, so the Tempest Bobcat should bring some self-respect back to the class.

Being appreciably lighter than the GTO, the Tempest handles better, and typical understeer can be easily neutralized by the throttle. Much of this



It's an honest car that uses more than racing stripes to make it fast; i.e., thinned heads and gaskets, heavy-duty points, adjustable lock nuts, new plugs, etc.

He won the first seven races he entered last year. Who is he?



If the face isn't familiar, his record sure is. It's Gus Hutchison, the driver who made a shambles of SCAA Grand Prix events last year. Of all racing entrants in the country, Gus probably had the best record. He has something else, too:

Quaker State Motor Oil. The motor oil with the extra quality needed to win the big ones. It's 100% Pure Pennsylvania Grade Crude Oil, the world's choicest. Next time you get out to the track, keep your eye on Gus. And the brand of oil he uses—Quaker State.

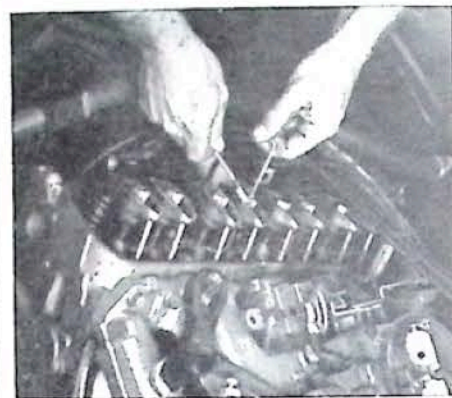
Quaker State your car to keep it running young.



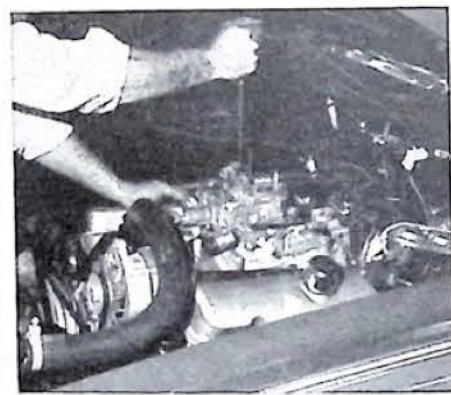
SECOND GENERATION continued

fine quality can be attributed to the 3.91 rear end, which holds engine speeds high under all conditions.

For once, the stupidity of legislators will find little argument from enthusiasts' ranks — as long as they own a Tempest Bobcat. Speed limits of any



For maximum revs and good reliability, rocker arms are adjusted and locked down, and another timing check is made.



Accelerator pump on quad-jet carb is recalibrated, secondaries are checked, and primaries are jetted up to 0.003.

velocity above 75 or 80 mph will have the engine of this car and its high rear axle ratio operating at such awesome rpm, that even a dedicated pop percussionist will find the noise and activity uncomfortable.

True Bobcat-ing — an additional \$200 if done in the shop, or \$65 in kit form — doesn't actually occur until Royal brings out the blueprints, but when it's completed, you have a hand-blessed, super-tuned car that will make a stock GTO feel like Hubert Humphrey at a Hell's Angels pot party.

First, each Bobcat customer is engaged in individual consultation by Schornack or Warren, to determine to what limits they wish to go in engine modifications.

Then, the nitty gritty: heads are pulled, thinned out 61 c.c.s; a new gasket, thinner by 0.0020, replaces the old one, and heat risers are blocked.



For tailoring to owner's preferences, distributor is recurved on a Sun machine and heavy-duty Mallory points are used.

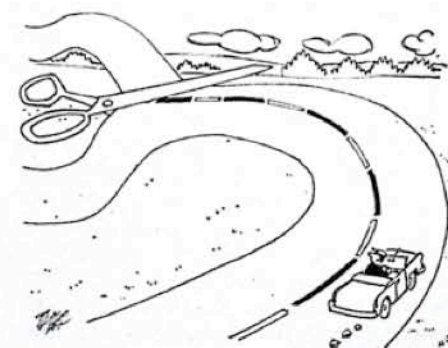
Next, the carburetor is attacked. The accelerator pump is recalibrated and adjusted, secondary air jets are checked to make sure they open properly, and the primaries are jetted 0.002 to 0.003.

Vacuum retard and advance lines of the distributor are then plugged, and a curve is plotted on a Sun machine to obtain optimum results. Once the type of fuel to be used is determined the curve is plotted to come in fairly early, usually beginning at 1000 and finishing at 2200. Advance is limited to 10 degrees. Heavy-duty Mallory points are then installed, which allow revving to as high as 6500 without point bounce.

Adjustable lock nuts are then installed on rocker arms to prevent valve float, and the dwell on points is adjusted at 30 degrees.

Once the car is running, all rocker arms are adjusted, locked down and timing is rechecked.

Repackaged and running, it's like a Packer halfback with his hernia repaired... you've never seen such enthusiasm. The car is happy to rev well past 6000, even though 5700 is optimum for all performance ranges. However, with proper training and respect of your possession, chances are you will have a duplicate, yet in some ways unique, machine that will perform as well as ol' Tempest Bobcat Marque I — which is to say a quarter-mile in 14.3 seconds at 99.78 mph, with street tires... 13.70 seconds with slicks. Finally, you can spend some money, and, once having done so, sleep well. /MT



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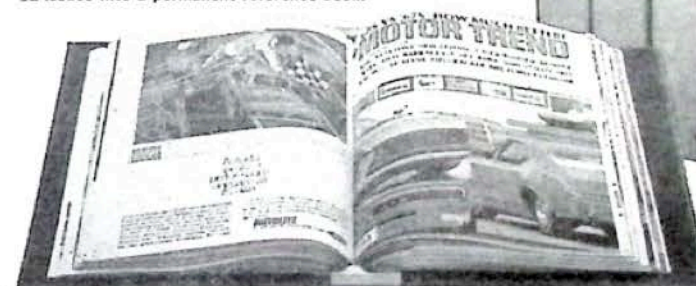
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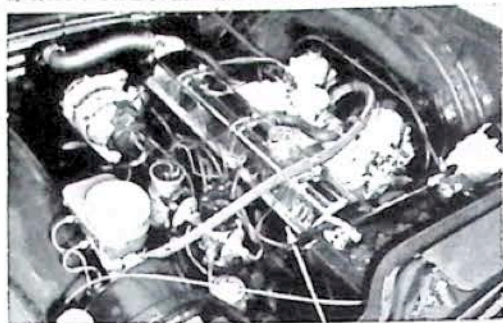
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Triumph 250

SIX CYLINDERS FOR '68



By Bill Sanders



You have to be a hard-nosed, dyed-in-British-wool, Triumph fan to be turned on by the 250, a good idea that turned out to be a rehash of the TR-4A. Dash layout is good, but interior room is lacking.

Photos: PAT BROLLIER

Scene: The research and development laboratory at Standard-Triumph Motor Company, overlooking the rolling green hills of the English countryside.

Chief: Look 'ere, mates, what can we do to the TR-4A in '68 to 'andle our competition in America?

Tom: I've got it, 'arry. Those Yanks love power and speed. Let's put in six cylinders and fuel injection.

Chief: That's it, Tom, boy! You've got it. By George, I think you've got it. Scene: The U.S. Customs Office, new Division of Automobile Safety and Smog Control.

Customs Supervisor: Sorry, that fuel injection will have to go. It causes just too much smog. You sports car types only think about performance, you never want to conform. We can't allow that.

Triumph Chief: Blimey. Anyway, we tried (sigh). Well, back to the Stromberg side drafts, mates. (Exit)

Powertrain & Performance

Although they couldn't get their fuel injection into this country, the Triumph engineers have kept their 6-cylinder engine, which displaces 2498cc (152 cubic inches). The new size powerplant puts the Triumph 250 right up there around the 3-liter category with many of its contemporaries. However, performance has suffered in the transition from fuel injection to carburetion. When you're only working with 104 horses, though, you can't expect a supercar. Acceleration is good in the low ends, in low gear from 0 to 30. It begins to fall off from there, and starts to get mighty slow by 3rd and 4th. The

new engine runs smoothly and efficiently and doesn't give any indications that it might turn on those "new engine" bugs that can occur with an unproven engine.

As with most European sports cars, only one engine is available, with no options offered for powerplant variations. With the demise of the fuel injection system in this country, Triumph has reverted to using two Stromberg 175 side-draft carburetors. A large, seemingly well designed intake manifold has been fitted with the carburetors.

The customary 4-on-the-floor gearbox is positioned in a convenient location for throwing fast, easily executed shifts. Triumph's new shifting pattern eliminates the lift-up lever for reverse. Reverse is located all the way right and down, and is as easy to shift into as the other gears. All forward slots are synchromesh. Standard rear axle ratio is 3.7:1. Triumph still uses the reliable old Laycock overdrive. Using overdrive is a relatively simple function, compared to some cars carrying this useful appendage. Overdrive lever is located on the left side of the steering column and can be activated simply by using one finger, without necessitating removing a hand from the wheel. A reduction of about 500 rpm in engine speed is gained by using overdrive, cutting fuel consumption and engine wear on long, steady driving trips.

Handling, Steering & Stopping

Going through the corners is what it's all about with sports cars. The 250 makes a stab at it, although the han-

dling and riding characteristics seem to have regressed to the days of yore when steel kidneys and iron constitutions were mandatory to face the *de rigueur* of covered wagon suspensions with a smile. Triumph is touting their 4-wheel independent suspension again in '68. Rear suspension features semi trailing arms. The same hang-ups that were evident on the TR-4A are still there. Springing is excessively hard, and, when the car encounters bumpy conditions, even tar strip dividers, driver and passenger are lifted bodily from their seats and returned most unceremoniously, repeatedly. The 4-wheel suspension is supposed to keep wheels on the ground even on the bumpiest of roads, but it didn't seem to work that way. Rear axle shafts are jointed and are not supposed to transmit shock to the other wheel, or change camber excessively, when hitting a bump. Rear suspension is also supposed to deliver better traction and higher cornering power, which, we must admit, does seem to be the case in some instances. But, the hard springing and resultant bouncing ride interferes with handling and makes good control difficult. On a smooth strip though, the 250 hugs the road tightly, which must be attributed to the suspension. However, an unusual amount of sway was noticed, both in the car itself and in the occupants, a tendency which was difficult to control, especially in the latter. In all fairness, we must note here that our test car had been used, prior to our test, for speed tests at Daytona Beach, Fla., and was fitted with an extra hard suspension

for that reason. However, the hard ride and bouncing seemed to be merely a magnification of the normal suspension we had faced in the TR-4A, which had the same ride characteristics.

With the rolling, bouncing and swaying, steering sometimes became a problem in our test car. But, overall, steering itself was generally quick and responsive without giving any feelings of insecurity that can develop with some sports cars when putting them through their paces in the corners. The 250 incorporates rack-and-pinion steering with 3 1/4 turns from lock-to-lock, and a turning circle of 33 feet. An energy-absorbing steering control system is supposed to alleviate the problems of road shocks being transmitted to the steering wheel, a system that seems to be only partially effective. Our test car had an unusual amount of "shimmy" in the front end that made itself extremely noticeable in the steering wheel. The "shimmy" was encountered between 40 and 60 mph. It did drop off from there, but never completely disappeared. At times the "shimmy" was so violent it was difficult to hold the wheel. Our non-shock-resistant wrist watch suffered mightily during the 250 test.

Once you get it going, it's a shame to waste all that momentum, but, occasionally a situation will arise when the brake pedal must take a little abuse. Vacuum, servo-assisted 10.7-inch front discs and 9-inch drum rear brakes provide the stopping power. Stopping distances are good, 27 feet from 30 mph, but nothing to really brag about with a 2277-pound car. A useful '68 feature is the brake warning light on the dash that is activated when any brake failure occurs. Master cylinder is translucent for quick checks on fluid level. Stopping is positive with no fade encountered after numerous stops. Next Triumph step in this area should be 4-wheel discs.

Comfort, Convenience & Ride

When you stop bouncing, comfort isn't bad. Bucket seats are well contoured and actually conform comfortably to the anatomy of the lower posterior regions. Ventilated seat facings allow the vinyl covers to breathe, adding to cool driving comfort.

Limited arm movement was encountered when turning or shifting, and when you get two obese 6-footers side-by-side, man, forget it. Steering, under those conditions becomes a straight-arm proposition. And, throwing even plebian shifts is tough to accomplish. That's a sad situation, as shifting is one of the few outstanding features of the 250 and can really get the old spleen working if all external stimuli are properly motivating.

Two fresh air ducts are located at

each end of the dash and seemed to function at about 50% efficiency. Heater and fan worked extremely well on our test car and kept the cockpit uniformly warm. An option this year — purists don't faint — is a \$395 air conditioner.

Instrumentation is one excellent feature, and all gauges are located in an easily readable position. Both speedometer and tach are located directly behind the steering wheel for easy checking. In addition to amps, fuel, water temp, and oil pressure gauges, warning lights are dash mounted to indicate when electrical system is discharging or when oil pressure drops. Padded leather steering wheel is easy to grip and comfortable to hold. Dash-top-mounted ash tray is easy to see and find, even at night.

Outside, reflective safety striping is a special feature on the 250. By day, it looks like plain old masking tape, but at night — "voila," the 1-inch strip above the rear windows and doors glows brightly in the lights of another car. A good convenience and safety feature is the extra-large, magnetically sealed gas tank cap. If left open accidentally, it will fall closed with the first jarring motion of the car and

magnetically seal itself. Front, side mounted turn indicators seem to be encased in an excessive amount of chrome, as is the case on the TR-4A, but some may enjoy the added touch. Trunk space supposedly contains 5.6 cubic feet, but storage capacity is minimal, to say the least. Some space is also available behind the seats. Radially tires are standard on the 250 and are supposed to give better handling and a more comfortable ride. They usually do. They didn't help on the 250. Full disc wheel covers, simulating mag wheels, at all 4-corners detract from any sporting image the car may have attained. The car actually looks better bare-wheeled, without the addition of imitation covers that look just that.

Triumph engineers lost their fuel injection on the golden shores of the promised land, a fact that is still difficult to comprehend in these quarters. Couldn't their F.I. system be developed and tuned more precisely than carburetion for better burning and less emission problem? In return, it appears they slipped on an extra hard sprung suspension to give us soft Americans something to remember them by. Retribution. /MT

PERFORMANCE

Acceleration	
0-30 mph	3.6 secs.
0-45 mph	6.6 secs.
0-60 mph	11.6 secs.
0-75 mph	17.8 secs.
Passing Speeds:	
40-60 mph	5.7 secs. 417.2 ft.
50-70 mph	6.8 secs. 598.4 ft.
Standing Start 1/4-mile:	76 mph, 10.8 secs.
Speeds in Gears:	(Normal) (O.D.)
1st	36 mph @ 5000 rpm
2nd	57 mph @ 5000 rpm
3rd	86 mph @ 5000 rpm
	86 mph @ 4000 rpm
4th	90 mph @ 4000 rpm
	84 mph @ 3000 rpm
MPH per 1000 RPM:	22.5 normal, 28 O.D.
Stopping Distances:	
from 30 mph	27 ft.
from 60 mph	141 ft.
Mileage Range:	17-22.3 mpg
Average Mileage	20.6 mpg

SPECIFICATIONS

Engine: 6-cyl. in-line OHV. Bore & Stroke: 2.94 x 3.74 cu. in. Displacement: 152 cu. in. Horsepower: 104 @ 4500 rpm. Torque: 152.2 lbs.-ft. @ 3000 rpm. Compression Ratio: 8.5:1. Carburetion: 2 Stromberg 175 CDSE. Transmission: 4-speed manual, all-synchromesh forward gears. Laycock de Normanville 22% overdrive. Final Drive Ratio: 3.7:1. Steering: Rack and pinion. Turning Diameter: 33 ft., curb-to-curb. 3 1/4 turns lock-to-lock. Tires: G800 Michelin X — 15-in. radial-ply. Brakes: Hydraulic, 11 in. front disc, 9 in. rear drum, with non fly-off handbrake. Suspension: Front: Independent coil spring. Rear: Independent semi-trailing arm. Body/Frame: Channel steel pressings: Box section side members. Dimensions, Weights, Capacities: Overall length: 12 ft., 10 in. Overall width: 4 ft., 9 1/2 in. Overall height: 4 ft., 2 in. Wheelbase: 7 ft., 4 in. Front track: 4 ft., 1 in. Rear track: 4 ft. Curb weight: 2277 lbs. Fuel Capacity: 13.5 gals. Oil Capacity: 9.64 pints.

OPTIONS & PRICES

Manufacturer's suggested retail price, P.O.E. East Coast, \$3395, West Coast, \$3445. Factory installed options: Wire wheels, \$118; Overdrive, \$175; Michelin tires & Tonneau cover, \$35 each; Air conditioner, \$395.



Handling and steering are fair, on a smooth, flat surface. Ride is rough — much rolling and pitching. Luggage space is minimal.

ELECTRIC CARS: ANYTIME YOU WANT THEM?

The breakthrough to a quiet, smogless car is nearing. When it comes, your life on wheels will change. Here's how developments stand at the moment...

BY BOB FENDELL

The electric car is a memory given a chance to become reality by one word—smog. Except for specialized uses, it had lost out to fossil fuel engines because it has not been able to match them in flexibility. It still can't—if by flexibility we mean the ability to reach speeds we can not legally reach on most public roads or the ability to go distances 90% of us never attempt more than once or twice a year.

But the scientific state of the art is such that you could own and drive an electric—or electronic—car tomorrow and a car actually designed for electrochemical propulsion systems in two years. The problem of the electronic car is now becoming a problem of marketing, economic and social impact and maintenance procedures. Two of the most respected technical firms in the field are among those who have admitted this—Gulton Industries, which is collaborating with American Motors Corp. in the design of the Amitron electronic vehicle, and Yardney Electric, which is collaborating with Ford Motor Co. in electrochemical propulsion research.

The electric car concept becomes more and more difficult to ignore whether or not the U.S. auto industry really is interested in fostering it. This is because sums budgeted for electric car research and development had risen to \$18 million annually last year and are expected to rise steadily as the modern, mass-produced electric becomes even more feasible.

The early electrics were the victims of a stagnant technology, exactly the opposite of the fossil fuel engine. Research into batteries was painfully slow, short-changed because the field always has been so competitive there is little money left for research and development (R&D).

So, until very recently, making batteries was more of an art than a science and this reflected upon the electric car... low power density, control and acceleration problems. U.S. electric cars based their sales campaigns mainly on non-performance and their comfort. They disappeared completely about 1929 yet all during the 1930s there were periodic articles detailing their durability, their simplicity and their silence.

In 1947, Frenchman Henri Andre developed his silver-zinc battery. In 1953 his Dyna-Panhard, running on a

56-cell version, went 50 mph for 120 miles between charges. Later he proposed a tandem 2-seater weighing 770 pounds (352 pounds of battery) with 60 mph top speed and a 240-mile range. The idea died quietly but Andre had affiliated with Michael Yardney of New York for one of the most potent research combines in this field. The two have a British arm, Venner Accumulators, which has been a pioneer.

Meanwhile, there was a steady stream of converted cars. Only a few are cited as examples. Most used lead-acid batteries. Exide's Henney Kilowatt was a Renault; there was a proposed electric Rambler by Cleveland Vehicle Co.; Electric Storage Battery and Maust Coal and Coke never made it. On the East Coast there was the Voltra which realized the possibilities of the kinetic energy created in slowing; in the West there was the Charles Town-About from Stinson Aircraft of San Diego.

About 1959, AMC's George Romney let a contract to Sonotone Corp., Elmsford, N.Y., to develop an electric motor system which would recharge constantly during operation of the car. Sonotone, involved in nickel-cadmium battery research for military aircraft, never had the contract renewed and Romney became interested in other aspects of life—like politics.

Meanwhile, the electric conversions have continued, getting more sophisticated. Yardney Electric showed a Renault Dauphine with silver-zinc batteries; Electric Fuel Propulsion in Detroit showed a lead-acid converted Renault and last year switched to lead-cobalt. Yardney, meanwhile, has shown a scooter powered by a zinc-air battery.

The utilities also have not been quiet on an individual basis. We shall discuss West Penn Electric's Allelectric later. And General Motors has been in the electric car research business since 1956. When he was executive vice president of GM, Ed Cole told technical writers, "We are interested because energy conversion is our business." Later came Electrovairst I and II and Electrovan.

Electrovairst II, latest to be released although the competition hears there will be an Electrovairst III anytime GM deems such a vehicle useful, did 0-60 in 16 seconds and could reach 80 mph

but had a range of only about 50 miles.

However, the GM Power Development Department had solved problems of braking, speed control, smoothness and component location. Electrovairst also utilized silver-zinc power.

Ford came into the ballgame publicly with a \$4 million tie-in with Yardney last year. The approach has been to develop components and systems before attempting an electronic Falcon, but in England the company has produced a prototype in-town minicar, the Comuta.

Since Professor Andre, there has been some interest in Europe which, because electric trucks and delivery vans are in use, may have a slight lead in traction motor knowhow. Fiats have been converted in Italy; in fact one Rome firm—Moretti—is supposed to put an electric Fiat on the market about now.

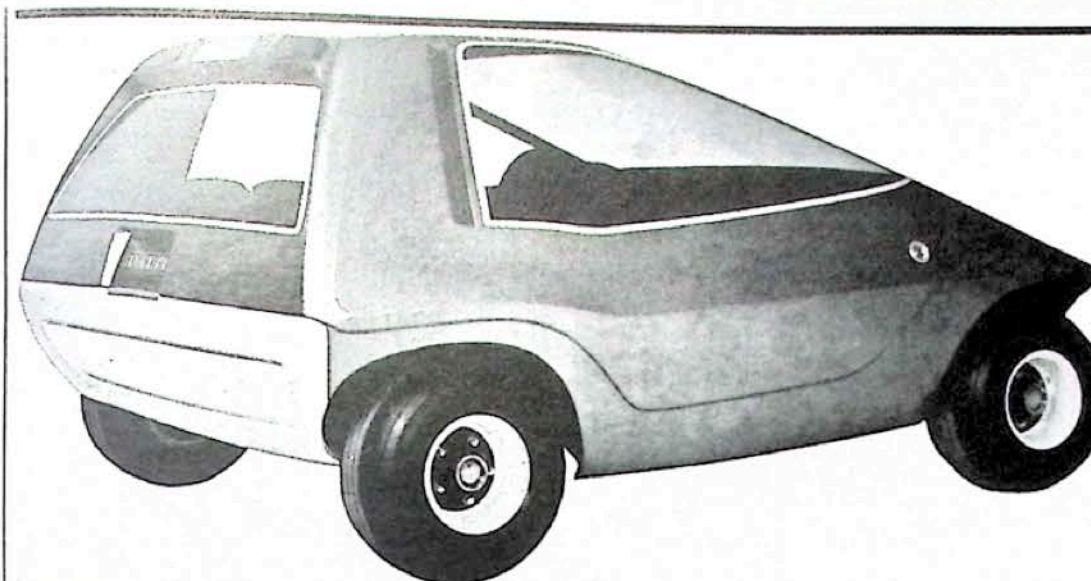
In England, Alec Issigonis is scribbling drawings of electrochemical Minis because BMH is affiliated with a company developing versions of the zinc-air battery (Crompton-Parkinson in collaboration with Leeson-Moos, Warwick, R.I.). Carter Coaster Ltd. of London is supposed to release its version of an electric—with motors at each wheel à la an early DeSoto proposal—this spring.

In the U.S., you can buy a converted Renault in Detroit or a Karmann-Ghia in L.A. Gulf General Atomic will have a zinc-air van sometime in '68 and Rowan will have a commuter car late in the year.

With all this activity, it would seem that a commercially produced electronic car is inevitable very soon. This may be true in a limited sense. However, we must define terms, set goals and evaluate markets.

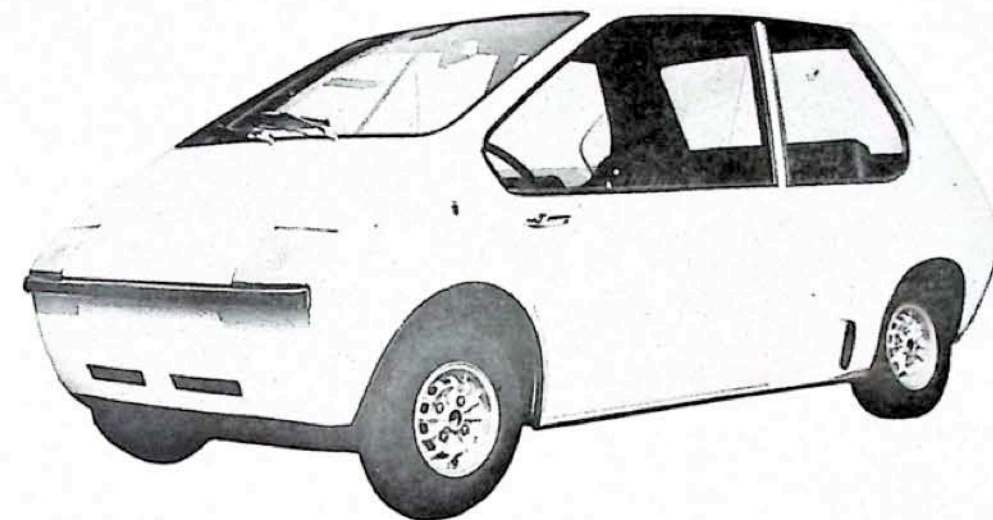
Last year the American Institute of Public Opinion (Gallup Poll) concluded that 36 million Americans are interested in buying an "electronic" car with a top speed of only 40 and a range of 150 miles. But a Ford study claimed that there is only a very limited market right now, either commercial or passenger. What the Ford study did not speculate upon—and it is obviously a key factor—is whether the kind of selling job done at present for fossil fuel cars would alter its conclusions.

What are the basic facts about any



The American Motors-Dr. Leslie K. Gulton collaboration portends the Amitron, a mini electronic car that combines two different types of battery to solve the economy/performance conflict. It would have a roll bar and rubber-like bumpers, and lots of attention is to be placed on comfort, styling and handling.

Unlike piston engines, electrics are naturals for incorporating excellent weight distribution into the design. This also allows for better space utilization in the passenger area. The Rowan is a very impressive package, and has behind it the most eminent names in modern automobile design and technology.



electric car? One horsepower equals 746 watts. If it takes 20 hp to drive our electric car at 60 mph, we need 14.92 kilowatts of power to do the job, assuming 100% efficiency. (Though electrics are far more efficient than gas buggies, 85% would be excellent.)

Choice of motor would determine the discharge rate but let's assume a voltage under that of ordinary house current. We must get the power from our electro-chemical system (our batteries) until fuel cells come along.

This is why energy output or watt-hours per pound of battery is important. The most common and most utilized automotive battery works on the interaction of lead and acid. It produces at best 12 watt-hours per pound so we would need 1200 pounds of this type battery to meet our 60 mph standard—obviously a difficult if not impossible energy source.

In the laboratory there are myriad systems more efficient. Some are ruled out for safety reasons, others because of their expense. Some of the leading

contenders, for now and for the future, work on interactions of silver and zinc, zinc-air, iron-air, lead-cobalt, lithium-chloride, nickel-zinc, silver-cadmium, sodium-sulphur.

For primary (1-shot) use, these give up to 200 watt-hours in the lab. We need secondary (rechargeable) batteries, capable of two to three years of life depending upon how they cost out per mile.

Gulton scientists think 100 watt-hours is a good initial goal; Yardney men are aiming for 75, same as the men at Gulf General Atomic and General Telephone.

The Federal Power Commission is talking about 4 million electronic cars gliding around by 1985. What kind of cars will they be? Certainly not lead-acid powered. Or at least the primary electrochemical power won't be from a lead-acid battery.

Right now, according to Dr. Craig Marks of GM, vehicles powered by silver-zinc batteries would give acceptable performance according to the standards as we have set. (If the Yard-

ney Dauphine did not have a sign announcing what it was, no one on N.Y. streets would know engineer Charlie Gold was driving anything unusual.)

However, like the fossil cars we now drive, the silver-zinc propulsion system carries certain problems with it. Silver costs \$2 an ounce and while no silver is lost in the chemical interaction, we might have a new breed of thief stealing batteries instead of the entire car.

Silver-zinc batteries, moreover, have only about 200 cycles in them—the times they can be recharged—or about three months. This will be extended to 350 cycles and more very soon, depending upon whom you ask.

Your friendly local banker may have missed a beat by not reading MOTOR TREND since no bank has come forward to espouse Dr. Michael Yardney's proposal that the \$1000 worth of silver in a small car propulsion system of this type be rented apart from purchase of the car.

Neither have Ford or GM, both with

ELECTRIC CARS *continued*

sizable installment credit subsidiaries, proposed to go into the silver renting business. That is why Yardney and others are proposing silver-zinc electric cars be introduced first as transport for federal, state and big city agencies.

Andy Leparulo, assistant veep of Yardney, stated the case for a generation of electric cars based on the silver-zinc electrochemical reaction to the U.S. Senate. You decide if it is workable.

"We could produce runs of 10,000 silver-zinc batteries for electric vehicles at a cost of \$700-\$900 per battery exclusive of the cost of silver," said Leparulo. "As indicated, this could be provided on a rental basis or (in the case of government cars) government-furnished. Taking all costs into consideration, including silver rental, detailed studies at Yardney Electric place the total cost of an electric at 8-10c per mile (this compares with 12-13c per mile for fossil cars).

"The major reason," Leparulo continued, "for the reduced cost of an electric is that it requires no gas, oil, radiator, water pump, transmission, carburetor and other expensive parts. We therefore believe the argument of cost is not valid."

Leparulo believes that the government should show its sincerity in the smog abatement business by switching many of its 330,000 vehicles to electricity. He would see the nation's utilities going the same route with an estimated 200,000 vehicles now fossil fueled, then taxis and industry—and finally you.

Clearly, however, should the government or a major industry decide the silver-zinc car is step A toward a mass-produced electric vehicular population, they can do it tomorrow. At this writing, nobody's playing pioneer.

Current big favorite to make the grade is the zinc-air battery. At least it is project "top priority" at many of the 20 or so major firms doing research. The most optimistic can't see it in a car before 1970, however.

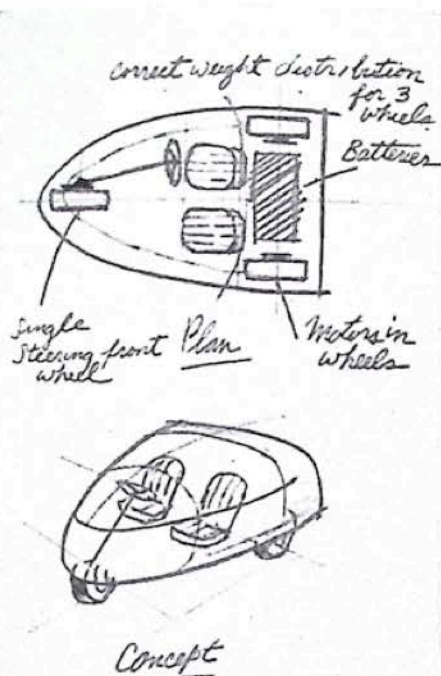
Gulf General Atomic, which Gulf Oil bought this past year from General Dynamics Corp., is cooperating with Edison Electric Institute, a trade association of utilities, in developing a zinc-air system. Andre-Yardney-Venner, with Ford, is working on still another. General Electric has its own designs and ideas and British Motor Holdings (now British Leyland Motors Corp.) is in "almost daily consultation" on electronic car designs which incorporate a zinc-air rechargeable which is coming mainly out of Lesona Moos Laboratories in Rhode Island and New York.

Air is as cheap a material as there is; zinc costs 15c a pound; the other ingredients are equally inexpensive. Zinc-air is capable of energy storage density and vehicle operating ranges five to seven times those of lead-acid. It operates over the temperature range of U.S. climate with the possible exception of Death Valley at high noon in the summer.

Edison Electric Institute has increased research funds to Gulf General Atomic each year. This year it expects the San Diego laboratories to

run a 3000-pound van via zinc-air batteries. GGA had been working on the batteries since 1960 and, according to EEI's Pat Deigle, was chosen as most likely to succeed after a world-wide search of battery systems and researchers.

The various zinc-air battery designs differ widely, and how widely is demonstrated by how they approach the problem of rechargeability. GGA's does not even look like a battery since it needs an air compressor to



British Leyland Motors Corp. has returned to the 3-wheeler for their electric offering. They consult with Lesona Moos on a zinc-air rechargeable unit.

blow the air across the zinc plates and it pumps electrolyte continuously across the plates to minimize treelike growths called dendrites and to combat zinc's tendency to change shape in replating. The electrolyte also carries the zinc oxide formed during the production of energy off to a filter outside the cell stack. This has the advantage of allowing GGA to design a lighter battery.

Yardney, which ran an electric scooter on its zinc-air design, has chosen to investigate several ways of accomplishing the same thing. It uses no air compressor since it feels louvers in the car body can direct enough air through the cells but it is both moving and wiping the zinc electrode rather than moving the electrolyte.

Dr. R. C. Osthoff of GE, who wants "to get the cost out of these batteries," reports his firm has designed zinc-air of up to 20 cells with no moving parts.

Dr. Stewart Chodosh of Lesona-Moos notes the possibility of mechanical recharge by physically replacing the zinc plates which then could be replated at leisure at the local service station. L-M has some cathodes which make its battery a sort of elementary fuel cell since they act as energy-conversion devices. These cathodes are made from a proprietary hydrophobic material which supports a conductive mesh and a layer of catalyst to improve the rate at which oxygen is sifted from the air. This fights zinc-air problems and improves the chance of ultimate rechargeability by plug-in. It is, of course, much simpler than the GGA system but also further away from vehicular application.

You also should know about the American Motors-Gulton solution, combining two different kinds of battery into a single system. Dr. Leslie K. Gulton of rechargeable flashlight and toothbrush fame sees this as a way of tapping what otherwise would be two unsuitable power sources.

When it finally runs, the "Amitron" will operate on a combination of a bipolar nickel-cadmium battery which has quick-start characteristics and a lithium cell stack which stores much more energy but has slow start. What Gulton gets, at least in theory, is an attractive vehicle propulsion system. As far as the public knows he has yet to build the system.

Other battery hybrids are possible including lead-acid/zinc-air, according to a Gulton vice president, R. C. Shair.

At this point in time, companies are first beginning to think about designing an electronic vehicle from the wheels up. The experience of West Penn Power Co. with its Allelectric is quite interesting. It represents a half-way point between the conversion and true electrochemical car. *continued*

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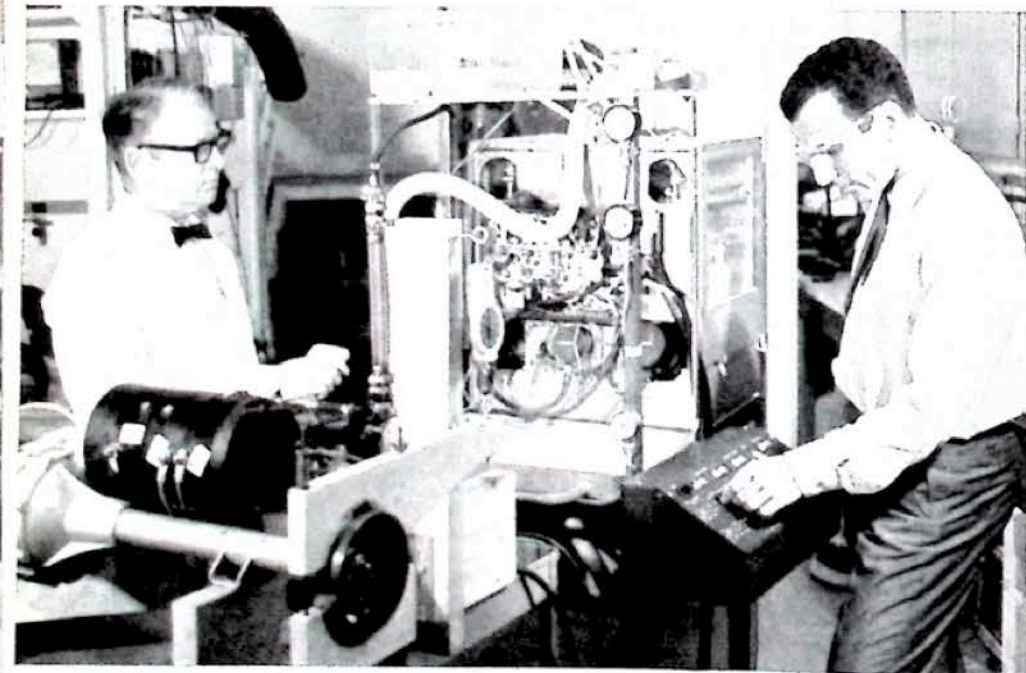
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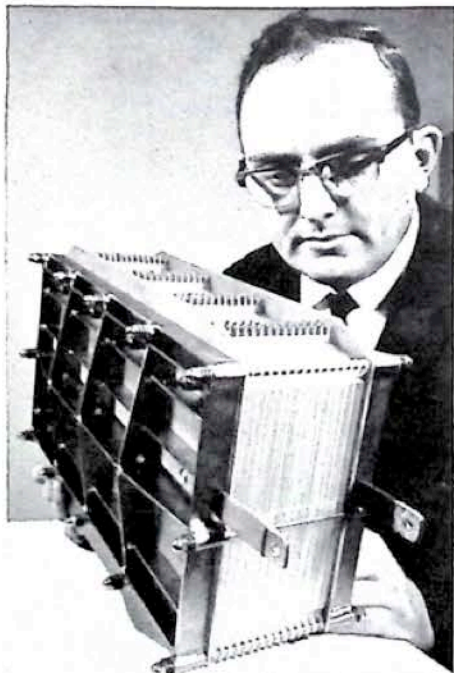
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General Atomic Division of General Dynamics experiments with a 14-kilowatt-hour capacity prototype of the zinc-air battery that operates a train for small electric-power vehicles. Engineer at left has his hand on the accelerator. Control panel is monitored at right.



Model cell stack of General Atomic's zinc-air battery is sized for an energy storage of 7 kilowatt-hours for each unit.

ELECTRIC CARS *continued*

West Penn decided the optimum powerplant was 50% of total weight of 2000 pounds or 1000 pounds of batteries (industrial lead-acid). They were well within the limit until they started to add lights, turn signals, bumpers and other necessities required to get a normal car license. They ended with a 2160-pound 2-seater with largely VW running gear. It goes 50 mph and as long as 50 miles between charges.

They think that they could now build an 1800-pound car which would be 50% power, according to W. E. Sturm, a vice president. This is with lead-acid batteries, least acceptable power source.

However, to complete their Allelectric within design limits West Penn had to do the thing that is the real key to electrics—just as GM had to do it with Electroair II and Ford with Comuta. They had to create special components.

They developed a pulsed rectifier circuit for the built-in battery charger and an unusual speed control system of chopper switches which varies in both the width of the pulse and the frequency. It gives a smoother control than stepped relays.

The Comuta control system utilizes thyristors, solid state high-frequency switches allowing 15-20% more of the battery energy to be used for motive power. A series of short duration pulses are switched into the two 5½-hp motors driving the rear wheels via an electrical choke which helps smooth the current supply to continuous voltage lower than battery maximum. For full power, the thyristors are bypassed.

The Electroair has a highly complicated system involving fabulously expensive components like silicon rectifiers in the switching unit, separate componentry to turn them on and turn them off, a logic system, etc. But then GM was striving to do something no one else is even contemplating—make a general purpose electric car.

And, besides the problem-solving knowhow gained, out of the Electroair project came the first motor designed especially for an electronic car, Delco's 100-hp alternating current induction design with a weight-to-hp rating of 1.3 pounds. Remember that because of greater efficiency, one electric motor hp is equivalent to four internal combustion motor hp, so we are in effect talking about a 130-pound motor delivering the punch of 400 horses!

GE, Westinghouse and Ford are others working or developing motors especially for electric vehicles. And the

list is endless of firms working on ways to get flexibility of speed which a car needs. Meanwhile, configurations of two and four small motors, though theoretically less efficient, require simpler controls and a benefit of possible "4-wheel-drive" traction.

There are two other concepts which seem likely to become part of every electric—what Gulton calls non-dissipative speed control and regenerative braking. The Yardney and the Mars II Renaults both had this, so does the Amitron.

Non-dissipative speed control means you don't lose any energy when you are not pressing the accelerator. If you are stopped in traffic you can sit all day, unlike a gas buggy. This helps increase range and lower operating costs.

Also increasing range is regenerative braking which in effect uses the kinetic energy of the stopping and slowing to put back a maximum of 25% of the energy in the batteries. We may have a new driving style where the electric car jockey does not maintain a steady speed but rather alternately accelerates and slows. (The Federal Safety Bureau may yet have to think about things other than the location of vehicle identification numbers.)

Most systems use an alternator with a rectifier arrangement to get the regeneration.

If we are translating our thinking from fossil cars to electrics, we know that about 30% of the weight is in the structural portion. Despite the obvious complication of complying with federal safety laws tailored to gasoline-powered vehicles (unless the electric is to get an exemption—no one really knows), theorists feel that batteries



Michael Yardney demonstrates an English mini-scooter powered by his company's economical Zynoxel zinc-air battery.

can be made a structural portion of the vehicle, saving more weight.

The Rowan may be the first "from the wheels up" electric to make the American scene. (It should be remembered that Great Britain's Electricity Council already has encouraged several tiny town cars; that is if financier Amory Haskell, who controls Rowan Controller Co., Hyattsville, Md., de Tomaso Automobili, Ghia s.p.a., and Metrodynamics Inc., can rustle up about \$3 million after prototype testing.)

This 10-foot car is made so that the lead-acid batteries are a function of the favorable weight distribution. Haskell says it would be simple to substitute more advanced batteries filling the same space and presumably getting far higher speed and range than the 44 mph and 108 miles projected from lead-acid.

However, Haskell said there are no present plans to do this. His car uses two General Electric 9-hp motors and eight 6-volt batteries which feed through a solid state control box. The drive system comes from Metrodynamics.

The motors drive the rear wheels through a toothed fiberglass belt akin to that on the Pontiac ohc. They also act as brakes on the rear—the front has disc brakes. Radial tire size is 145 x 10.

The car is five feet wide, seats five adults. The chassis is formed by aluminum sheets with inside stiffening elements. Designed by de Tomaso, it gives extreme rigidity with minimal weight and supports the steel Ghia body, the batteries and running gear and the suspension members.

These are formed by a magnesium alloy arm which locates the wheel through what is in effect a combination rubber spring and shock.

The Ghia body is designed with a wedge frontal area to penetrate the air most efficiently and a tall rear with a door makes it virtually a ministration wagon. The car is 53 inches high.

Components are so located that there is also storage capacity in front. The Rowan people admit they could save even more weight if the body were fiberglass instead of steel.

Amitron is only 85 inches long but is nine inches wider than Rowan and seven inches lower. Air-filled seats save weight and can be deflated to carry cargo. The wedge-shaped car opens like a clamshell for entry from either side.

Similarity of body design thinking with Ghia's Rowan is striking. Amitron also has a frame which supports the batteries and keeps the center of moment very low but it has 8-inch instead of 10-inch wheels.

It also has a roll bar and rubber-

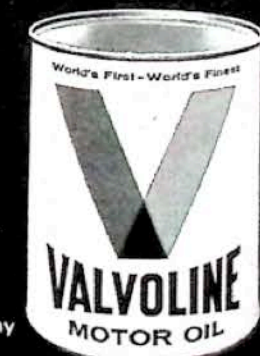
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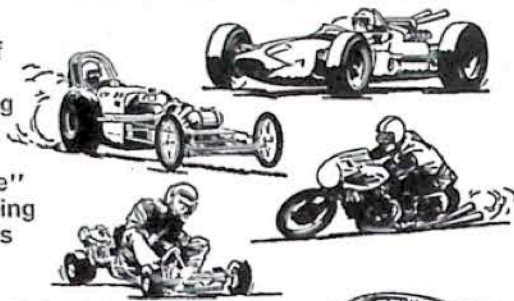


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ELECTRIC CARS *continued*

like bumpers, the '68 Pontiac GTO. It is supposed to be rolling in prototype form within a year.

These then are the beginnings of the total-design electrochemical cars. Whether or not they blossom is partly up to you, partly up to government which has already hired Arthur D. Little, a famed "think tank," to examine the possible impact of mass-produced electronic cars upon American life.

It seems inconceivable to experts that this time around some kind of electronic car won't make it. There are too many big companies outside the auto industry with growing investments in its future. Even though it has a built-in interest of billions in the fossil-fuel vehicle, the auto industry knows this, too.

The question is when? Several university experts have accused the Big 4 of being quite reluctant about electronic car design, even more so than with the turbine. They may well be right—in a way they don't comprehend fully.

Some social scientists suggest that the era of the general purpose car is coming to an end, electric or no. Specialized cars already are here and they proliferate each year.

The same social scientists see the technological upheaval of the electronic car era most affecting the tax structure, the oil industry and labor. The government will have to devise a substitute for the gas tax when electronic cars become a significant factor. Labor, particularly in the auto industry, could be affected if careful planning does not make the transition smooth.

Service stations, these scientists predict, would merely add plug-in or quick recharge facilities impractical at home and would learn new repair skills. But the oil industry, whose main product is gasoline, would be forced into complete reorganization and a search for a different product base—most likely come in the burgeoning chemical industry.

Can the public utilities handle the increased power need? Experts differ but preponderance of opinion is affirmative despite the startling proportions of the increase. In fact, the ramifications of an eventual electronic car takeover can be speculated into a monster which could shake world economy.

For now, it's a case of who gives you the chance to buy an electric first, what kind of electric it will be, and what kind you will accept either voluntarily or by anti-smog necessity. Stick around... cars are becoming more exciting than ever. /MT

Find another car under \$2,000 that has all that the Renault 10 has, and we'll buy it for you.

We believe the Renault 10 gives you more for your money than any other car.

And the fact that sales have soared since we introduced it, leads us to believe that quite a few people agree. We sold 72% more 1967 Renaults than 1966 Renaults.

But if some doubters remain, we offer this challenge: Find another car under \$2,000 that has all that the Renault 10 has, and we'll buy it for you.

The Renault 10 has, as standard equipment:

4-wheel disc brakes

Disc brakes take hard braking better than drum brakes. They have long been used on super-speed, super-priced automobiles.

4 doors instead of 2

You don't have to fight the front seat to get to the back seat.

35 miles per gallon

Some people say they get more.

Contoured seats that recline for sleeping

Plus 18 other positions for when you're not sleeping.

Engine weight over the drive wheels

The drive wheels bear down on snow and ice because the engine weight bears down on them.

Turning circle of 30 feet

You can make most u-turns in one clean sweep.

4-wheel independent suspension

Each wheel moves up or down without affecting all the other

wheels. So when one wheel hits a bump, only one gets bumped. The other 3 keep the car and you going in a level position.

4-speed synchromesh transmission

This matches the speeds of the engine and transmission to allow the gears to mesh easily. Which makes shifting a lot easier on you and your transmission.

Replaceable wet cylinder sleeves

When the cylinders wear out in a conventional engine, the whole engine has to be pulled out and rebored. Sometimes it pays to buy a new car. But a Renault piston moves in a replaceable wet sleeve. If the sleeve ever wears out, you can put in a new one easily and inexpensively.

Sealed liquid cooling system with expansion tank

Water-cooled engines are much quieter than air-cooled engines. However, water and anti-freeze can frequently overflow. But Renault's water-cooling system has an expansion tank to keep the overflow from escaping.

5 main-bearing engine

Instead of three bearings sup-

porting the crankshaft, we have five. (As many as most V-8's.)

Special vents for draft-free ventilation

You can get plenty of fresh air with the windows shut. Which, incidentally, shuts out noise.

Rack and pinion steering

Eliminates play in the steering.

2-speed hot-water heater and dual defroster

Our heater uses the same hot water that circulates in the engine. So our heater heats faster and produces a more even temperature than any air-type heater.

15 inch wheel

Most economy cars have 13" or less. Our larger wheel makes fewer revolutions to go the same distance. Which saves rubber. Which saves money.

Spare tire not in trunk

If you get a flat you don't have

to unload the trunk and get everything dirty.

11 cubic foot trunk capacity

We're not the biggest in this department, but neither are we the smallest. The smallest only has 2.3 cubic feet, which is about as much space as we have behind our back seat alone.

Hits a top speed of 85

That's pretty surprising considering the mileage we get.

Unique warranty

12 months/unlimited mileage.

Price—Under \$2,000

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AVANTI / SUPER *continued*

tors, the Avanti/Super does not conform directly with the federal rules.

There, of course, is no federal standard requiring a roll bar but there is one requiring shoulder harness devices. The Super did not have a harness but I was advised it could fit one much more solidly and with less clutter than most cars, taking it off the roll bar for front-seat passengers, with a roll-up device.

The car does not have the sectioned steering wheel nor the padded horn ring but this regulation was based on the predication of a steel body. The Cornell Aeronautical Laboratory, which does one of the most thorough jobs of automotive accident research, admitted to this writer that it did not have meaningful crash information on fiberglass bodied cars.

We would suspect that Chevrolet, which makes Corvette, does but it has released nothing for public consumption. Fiberglass will flex up to the limits of its strength, then shatter at point of impact. Published research into energy absorption has been done only in the lab.

The car has a conventional suspension in front but it is well made. It uses A-arms of unequal length, coil springs and tube shocks. There is also a thick stabilizer bar. In the rear are leaf springs. For really quick driving I would have fitted Tractionmasters because the rear wheels tend to load. However, so do most supercars and they don't come with Tractionmasters either, although they are safety-approved.

Altman declares that the cost of immediate changes—such as to a tandem braking system, the split steering column and, looking ahead to the next round of requirements, the re-engineered interior hardware—would make his costs so prohibitive, he would have to raise prices out of sight. He hopes to use up stocks of steering mechanisms, brakes and door hardware before going to these features.

The interior is unusually well arranged although the knobs on the console aren't of breakaway plastic. There is only one knob on the padded dash—for the windshield wiper and it is behind padded instrument cowling. Altman retained the Loewy idea of leaving light switches overhead and temperature and ventilation controls on the console. The radio is recessed into the dash above the console. The cigar lighter is covered in the console.

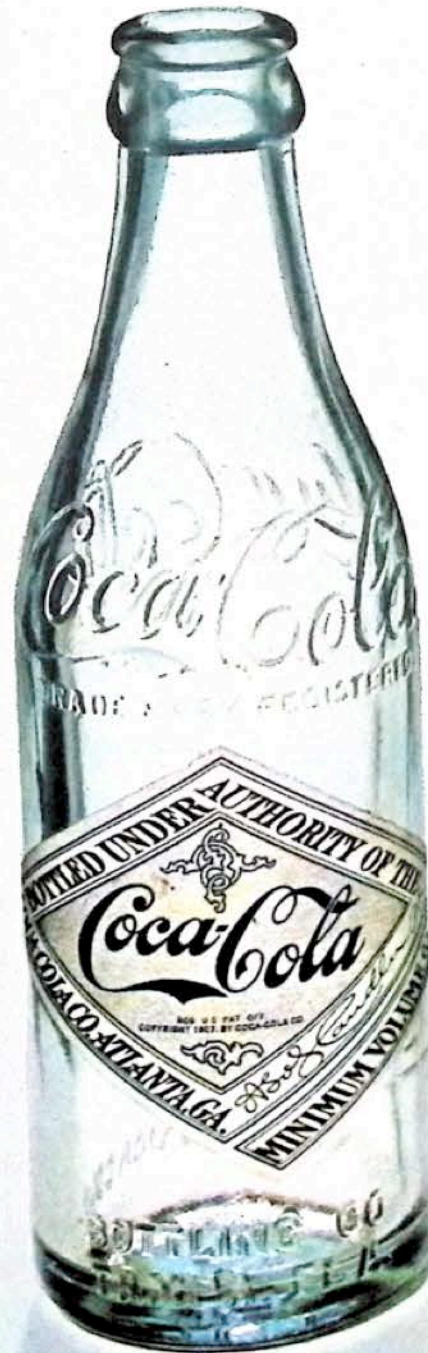
Avanti partially rubberized its bumper before GTO got the message, utilizing a synthetic rubber add-on at the fenders and over the license plate.

continued on page 84

Same Difference.

Funny thing about Coca-Cola. The bottle is different today. But inside? Coke has the same great taste. Unchanged since 1886. Which was when things first started to go better. Talk about having a taste you never get tired of! After 81 years...

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put spring back in your car continued

Now take off those clumsy snow tires and put back your regular road paws. This is a good time to rotate tires. And don't just toss those snow boots into a garage corner. That way they'll develop flat spots on the bottom; it's better to hang them up on the wall or lay them flat on the rafters.

As for the tire chains, prevent a mess next winter by stowing them properly, too. Wash them thoroughly with the garden hose to get rid of dirt and salt, then let them dry. Once dry, either spray the chains with a silicone lubricant in a pressure can or rub them all over with oil-saturated rags. You can then wrap them in these same rags and put them into a plastic freezer bag or, if you've sprayed them, put them into the polyethylene bag without the rags. This way you won't end up with two rusty lumps next year.

At this point, take the car to a front-end shop and look into these items: a) Front-wheel bearings — inspect them and repack them if they need it. b) While you have the front wheels off,

also check to see how much brake-lining life you have left. c) Have the front-end man inspect kingpins or ball joints. All that jouncing around in frozen ruts can have drastic effects on a car's steering system. d) Put the car on a wheel-alignment scanner and see if caster, camber and toe-in conform to specs. If not, invest the \$8.50 or so it costs to align the wheels, because you'll save that amount eventually in reduced tire wear.

With all that mechanical work out of the way, the time has come to get the car looking as good as it runs.

Vacuum and clean the interior, after using a stiff-bristle brush to loosen dirt in the carpets and to fluff them up. Go over the upholstery with a recommended cleaning agent or simple soap and water (see MT, June, 1967, p. 51, for proper cleaning solutions). It's always wise to take the seats out for cleaning, because that way the light is better and besides, you can also clean under the seats.

Touch up chipped and damaged paint, especially at door edges and near rocker panels, where scrapes from ice and curbs tend to start rust holes. Most auto-supply stores carry small vials or pressure cans of factory-matched colors.

That done, wash the exterior thoroughly in preparation for waxing. Even

new acrylic paint benefits from a periodic wax job, though it doesn't ordinarily need polishing beforehand. Pre-1962 cars with older enamels and nitro-cellulose lacquers, though, usually do need a good polish (auto polish, also called cleaner, is best not used in the form of a cleaner/wax combination — the advertised "one-step" polish/wax. Rather, do the job in two stages, first with a straight polish, then with a good paste wax.)

Pay special attention to waxing chromed parts — bumpers and side trim. Be sure you get a thick coat on them. If the chrome appears pitted with newly sprouting rust buds, never take these off with steel wool or rubbing compounds. Both are too abrasive and will cause more rusting later on. Use chrome cleaner instead, then wax immediately and thoroughly.

It's also a good idea at this point to remove the hubcaps and clean the wheels, as well as loosen the lug nuts and oil the lug studs.

Apply touch-up paint where needed to the inner surfaces of the hood, trunk lid and door jambs. It never hurts to wax these areas, too.

Vacuum out the trunk, remove the spare tire and check to see if rust is starting on the bottom of the spare well. If so, prime and paint this area

continued

Confessions of a trim photographer's model, or

How the Insistent Metal from Alcoa focuses on beauty

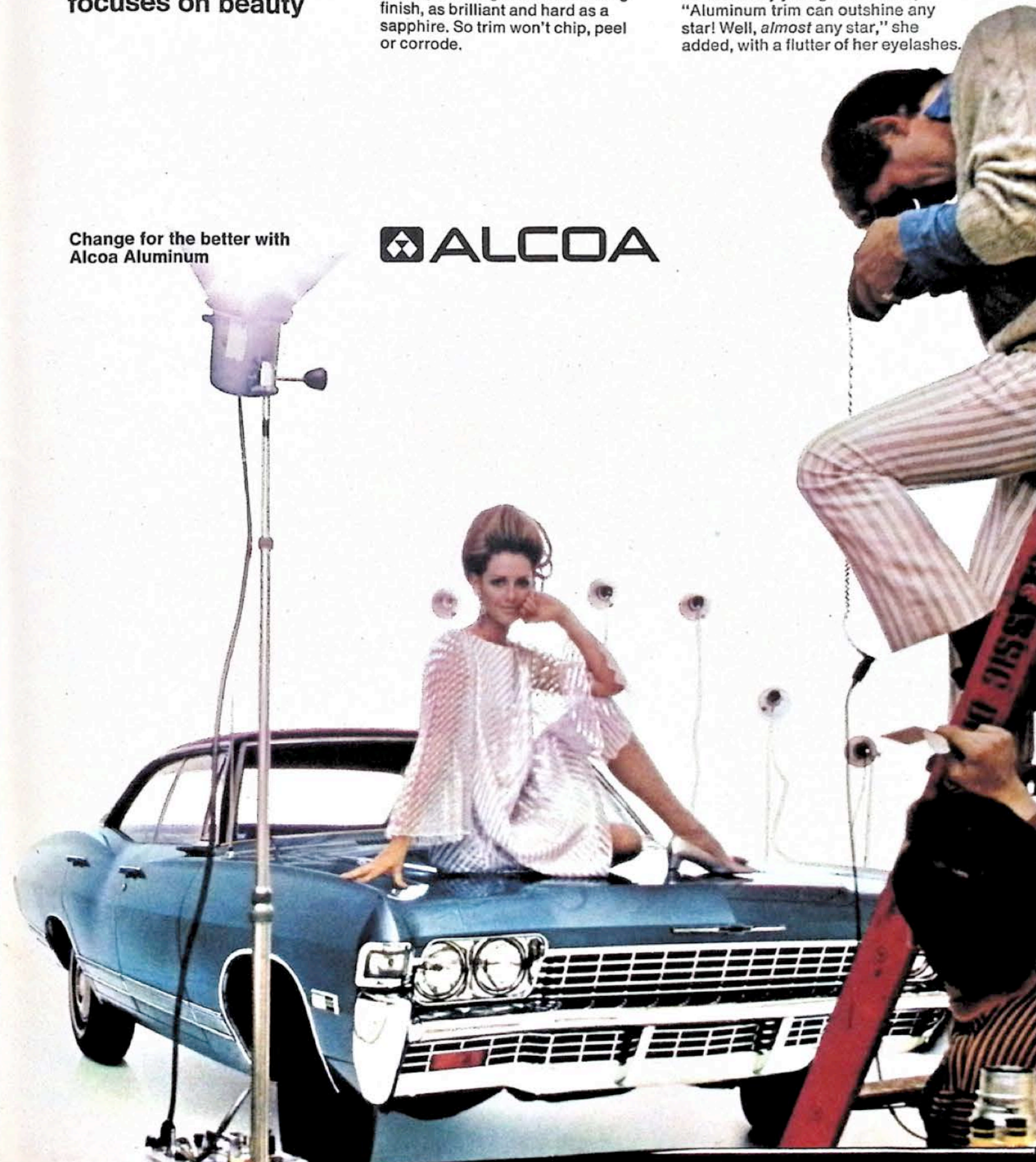
One day, we asked a model for her views on Alcoa® Aluminum trim. "Quite lovely," she replied. "And it keeps its good looks for so long! Perhaps you could tell me its secret?" We'd be glad to. The secret of aluminum trim is anodizing. This Alcoa process gives trim a lasting finish, as brilliant and hard as a sapphire. So trim won't chip, peel or corrode.

Washday worries? Not a one. Because Alcoa Aluminum trim cleans off with just a quick hosing! Alcoa's cooperation with auto-makers makes aluminum insist on being used to give today's cars lasting good looks.

As the lovely young model said, "Aluminum trim can outshine any star! Well, almost any star," she added, with a flutter of her eyelashes.

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NIGHT TIME
PROTECTION
FOR YOUR CAR
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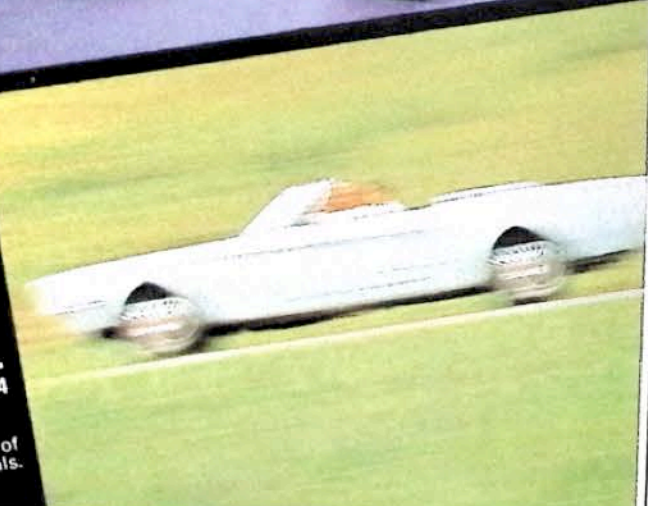
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put spring back in your car

continued

with a rustproofing enamel to keep the rust from spreading.

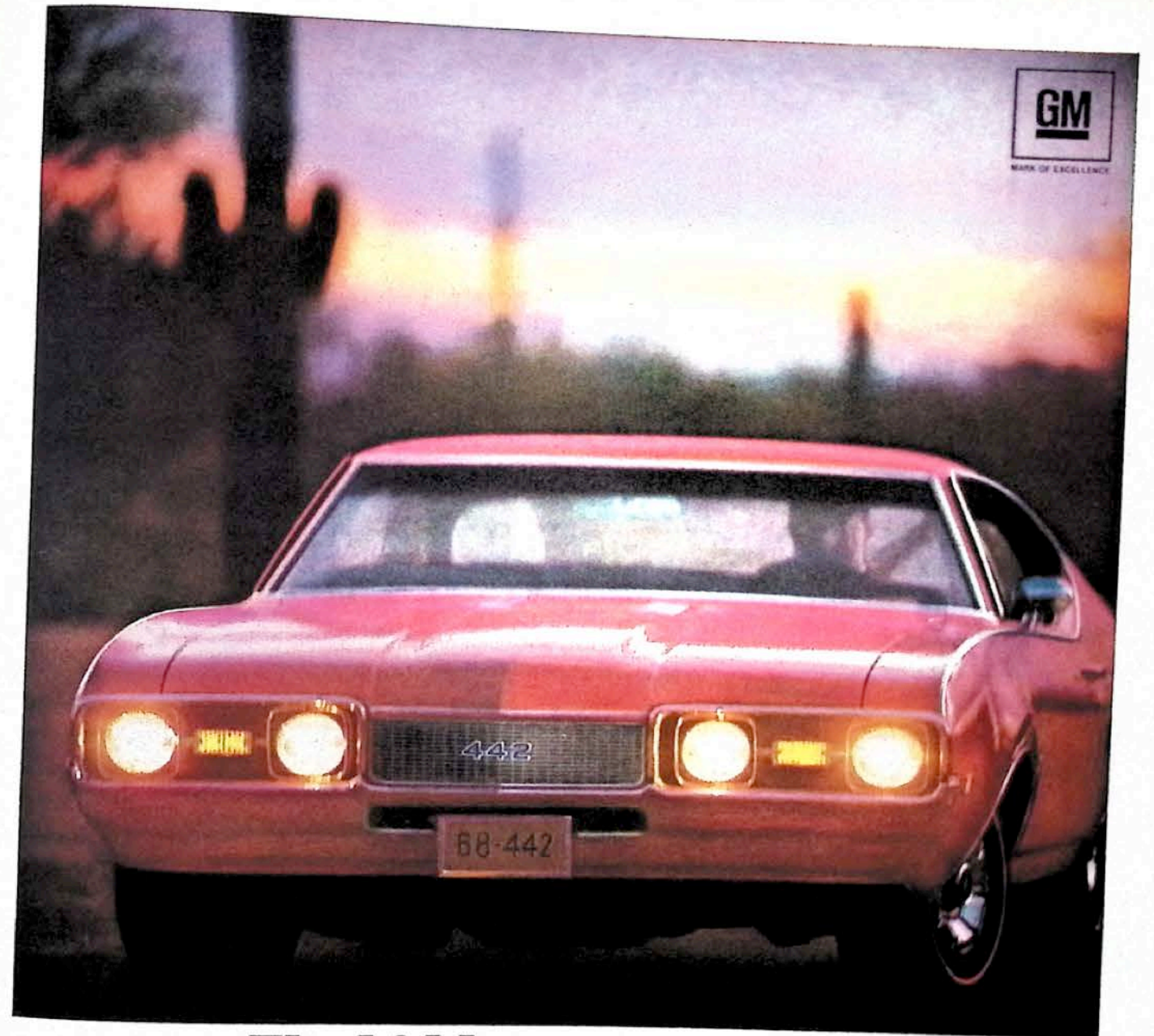
Finally, leave the trunk open for a few hours on a sunny day to let it dry out. Moisture always tends to collect here, and the drying process will also air the spaces behind the rear seat and under the rear package shelf.

And if you have air conditioning, this is the time to check the system for anticipated hot weather operation — and to recharge with refrigerant if necessary.

All that done, you can put your mind at ease about summer driving, and also rest assured of having your car complete with the best at trade-in time. /MT

Summer Car Care Checklist

- Steam clean chassis, engine.
- Touch up undercoat.
- Lube chassis.
- Inspect exhaust system for rust and damage.
- Change oil and filter if necessary.
- Clean and care for battery.
- Oil generator, shift linkage, door strikers, hinges.
- Drain, flush, refill radiator if necessary.
- Check radiator hoses, clamps, heater hoses, thermostat.
- Tune engine.
- Check air-filter element (if oil bath, change oil).
- Check fuel filter.
- Remove snow tires, rotate regular tires.
- Clean, rustproof, store tire chains.
- Inspect front-wheel bearings, repack if necessary.
- Inspect front brake linings, reline if necessary.
- Check kingpins or ball joints, wheel alignment.
- Brush and vacuum upholstery and carpet.
- Touch up damaged paint.
- Wash and wax body thoroughly.
- Air out trunk compartment.



The hidden persuaders:

ENGINE
Type.....Rocket V-8
Bore x stroke, inches.....3.87 x 4.25
Displacement, cubic inches.....400
Compression ratio.....10.5-to-1
Bhp.....350* at 4800 rpm
Torque, lb.-ft.....440 at 3200 rpm
Carburetion.....4-bbl.
Exhausts.....Dual
Built-in Combustion Control System provides constant carb air temperature.
Availabilities: Force-Air Induction System. 360 bhp at 5400 rpm. Teams with close-ratio 4-on-the-floor transmission or Turbo Hydra-Matic.
Cruising package: Includes 400-CID V-8 with 2-bbl. carb, 290 bhp, 9-to-1 compression, Turbo Hydra-Matic, 2.56-to-1 axle.
*325-hp Rocket 400 V-8 with 4-bbl. carb and 10.5-to-1 compression ratio teams with Turbo Hydra-Matic.

DRIVE TRAIN
Transmission.....Fully synchronized, heavy-duty 3-on-the-floor with Hurst Shifter
Availabilities: 4-on-the-floor (close- or wide-ratio with Hurst Shifter) or Turbo Hydra-Matic floor shift.
Prop shaft.....Heavy-duty
Axle ratios.....2.56-to-1 up to 4.66-to-1
Availabilities: Heavy-duty axles (H.D. shafts, bearings, differential gears), 3 ratios.

CHASSIS
Suspension.....Heavy-duty. Includes heavy-duty springs and shocks, front and rear stabilizers.
Steering ratio.....24-to-1
Wheels.....Heavy-duty 14-inch with extra-wide rims
Tires.....F70x14", Nylon-Cord Wide-Oval Red-Lines

OTHER AVAILABILITIES
Power front disc brakes. UHV Transistorized Ignition. Anti-Spin Differential. Rally Stripes. Rally Pac (clock, tach, engine gauges). Sports console. Custom Sport Steering Wheel. Simulated-wire and Super Stock Wheels. Special wheel discs. Others.

GENERAL

Wheelbase.....112"
Overall length.....201.6"
Overall width.....76.2"
Overall height.....52.8"
Curb wt. (lb.) Holiday Coupe.....3628
Tread.....front 59.0", rear 59.0"

SAFETY

All the new GM safety features are standard, including energy-absorbing column, seat belts for all passenger positions.

Three bucket-seat youngmobile models: Holiday Coupe, Sports Coupe, Convertible.

Olds 4-4-2

CARS Magazine names Olds 4-4-2 "Top Performance Car of the Year."

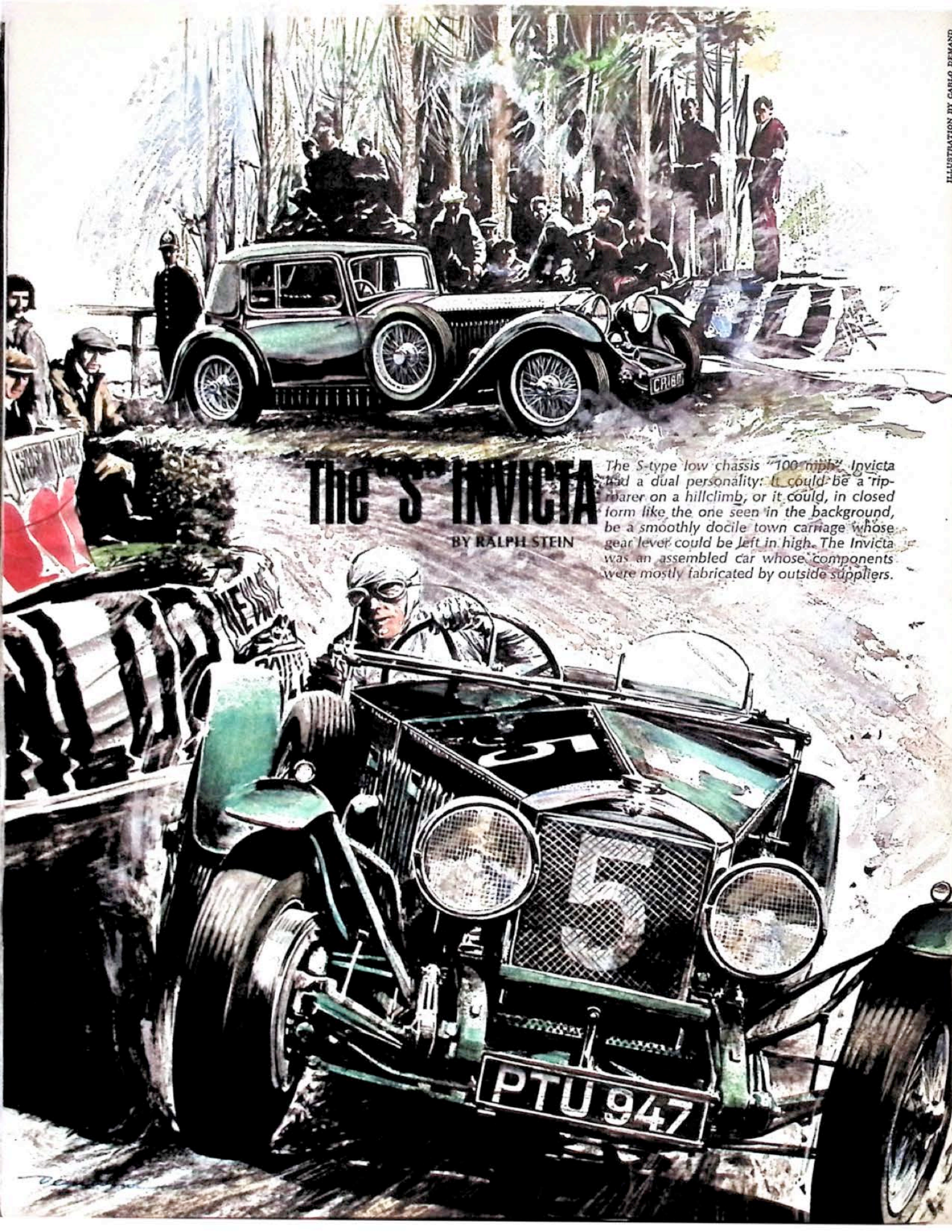


ILLUSTRATION BY CARLO DEMAND

The S INVICTA

BY RALPH STEIN

The S-type low chassis "100 mph" Invicta had a dual personality: It could be a tripper on a hillclimb, or it could, in closed form like the one seen in the background, be a smoothly docile town carriage whose gear lever could be left in high. The Invicta was an assembled car whose components were mostly fabricated by outside suppliers.

I suffer pangs of remorse every time I think about the lovely machines I once owned and don't own any more. (I have to force myself to remember how happy I was at the instant of getting rid of most of them.) There was at least one car, however, a low chassis "S" type Invicta (S155), which caused me anguish the very moment it was no longer mine. I had idiotically traded it for a 2½-liter Riley.

I first saw the Invicta—the first one to reach this country—in 1940. A young Englishman who had driven in from Canada had brought it into Zumbach's, one of the very few foreign-car repair shops of those days, to have the pistons in its S.U. carburetors freed up. I went all weak in the knees at the very sight and sound of it. No car I had ever seen looked more like my ideal.

The Invicta was lower than any car around—lower than a Bugatti or Alfa. Its angular, riveted hood was so long that the driver's back was on a line with rear wheels. Shining outside exhaust pipes curved out from between yards of louvers. The squat square radiator (mounted on a pair of rubber handballs!) complete with a built-in wire stoneguard sat way back—behind the line of the front wheels' knock-off hubs.

The outer aspects of the Invicta were but a part of its charm. The cockpit, too, had its delights. The black-japaned brass instrument panel held not only the usual dials—plus one indicating air pressure in the fuel tank—but also a captivating array of buttons and switches and a pump for pressurizing the tank so that it was possible to run if the electric fuel pumps were out of action. Operating various valve-controlling buttons brought a different set of beautifully-plated fuel lines into play. There was no ignition key—a switch on the dash turned on the electrics. The starter switch lived in the center of the steering wheel and was microscopically engraved "Pull to Start."

The right-hand gear shift lever worked in gate at the end of an aluminum tunnel which sprang from over the gearbox and passed under the driver's legs.

I just had to own that car. But its rudely English owner just looked down his nose at my eager questioning.

Three years later (when both the Englishman and I were in the U.S. Army) the Invicta was mine. I paid \$400 for it—but I had to sell (for \$300) my 734 boat-tail Packard to the owner of the garage where the Invicta lay before he'd let me take it out. I think I'd have given him that Packard if he'd insisted.

The "S" type Invicta I owned was one of the very last of the 77 low

chassis machines built. I believe, in fact, that it was one of those put together from spare parts in the company's London service station after production ceased in 1934.

I used the Invicta for over seven years. It had one exasperating and continual mechanical problem—the same for which its previous owner had brought it to Zumbach's. The pistons in its bronze-bodied HV5 S.U. carburetors continually stuck. Since, during the war years and for a while thereafter, it was not possible to get S.U. spares, I foolishly installed a pair of Solex carburetors which never gave quite the same vivid performance.

The Invicta had a big pushrod ohv 4½-liter 6-cylinder engine built by Meadows for use in trucks. A magneto and a coil supplied sparks for dual ignition. Horsepower was quoted as 125 but this always seemed on the conservative side for it pushed the Invicta along with considerable verve. Although it never reached the speed which its popular name, the "100 mph Invicta," claimed, it often got into the low 90s and would accelerate from 0 to 60 in about 14 seconds.

The Meadows engine was by no means the smoothest of powerplants. At anything near its rev limit of 3600 it felt more than a bit rough. After all, 3600 rpm was a little on the high side for a 120mm stroke and a 4-bearing crankshaft. Bore was 88mm.

But the Invicta was a very tough automobile. Its unusually deep underslung, nickel-chrome steel chassis members would have done justice to a tank. Its rear axle shafts were some 1¼-inch in diameter. In 1931 Donald Healey starting in the Monte Carlo Rallye from Stavanger, Norway in one of the first "S" types proved its near indestructibility by sliding into and demolishing a telephone pole a few miles from the start. The rear axle was knocked askew and Healey was forced to disconnect the rear brake rods. In spite of this his Invicta won the rallye outright.

The extreme lowness of the Invicta was perhaps the cause of its greatest fault—a tendency to go sideways. A low, low center of gravity plus a high roll center is now known to cause such characteristics, but in 1930 designers still considered lowness an unalloyed virtue. I had some hair-raising spins in old S 155.

I seem to have made a list of the Invicta's faults but it was really one of the most satisfying cars I've ever owned. Its Marles steering was impeccable (although subject to terrifying cable (although subject to terrifying wheel-wobble if the Andre hydro-tele-control shocks were not correctly adjusted), its gearbox had just the right close ratios and, in spite of no synchro mesh, was a delight to handle. Long

trips caused no fatigue—the engine just burbling along at 2000 rpm even at 60 mph—quite fast for the Forties.

But the "S" Invicta came out at the wrong time—in the midst of the depression. In chassis form it cost 1050 pounds sterling—\$5000. A convertible body by a good coachbuilder (Invicta built no bodies) might add another £800. And \$9000 or so was just too much money for a car in the early Thirties. The Invicta company stopped building them in 1934.

The "S" type, during the few years of its manufacture, did quite well in competition. In 1933 an "S" type, driven by A.C. Lace, beat Sir Henry Birkin's Tourist Trophy lap record in a 4½-liter blown Bentley by averaging 77.69 for the 13¼-mile circuit. In 1932 Raymond Mays set an international sports car record for the Shelsley Walsh hillclimb in a specially prepared "S" type.

There had been earlier Invictas than the "S" types. The marque was born as early as 1924 under the aegis of Captain Noel Macklin (later Sir Noel). These machines had 2½-liter Coventry-Climax engines. The first Meadows engined cars—of 3 liters—appeared in 1926. These machines were quite successful—in spite of somewhat whippy chassis frames—and became famous for reliability feats in the hands of a Miss Violet Cordery. Among other records, she drove one around the world, took the 25,000 kilometer record at 55.7 mph and won the Dewar Trophy for covering 5000 miles at 70.7 mph at Monthéry. In 1928 the Meadows 4½-liter engine was installed in a car called the "Invicta Sports," but this high chassis machine was more a tourer than a true sports car.

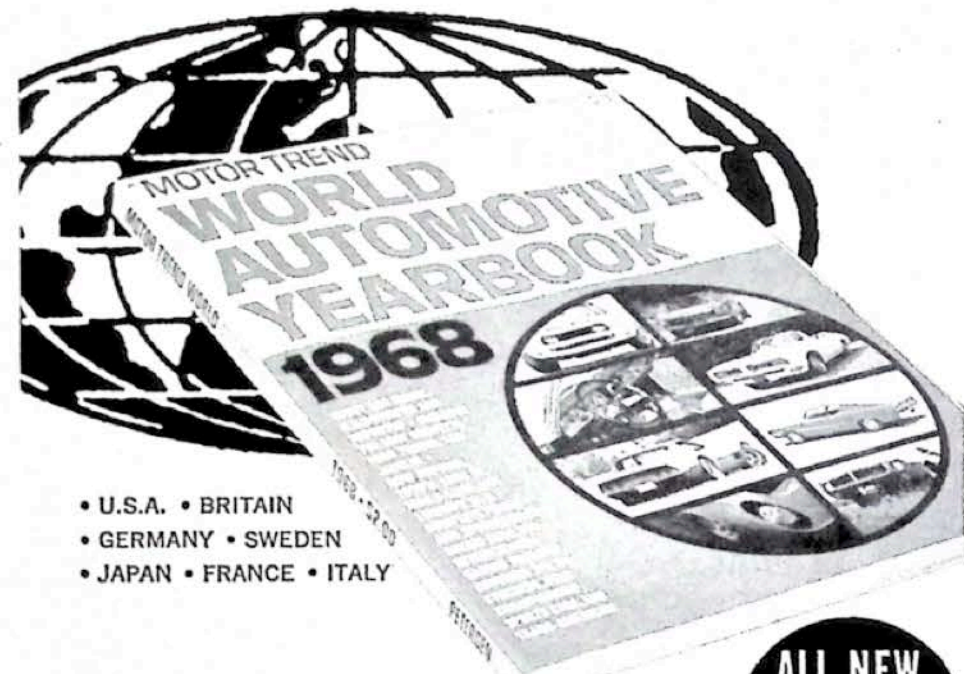
A few 1½-liter blown and unblown Invictas with overhead cam engines were built for a time in the Thirties but never attained the success of the "S" types. Even at the astronomical revs caused by 6:1 rear end ratios, they just didn't have enough power to drag their heavy chassis along.

Just before the company went out of business the "S.S." Invicta with a double overhead camshaft 5-liter engine and a Wilson pre-selector gearbox was in the works, but as far as I know none was ever sold.

After the war in 1947, an attempt was made to revive the Invicta name with a car called the Invicta "Black Prince." This machine had sliding pillar front suspension, an advanced 3-liter twin ohc engine and an idiosyncratic automatic transmission formidably named "The Brockhouse Hydrokinetic Turbo Torque Converter." This transmission and a very high price killed it in infancy.

Note: Buicks by whatever name were never Invictas. /MT

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AVANTI/SUPER *continued*

The bumper is designed to really protect the sides of the fenders as well as the front.

At Daytona International Speedway, the Avanti/Super was an official car for Newspaper Enterprise Assn. managing editor Bob Cochnar. It is currently enjoying life in Georgia with a private individual.

Both Altman and Stevens as well as Jack Griffith, who imports the Ford-engined Torino (no relation to the Ford car of the same name) from Italy through Genser-Forman, Triumph distributors for the Northeast, Steve Wilder with the Omega and the Cord 810 all are in the same Bayh amendment boat. In fact, if you decided to make a new car for U.S. commercial distribution, you would be, too.

Griffith, who now actually is the representative of the Italian firm building his Torino, Intermecannica, declared, "It gives the small manufacturer a chance to get his feet wet in the American market and does not stick him with inventories of parts which he bought before the safety law became finalized. This is going to be the case until we have all the safety standards on the books, until we pass the period of trial and error which could take five to 10 years yet."

Stevens noted, "We've been on pins and needles but we have continued to produce cars. The Bayh amendment, which our Senators Proxmire and Nelson co-sponsored, would allow us to stay in business.

"We only have a top capacity of 200 a year for the Excalibur and we've been in the position of being back ordered six months," he added. "However, we're hoping that we can work out some permanent relief from testing procedures with Dr. Haddon."

It all comes down to a chicken and egg situation. The Excalibur is a highly maneuverable well-built specialty car; the Avanti/Super has safety features that only projects like the New York state safety car have thought about, but it doesn't have the ones the Federal Highway Safety Act has decreed.

Ferraris, Maseratis, Morgans have braking and handling standards far beyond what the U.S. government contemplates in the future. Haddon admits this but says, "I don't think our standards are too onerous for anyone to comply with eventually. When it becomes a choice between styling and safety, I think I would choose safety."

So it eventually will be up to each under-500 car maker to be safe the government way. Let's hope the Avantis and their contemporaries will continue to be safe in their own way, too.

/MT

Mercury's got it. A quote about Cougar that says it better than we could.



"Driving comfort is so groovy, owners might want to move 15 or 20 miles farther from work just for the pleasure of the ride back and forth each day. Would you believe five?"

Motor Trend magazine

The Fine Car Touch inspired by the Continental.

MERCURY



Datsun PL 510

A LOT OF CAR FOR A LITTLE MONEY

If fun is your bag, then the Datsun PL 510 stacks up as a good bet for you. Although it will never be a star at the drag strip, this car performs admirably in traffic — the place where it belongs. It is reliable, comfortable, maneuverable and economical to run — a true fun car.

Ride, Handling & Performance

The close to 24 mpg on regular gas sipped by our test car is impressive when you consider that all the miles — about 200 of them, were racked up within a stop-and-go metropolitan area. It's sort of disappointing to think how few trading stamps you can pick up at filling stations on a cross-country jaunt.

Getting started is no trouble at all. All four cylinders percolate at a flick of the key, but you can expect a cold engine even with an assist from the hand choke. It will take about a half-mile on the odometer before the temperature is constant and worry-free. From then on it's smooth sailing.

Rolling through canyon roads is a distinct pleasure in the 510, and only an occasional downshift is required to tame hills and curves. Steering response is instant and vibration free. The Datsun takes corners well for all except leadfoots.

The 96 horses put out by the new 1600cc overhead cam powerplant are indeed capable of keeping pace with today's freeway speeds. As a matter of fact, we sometimes found ourselves calmly passing and outmaneuvering everything but sports cars once we'd paced the traffic pattern. The car certainly seemed to be engineered for U.S. roads and drivers, and we definitely began to get the feeling that we were driving a much bigger car.

The 4-speed synchro gearbox on our

test car meshed as smoothly as an automatic the first time out of the driveway. With just a little imagination one can feel like a sports car driver. The Datsun is a rattle-free road hugger, with a right, semi-trailing arm type rear suspension that does its job well, except for an occasional kangaroo-like hop which is triggered by bad road surfacing. The suspension — firm but gentle — makes the 510 impatient with road dips; sort of ignores them. Pretty soon, you do, too.

The fade resistant disc brakes are apparently just that, and although they won't stop you on a dime, the Datsun does manage a 60 to 0 panic stop without deviation.

Comfort & Convenience

Entry and exit are excellent for a car of this size. All but basketball players can maintain dignity through the no-stoop entry. Once inside, five adults can sit bolt upright in comfort with nearly as much head, body, leg and knee room as in an intermediate.

Basic black — and in very good taste — describes the interior. It is rather spartan — perhaps restraint is the word. Although the status seeker may not be impressed, the man who wants quality certainly will.

Don't look for a tach — or even a clock for that matter. There are no fancy frills on the 510. Smokers, however, will be pleased with what may be the longest cigar lighter in the auto industry.

Datsun must have wished their shoulder-harness and seat belt spaghetti could be unobtrusive, but they're not. A person who doesn't use them could be made to feel very silly — but then what's wrong with that?

Datsun's highly touted Quiet Ride is

just that — a quiet ride. Not in the class of Rolls Royce, or even perhaps Ford, but roll up the big curved windows and the decibel count plummets — no doubt helped by the wall-to-wall carpeting and factory undercoating.

At this point the Fresh Air System is supposed to take over, circulating fresh air through the dash and out four rear vents. It works just fine when the outside temperature cooperates. However, if not, just crack open a rear window, and you probably won't miss air-conditioning at all.

The standard-equipment heater works just fine on those cold mornings and heats the interior in no time at all.

The foam padded seats up front are just what the doctor ordered for those long trips.

Plus & Minus Features

We miss the vent windows, but we suppose one must bow to the gods of modern design. As we mentioned before, snob accessories and the pizzazz most of us have come to expect in larger more luxurious cars do not exist in the Datsun.

But, if it's the little things that count, count Datsun in. For one, the hi-lo beam control integrated with the directional signal control leaves your left foot free for its primary clutching function. The windshield wiper and washer system is also another big plus.

One of the better features that Datsun has to offer is not as readily visible. The 530-dealer network scattered around the country is evidence of readily available parts and service of vital interest for imported car owners.

Factory whitewalls, chrome wheel covers and undercoating add to the value of a car that, with a sticker price of less than \$2000, is a real bargain. /MT

Datsun PL510 delivers over 2000 pounds for under \$2000 in a package that includes new 96-hp overhead cam powerplant for efficient, quiet ride within unitized contour body. Datsun stylist achieved exceptional visibility plus modest lines which cater to American preferences. Simple instrument panel tends to avoid confusion, as if to compensate for the clutter of shoulder harness and seat belts, while generous head and leg room are partly responsible for long-range riding comfort.

Photos by GERRY STILES



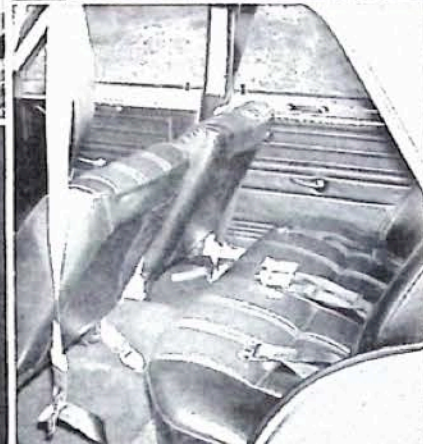
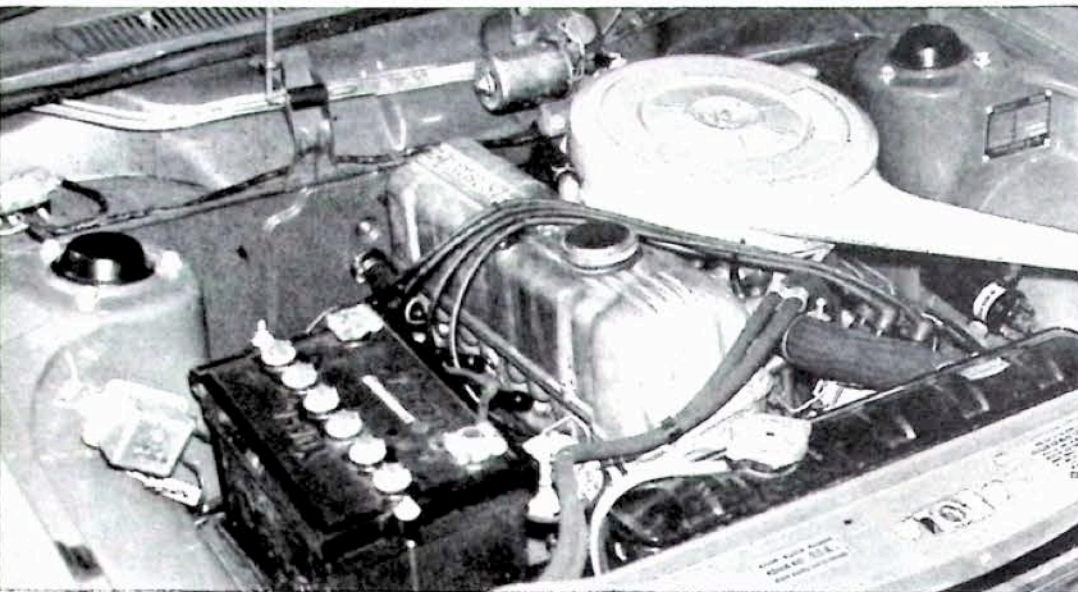
PERFORMANCE

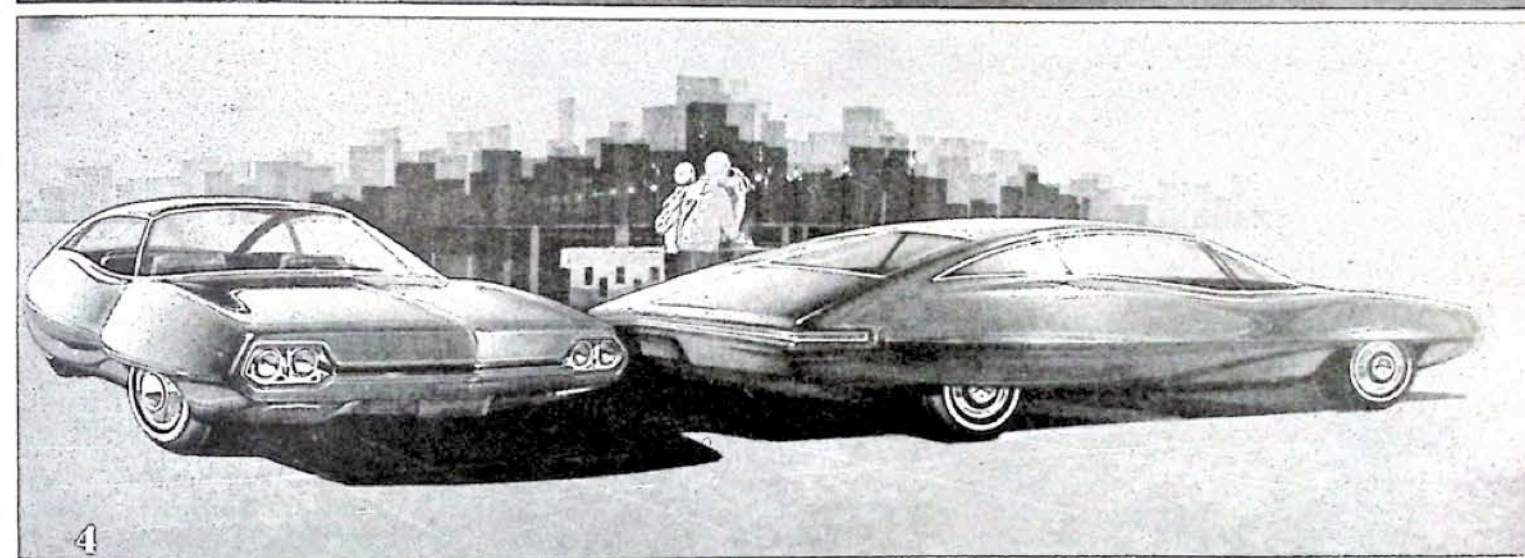
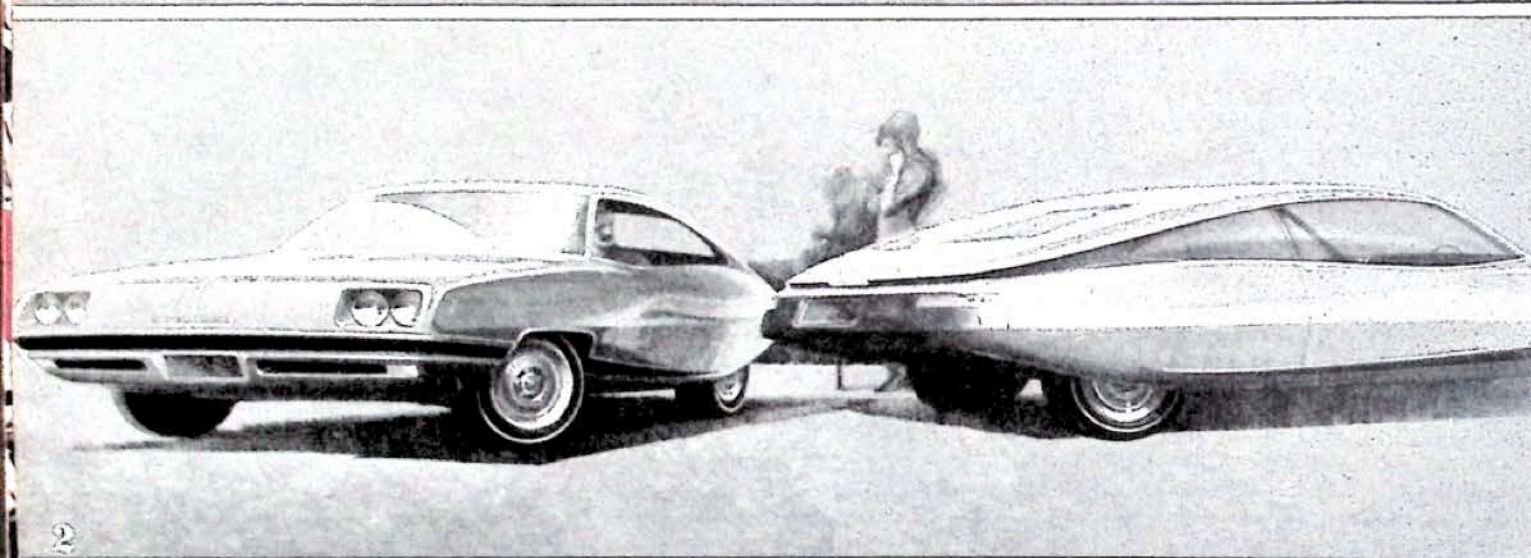
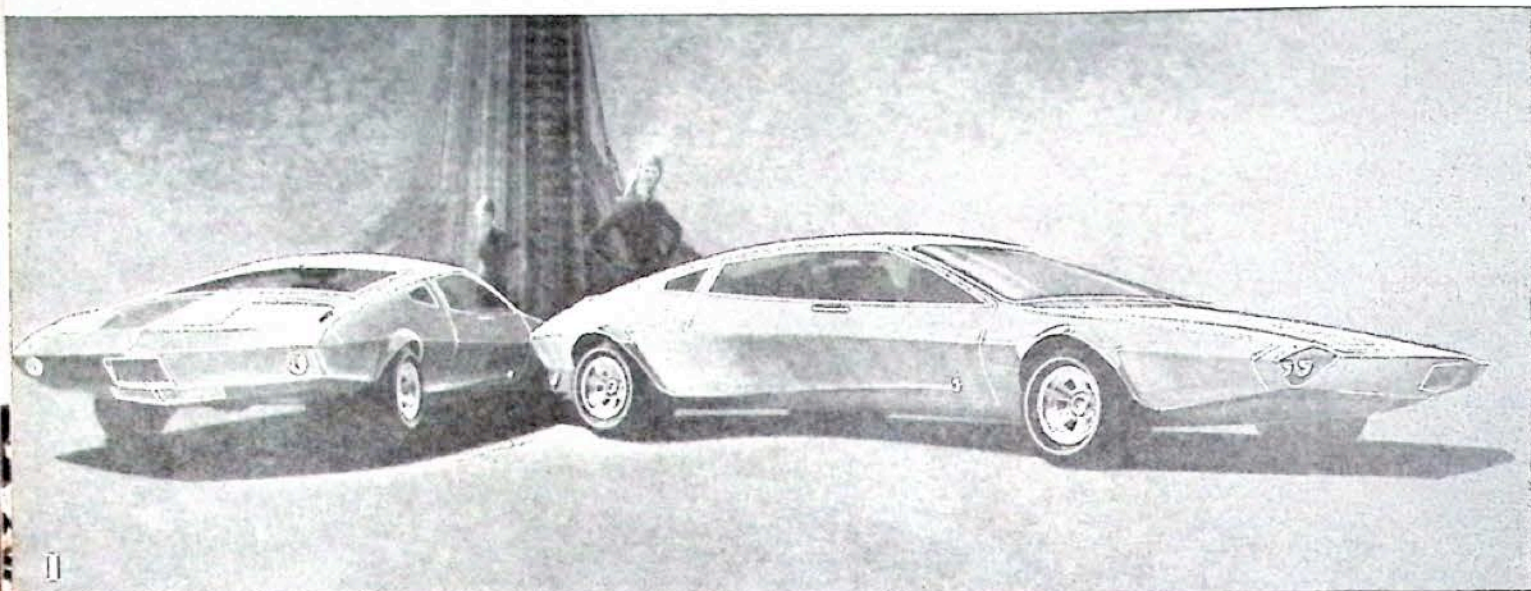
Acceleration	4.8 secs.
0-30 mph	8.8 secs.
0-45 mph	16.1 secs.
0-60 mph	
Passing Speeds	
40-60 mph	7.3 secs. 519 ft.
50-70 mph	10.5 secs. 938 ft.
Standing Start 1/4 mile	
70 mph	19.0 secs.
Speeds in Gear	
1st	28 mph @ 5500 rpm
2nd	48 mph @ 5500 rpm
3rd	68 mph @ 5500 rpm
4th	94 mph @ 5000 rpm
MPH Per 1000 RPM	17.0 mph
Stopping Distances	
from 30 mph	34 ft.
from 60 mph	142 ft.
Mileage Range	24.3-27.0 mpg
Average Mileage	25.65 mpg

SPECIFICATIONS

Engine: Single overhead cam, 5 main bearing, 4 cylinder. Displacement: 1595cc. Hp: 96 @ 5600 rpm. Torque: 99.8 lbs.-ft. at 3600 rpm. Compression Ratio: 8.5. Carburetion: Single two throat. Transmission: 4-speed manual all synchromesh forward gears. Final Drive Ratio: 3.7 stick, 3.9 automatic. Steering: Recirculating ball type. Turning Diameter: 31 ft. Tires: 5.60-13 4-ply rated. Brakes: Front, 9.1" safety disc. Rear, 9" hydraulic drum type. Suspension: Front, single strut deep coil. Rear: independent coil spring. Body/Frame: Unitized. Overall Length: 162.2". Overall Width: 61.4". Overall Height: 55.1". Wheelbase: 95.3". Front Track: 50.4". Rear Track: 50.4". Curb Weight: 2017 lbs. Fuel Capacity: 12.1 gals.

OPTIONS: Radio. Everything else standard.





Designs for Tomorrow

1 Richard Svenson's projection for the Corvair is a straight development toward its well-earned GT image in which the design stresses elegant simplicity and a positive but graceful character as a truthful representation of the car's driving appeal. Easier access to the 2+2 interior is by a wide door on a parallelogram hinge at the forward edge. Side marking lights are unobtrusively located in crevices between bumpers and body sheetmetal.

2 Noritsuna Watanabe is a member of the Toyota Motor Company, Ltd.'s design staff in Japan who has just completed a special course at the Art Center College of Design. Representing his company's interests, he has proposed an advanced version of Toyota's "Crown" model which has already gained international importance as a high-quality, compact luxury car. His appearance theme capitalizes on the distinctive trend already established by the smaller and popular "Corona" with its angle-back hood and crisply-defined front fender profile, while a continuous flow of surface and line through the body help to visually expand its practical dimensions.

3 Robert Hamilton is a Canadian who, naturally, suggests a course for the Canadian-built Meteor "Montcalm"—a Ford product that currently combines Mercury styling with Ford Galaxie components. Although his design's appearance favors the crisp graphics and "power dome" hood of L-M's "new tradition" look, he feels that it can also "exploit the fleet car market wherein practical space planning and styling flair are combined for the benefit of public relations. Appearance is important because many industrially-owned automobiles double as personal transportation for their assigned personnel." Body details include a top-hinged tailgate, a folding rear seat that provides a 4' x 8' cargo space of 50 cubic feet and separate spare tire compartment.

4 T. Daryl Hatch feels that "character identity is a necessary element of design in today's automobile in order to establish a distinctive difference between one car and another." He has taken the bold, new, performance-oriented theme of the '68 Dodge Charger and expanded it, as a Chrysler corporate image, into the Plymouth VIP line for 1972. Detail trim serves to complement the sheetmetal proportions and a flush, body-colored side strip, located mid-way on the flanks, absorbs parking lot door taps.

How could advances in automotive design concepts—spurred by technological breakthroughs and legislation—affect your new car three or four years from now?

This was a project challenge put to a select group of tomorrow's designers—advanced students in a Transportation Design class at the famed Art Center College of Design in Los Angeles. Their instructor, Strother MacMinn, selected the accompanying designs as a representative cross-section of proposed solutions. He sums up their approaches:

"Each student selected a particular auto manufacturer's product and then designed toward the next major body change, bearing in mind opportunities for improving safety concepts, merchandising appeals and corporate image.

"For example, unimpaired overall visibility from the inside out was considered just as important as being able to judge the dimensions of the car's front-end as viewed from the driver's seat—both assets in improving the

driver's sense of confidence in traffic maneuverability.

"Borrowing from the Pontiac GTO's lead, it was assumed that chlorosulphinated polyvinyl film-covered foam bumpers offer significant advantages in energy absorption as well as minimizing deterioration from minor traffic bumps.

"Front-end shapes were kept simple and smooth so as to avoid lacerating sharp edges that cause serious injury.

"Elimination of the bright chrome 'log' bumper and grille combinations placed additional importance on a skillful balance of proportions and significant detail to maintain each car's identification.

"Refinement of current lighting requirements was sustained for logical reasons.

"Four distinctly different sections of the market are covered in the accompanying design proposals, and each one helps to show the ingenious advantages found by its designer in the expanding approaches to automobile design."

/MT

My Wild Ride

continued

the left—my side—that had been a dramatic, Final experience for some. There were no other thoughts, only that we were heading for it, just as those other unfortunates did, and Dan Gurney was accelerating! The engine sound turned from scream to bellow as the wall came close enough for resonance—about 12 inches or less. We separated from the wall and I began to inhale for the first time, when Dan swerved to the right, this time aiming for the pit wall, still accelerating. But this time it was *his* side, so we came even closer. We started left again, gradually, Dan's foot buried, an upshift, and there it was—infamous Turn One. It's flat out on a good day with a clean track, lots of practice and the best of drivers, but Dan Gurney was going to do it with two aboard, a dusty track and acquaintance with this machine that was based almost entirely on vague recall. And we were approaching 170 mph in a curve . . . on a dusty track . . . and it's been months . . . his words pounded my guts " . . . there are times when I can't tell where it's going to go . . . ", " . . . there are times when I can't tell where it's going to go . . . " We weren't going to make it, I was sure of that. " . . . and it's slipping and loosing adhesion . . . " It happened. The rear end lurched slightly, the track was going sideways, and Dan's arms twitched briefly—a natural reaction—to the right. His right foot feathered the gas for only a split second, but didn't release, then mashed down again. The Lola had one last spasm, and with a growl it straightened itself and continued on course to Turn Two. That first lap had been an experience—Gurney was right—but now I detected a slight difference in his technique. Stern concentration began to partially replace his interminable smile, and his arms were now being jerked more imperatively by the steering wheel. His feet were working the pedals faster, and the characteristic Gurney "pumping" of the brake pedal was occurring faster than the naked eye could detect. Someone not aware of this vagary would never have noticed. "I had a bad experience with brakes back East once," said Dan, "and ever since then, I automatically tap them once before applying. I've tried to quit that, but I can't seem to, and as a result, there are several guys in Grand Prix racing that can outbrake me." Bull, Dan. Doesn't it strike you as odd that there are none faster? It was obvious now—a timed lap. And Dan was serious. He seemed oblivious of my presence, and never—almost never, did he lift his foot from the gas. If it wasn't buried, it was only refrain-



ing from going further. G-forces were happening at such intensity, and from so many directions, that it's natural to disbelieve that any mortal being can endure this kind of treatment for hundreds of miles. It is an agonizing drain, physically and mentally. We were somewhere in the esses now, and Dan wasn't turning the steering wheel—only periodically flicking it ever so slightly from one direction to another. "There's an ideal arc around each curve," he explained the other day, "which the car will follow naturally if you began the turn at exactly the right spot and exactly the right speed. If you find yourself steering, it means you're going too slow. If you find yourself flying uncontrollably off the road, it means you're going too fast." How could he know, turn after turn? Well, for one thing, he doesn't, really. You can't drive as fast as he, analytically. It's not a matter of learning, and all the degrees in the world won't work. This is one bag where science has its limitations. He was born with it, and that's the *only* way, baby. Try to get him to explain all that falderal about aiming for apexes, and you embarrass the poor guy. He doesn't do it, primarily because that's *not* the way to drive. Fast, like the big boys do. You either possess that recondite, transcendental sensitivity that enables you to negotiate curves with politesse and perfection at Gurney's speeds, or you don't go. Fast. Things kept happening, and again we were on the straight. My head was now buffeting badly and all was blurred, yet somehow Dan could see. Wham! and the brakes came on again and the walls came faster. Turn Nine was then behind us and he once again aimed for the walls, then swept around Turn One, the front end again slipping slightly through the long sweeper as we began our last lap. Finally, I was able to observe the eery behavior of the machine, and Dan Gurney's amazing ability to command it. He aimed for the pits, cut the power and unfolded out of the Lola, his full, light brown hair still unruffled as it was upon his arrival. That's Class, man . . . Class. "Great, Dan! A 1:24.5!" blurted one of his technicians. "Only two seconds from the track record!" Dan was disappointed, but my head was suddenly light and my knees refused to respond. Only two seconds over 2.7-mile, 9-turn road course! Two seconds! One-thousand-one . . . one-thousand-two . . . Two Seconds? With 180 pounds and no practice! omigod. omigod . . .

Well, Doc, you know the rest. Thank God it was just a nightmare. If I thought for a minute it had really happened, I would be a hopeless traumatic loss. But as it is, I . . . huh? You say . . . ? George . . . ? Camera . . . ? pictures . . . ?

/MT

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**He wasn't speeding.
He wasn't drinking.
He wasn't tailgating.
In fact,
he wasn't even driving.
He was just fixing
a flat tire.
In the dark.**



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After 995 minutes, the car would be a total loss. After 1000 minutes, the car would be a total loss.



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AS ADVERTISED IN MOTOR TREND



OPEL RALLYE KADETT 1900

What motoring surprises lie hidden
behind those compact lines?

BY BILL SANDERS

"What a funny looking car." "Hey, it's cute." "The wheels are too small." "Man, that's groovy." "It's too narrow." "It has nice lines."

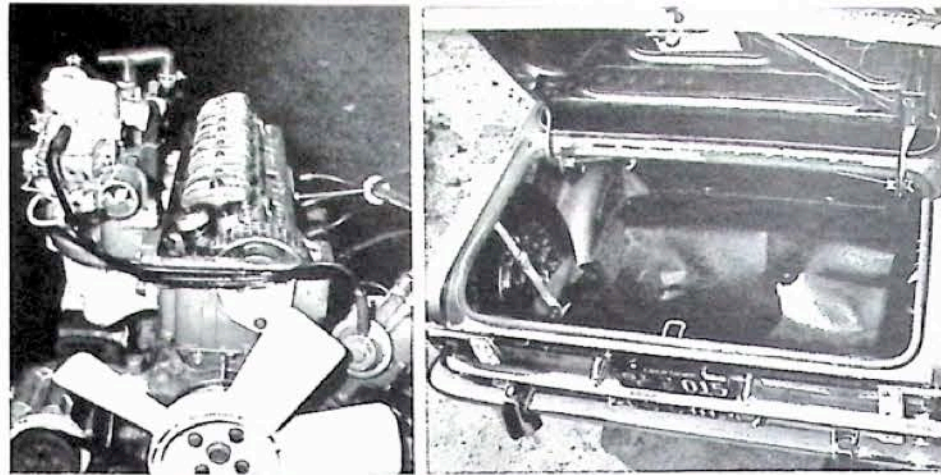
Comments about the Rallye Kadett were as varied as people's personalities. But one thing is certain: don't let first impressions fool you. At first, the seats and car seem too high. You feel self-conscious. The steering wheel is positioned at an odd angle, resembling the wheel on a bus.

Drive it anyway. A few miles... a few hundred miles: The Rallye Kadett is a car that grows on you. I mean really grows on you. You become attached. Suddenly, one day, like a subconscious revelation, it sets you free. Self-conscious feelings are gone. It's fun—you're having fun. It's quick, fast and agile. It's a groove to drive.

Powertrain & Performance

One of the unexpected surprises that lie hidden beneath the calm, compact lines is the power the 1.9-liter engine in the Rallye Kadett puts out. Horsepower rating has been upped from 67 in the 1967 1.1SR to 102 in the 1968 1.9, and you really get the message in a hurry. Last year there was only one engine choice in the whole line. Now there are three: 1.1-, 1.5-, and 1.9-liter powerplants are scattered among the six new models. Our GM Rallye Kadett test car is top-of-the-line and was equipped with the 1.9-liter engine, complete instrumentation, including tach, and a heavy-duty rear axle that is nearly as large as that on a Buick. The 1.9 engine has a 9:1 compression ratio.

New for 1968, both the 1.5 and 1.9



A phenomenal improvement over last year's offerings, the 1.9-liter Rallye sports new cam-in-head engine and suspension. Trunk space is huge, even by big-car standards. Style is similar to GM "A" body.

engines feature a cam-in-head design that is a basic copy of the successful Miller racing engine that was used and proven at Indy for a number of years. The 1.5 and 1.9 are essentially the same engines with differences in liter size accomplished through cylinder bore, although blocks for each are individually cast to control uniform thickness of cylinder walls. The cam-in-head arrangement permits an extremely rigid valve train, which accounts for precision valve timing and impressive fuel economy. Racing type, divorced skirt aluminum pistons are used in the 1.5 and 1.9 for better wear and cooler running.

A full synchromesh, 4-speed transmission is standard on all Opel models. A new type is used with the 1.9 engine and has a control ring on the shift lever knob that is raised to shift into reverse. Although the shift lever is rather long, shift throws are relatively short and easy to execute. Speed shifts, surprisingly, can be accomplished without any danger, but with the long throw are a little mushy.

Propeller shaft and rear axle with the 1.9 are the same used with the non-imported Rekord, a much heavier car, and have been modified and adapted to the Opel. The Rallye has a 3.6:1 rear axle ratio. All axle ratios have been reduced in '68 for better fuel economy.

To say that performance is brisk would be an understatement. For a car that weighs in at just under 2000 pounds, the Rallye moves out like it wanted to capture the No. 1 spot in import sales. Acceleration up to 3000 rpm is the epitome of mediocrity. But,

when you get in the 3500-4000 range, it's as if someone suddenly plugged in another 4 cylinders. Forward motion takes on a whole new significance. You get the impression the crafty little car had been laughing at you all the time and was through fooling around. Shift point is indicated on the tach at 5800 rpm but you usually run out of street space before you get there anyway.

Handling, Steering & Stopping

A little forthright, self-determination is necessary to bolster the courage when approaching the Rallye. An uneasy feeling of top-heaviness is the first stimulus that reaches the brain, warning: easy on the corners. Consequently, the first corner was taken v-e-r-y carefully. It wasn't too bad. So, we took the next a little less cautiously, and the next, and the next, until, suddenly, anxiety and hesitation were gone. Our terror dissolved into awe. Cornering was magnificent, with no roll, pitch or sway. The car had done it again. We had the weird feeling the car was testing us, deciding to prove itself when it was ready.

Performance was beautiful in tight corners or on long, winding smooth roads—especially the latter. Opel engineers set out to give the '68 cars a softer ride, and, although that goal has been achieved, their efforts have in no way interfered with the exceptional handling characteristics. Front suspension has been reworked to accept the heavier 1.5 and 1.9 engines. Opel continues to use the unusual transverse spring and A-arm arrangement. With the heavier engines a 3-

leaf spring is used, and many of the front end parts are extra-heavy-duty, also coming from the 6-cylinder Rekord. Lower control arm shaft has been redesigned because of the thicker 3-leaf spring. Wheel bearings have been changed from ball bearings to tapered roller bearings. A reinforcement is welded to the front suspension cross member to increase ruggedness of engine mounting brackets.

Rear suspension has gone from leaf to coil springs, and has a new link and track bar arrangement. Two tubular lower torque control arms are attached to the axle and body forward of the axle. These function in a way similar to the lower control arms on the Buick Riviera. A third, transverse torque tube also ties to the body on rubber bushings. Acceleration and braking torque is taken by the lower control arms and the torque tube. A track bar is used to control the axle laterally, a rear stabilizer bar is used on the Rallye for added roll stability. Variable thickness coil springs control leveling and prevent bottoming when heavier loads are carried. The five torque and stabilizing bars function exactly as planned and a very minimum of rolls, sway or hop are noticeable when cornering, accelerating, or braking. Remarkable characteristics in a car that at first seems overly top heavy and narrow.

Quick, responsive manual steering is firm—you know you feel the road underneath you—but easily operable. On mildly curved highway stretches, steering is fluid and almost effortless. The car follows your lead and goes where you want it to without any wheel corrections or any unnecessary jerks or pulls. Three turns from lock-to-lock and a 33.5-foot turning circle also add to the good handling.

Every adventure with Rallye braking from speeds in the 40 mph and over area is a wildly exhilarating, individual experience. When a yellow light or halted car is observed, one begins by

applying light pedal pressure. As the intersection or stopped car ahead continues to loom larger, increased pedal pressure gives the impression of having little effect. Finally, with blood pressure approaching the magnitude of brake pedal pressure, the Rallye, almost miraculously it seems, comes to a dead stop at the exact spot it should. Again, it is an eerie feeling that the car is toying with the driver. Actually, in full lock-up, panic stops, Rallye brakes are the best we have encountered in a small car. Especially, since there was never any swerve or deviation. And, stopping distances were fantastic. Would you believe 18 feet from 30 mph? One stop, in fact, did measure that distance. Our other stops at that speed were all 21 feet. No fade was noticed after repeated panic stops. Front disc and rear drum brakes are standard on the Rallye with a power booster used for the discs.

Comfort, Convenience & Ride

Even with all its good points, don't expect American sedan comfort with the Rallye. Two front bucket seats are firm and hold you in, but the firmness creates a little bouncing on rough roads. Four good-sized adults are comfortable in the Opel, but rear leg room leaves something to be desired. Front seats are well off the floor so knees are almost at right angles when seated. Pedals are easy to reach, but they are too small. Front seats lift forward in one piece instead of just the back moving forward, allowing plenty of room to enter the rear. Steering wheel position takes a little getting used to, but both wheel and gear shift lever are conveniently located for comfortable driving.

A brake warning light is new for '68. It can be activated manually to be sure the light bulb is functioning. High beam switch is located on the dash, with the normal floor location

for that instrument being taken over by a windshield washer-wiper pedal. We picked up the Rallye at night and were startled, when attempting to get high beams, by having our windshield washed and wiped.

Size of the Opel trunk is another of the highly deceiving aspects of the car. When viewed from outside, the trunk looks as though you may as well forget it, by American standards. But, open the deck lid and... surprise again. Gaping in front of you, like the whale about to swallow Jonah, is a cavernous chasm. Bottom of the trunk is much lower than it appears from outside, partly because the fuel tank is located in the right rear fender in a vertical position, thus leaving the underbody free for additional luggage, and partly because the stylists have done a good job of concealing it. The spare tire is located in the opposite fender—this is a good design feature which leaves the entire trunk available for storage.

Riding qualities also get accolades for a compact car with such good handling characteristics. New suspension gives a soft, smooth ride, but it is never "mushy-soft." Radial ply 155 SR x 13-inch tires also add to riding quality and stability. "Tight-as-a-drum" is an overworked cliché, but that is the only way to describe the body on the Kadett. After 1000 miles of driving on every type of road, not one rattle or vibration could be detected in the Rallye body. The only sound heard when encountering bumps—from tar dividers to good sized chuck-holes—was the 'thump' of the tires. Ride was always level and imparted that "glued-to-the-road" feeling.

Once you get to know it, you'll find the Rallye Kadett has a personality all its own. While it may not be built by little elves in the Black Forest, some of their prankish, cunning ways appear to have mysteriously found a haven in the '68 Kadett. /MT



Interior appointments are excellent, although pedals are a bit small and wheel is at odd angle.

PERFORMANCE

Acceleration	3.1 secs.
0-30 mph	6.3 secs.
0-45 mph	11.5 secs.
0-60 mph	18.3 secs.
0-75 mph	18.3 secs.
Passing Speeds (3rd gear):	
40-60 mph	6.0 secs. 449.2 ft.
50-70 mph	8.0 secs. 704 ft.
Standing Start 1/4 mile:	
76 mph	18.5 secs.
Speeds in Gears:	
1st	30 mph @ 5800 rpm
2nd	49 mph @ 5800 rpm
3rd	73 mph @ 5800 rpm
4th	86 mph @ 5000 rpm
MPH Per 1000 RPM:	18.5 mph
Stopping Distances	
from 30 mph	21 ft.
from 60 mph	122 ft.
Mileage Range: 22.5-26.4 mpg	
Average Mileage:	24.9 mpg

SPECIFICATIONS

Engine: 4-cyl. in-line cam-in-head. Bore &

Stroke: 3.66 x 2.75 in. Displacement: 115.8 cu. in. Horsepower: 102 @ 5200 rpm. Torque: 121 lbs.-ft. @ 3400-3800 rpm. Compression Ratio: 9:1. Carburetion: Single 2-bbl. downdraft. Transmission: 4-speed manual, all-synchromesh forward gears. Final Drive Ratio: 3.67:1. Steering: Rack and Pinion. 17.4:1 gear ratio. Turning Diameter: 33.5 ft., curb-to-curb. Tires: 155 SR x 13 radial ply. Brakes: Hydraulic. Front: Disc diameter 9.37-in. Rear: Drum diameter 9.06-in. Suspension: Front: Transverse 3-leaf spring. Rear: Link and track bar with coil springs. Dimensions, Weights, Capacities: Overall length: 164.7-ins. Overall width: 61.9-ins. Overall height: 55.3-ins. Wheelbase: 95.1-ins. Front track: 49.3-ins. Rear track: 50.2-ins. Curb weight: 1997 lbs. Fuel capacity: 10 1/2 gals. Oil capacity: 3 1/4 qts.

OPTIONS & PRICES

Price at dealer's, including heater, radial-ply tires, windshield washer & cleaner, 4-way flasher, safety belts, radiator anti-corrosive, outside mirror, preparation: \$2420.10 as tested with 102 hp, 1.9 engine. Standard with 80 hp, 1.5 engine, \$2324. AM radio \$65.00, Chrome wheels \$67.00.

MOTORSPORTS

UNION/PURE OIL TRIALS

Once again the Union/Pure Oil Performance Trials have passed into history. Winning manufacturers and Union/Pure Oil have shone briefly in their respective publicity spotlights for any astute car buyers who are interested enough to take advantage of the performance results as a basis of comparison in selecting a new car.

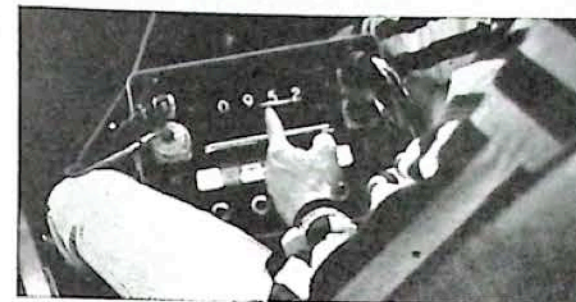
Another first was achieved for Riverside International Raceway at Riverside, Calif., when it was selected as the site for the first West Coast running of the Union/Pure Trials. Since their inception, the trials had been held on the track at Daytona Beach, Fla. In future years, they will alternate between Day-

tona and Riverside. Riverside was selected for 1968 because Union engineers ran comparative tests at both tracks shortly after the 1967 trials and found they could set up courses at Riverside that would give identical results. However, it was necessary to make changes in the economy and braking phases of the trials to compensate for the difference in the tracks and to give more accurate results in the braking tests and more equitable comparisons between different car fuel systems.

Any comparison test involving cars must always include the human factor, and once that factor is introduced, all the scientific measurements are of min-

imal use. Obviously, every driver is different and more accomplished in some events than in others. For that reason alone, results must be judged to a great extent on the handling abilities of the drivers, and that fact shouldn't be forgotten when comparing the final figures. To be completely fair, though, the Union/Pure Trials are seemingly as accurate and impartial as it is possible to produce from a mechanical and scientific standpoint.

Again in 1968, NASCAR (National Association for Stock Car Racing) was the sanctioning body. All cars were purchased from showroom floors by teams of NASCAR and Union buyers in unannounced, random visits to dealerships in a 6-state area. Seventy cars were tested, including all basic models in the most popular price ranges produced by the "Big 4." Testing was run



(Left) Complex electronic gear maintains highly accurate records in economy and acceleration phases. (Below) 'Hold'er Luke.' Keeping cars in a straight line during high-speed braking tests sometimes proved to be a bit difficult.



	Engine Type	Cu. In.	Carburetion	HP	ECONOMY Miles/Gallon (points)	ACCEL. Secs. (points)	BRAKING Dist./Ft. (points)	TOTAL POINTS
CLASS I — SUPER DELUXE								
Buick Electra 225	V-8	430	4V	360	15.266 (8)	9.715 (5)	190.0 (9)	22
Buick Riviera	V-8	430	4V	360	14.676 (5)	8.720 (10)	201.3 (8)	23
Chrysler New Yorker	V-8	440	4V	350	15.397 (10)	9.235 (6)	160.0 (10)	26
Oldsmobile 98	V-8	455	4V	365	15.305 (9)	8.875 (8)	203.8 (7)	24
Oldsmobile Toronado	V-8	455	4V	375	15.025 (6)	8.975 (7)	218.7 (6)	19
Thunderbird 4 Dr. Landau	V-8	429	4V	360	15.158 (7)	8.770 (9)	240.1 (5)	21
CLASS II — DELUXE 8 CYLINDER								
Buick Wildcat	V-8	430	4V	360	14.957 (8)	10.060 (7)	180.1 (9)	24
Chrysler 300	V-8	440	4V	350	14.757 (6)	9.380 (10)	199.7 (5)	21
Dodge Monaco 500	V-8	383	2V	290	15.886 (10)	10.670 (5)	192.8 (6)	21
Mercury Park Lane	V-8	390	4V	315	15.806 (9)	9.535 (8)	182.4 (8)	25
Oldsmobile Delta 88	V-8	455	2V	310	14.599 (5)	10.100 (8)	175.7 (10)	21
Pontiac Bonneville	V-8	400	4V	340	14.805 (7)	11.865 (4)	191.2 ⁷ (7)	18
Pontiac Grand Prix	V-8	400	4V	350	14.528 ¹ (4)	9.495 (9)	212.3 (4)	17
CLASS III — MEDIUM 8 CYLINDER								
Buick LaSabre	V-8	350	2V	230	16.192 (8)	16.390 (5)	192.8 (5)	18
Chrysler Newport	V-8	383	2V	290	14.010 ² (5)	11.225 (9)	182.8 (9)	23
Dodge Polara	V-8	318	2V	230	17.187 (10)	12.745 (6)	183.1 (8)	24
Mercury Monterey	V-8	390	2V	280	16.227 (9)	10.515 (10)	184.0 (7)	26
Oldsmobile Delmont 88	V-8	350	2V	250	16.014 (7)	12.320 (7)	178.8 (10)	24
Pontiac Catalina	V-8	400	2V	290	15.692 (6)	11.840 (8)	189.1 ⁸ (6)	20
CLASS IV — STANDARD 8 CYLINDER								
Ambassador	V-8	290	2V	200	16.445 (7)	15.320 (4)	191.6 (6)	17
Chevrolet Biscayne	V-8	307	2V	200	15.862 (6)	15.195 (5)	182.8 (9)	20
Chevrolet Impala	V-8	307	2V	200	16.670 (8)	14.555 (6)	176.7 (10)	24
Ford Custom	V-8	302	2V	210	18.078 (10)	13.160 (9)	188.1 (7)	26
Ford Galaxie 500	V-8	302	2V	210	17.286 (9)	13.505 (8)	187.5 (8)	25
Plymouth Fury I	V-8	318	2V	230	14.892 ³ (5)	13.095 (10)	204.1 ⁹ (4)	19
Plymouth Fury III	V-8	318	2V	230	14.688 ⁴ (4)	13.825 (7)	199.3 ¹⁰ (5)	16
CLASS V — INTERMEDIATE 8 CYLINDER								
Buick Skylark Custom	V-8	350	2V	230	17.175 (1)	12.420 (2.5)	181.0 (7)	10.5
Chevelle Malibu	V-8	307	2V	200	17.296 (2)	12.420 (2.5)	189.3 (3)	7.5
Dodge Coronet 500	V-8	318	2V	230	18.565 (8)	11.050 (6)	191.5 ¹¹ (2)	16
Dodge Charger	V-8	318	2V	230	18.515 (7)	10.990 (7)	200.3 ¹² (1)	15
Dodge Coronet 440	V-8	273	2V	190	19.181 (10)	12.480 (1)	177.9 (10)	21
Ford Fairlane 500	V-8	302	2V	210	18.508 (6)	11.235 (5)	180.6 (8)	19
Mercury Montego	V-8	302	2V	210	18.911 (9)	10.980 (8)	179.3 (9)	26
Oldsmobile Cutlass	V-8	350	2V	250	16.704 —	10.765 (9)	184.7 (4)	13
Plymouth Belvedere	V-8	273	2V	190	17.937 ⁵ (5)	13.150 —	183.9 (6)	11
Plymouth Sports Satellite	V-8	318	2V	230	17.603 (4)	10.740 (10)	358.0 ¹³ —	14
Pontiac Tempest LeMans	V-8	350	2V	265	16.440 —	12.150 (4)	204.3 —	4
Rebel	V-8	290	2V	200	17.300 (3)	14.225 —	184.1 ¹⁴ (5)	8

	Engine Type	Cu. In.	Carburetion	HP	ECONOMY Miles/Gallon (points)	ACCEL. Secs. (points)	BRAKING Dist./Ft. (points)	TOTAL POINTS
CLASS VI — INTERMEDIATE 6 CYLINDER								
Buick Special Deluxe	OHV-6	250	1V	155	18.403 (2)	17.540 (4)	180.1 (8)	14
Chevelle 300	OHV-6	230	1V	140	20.125 (6)	15.535 (10)	180.4 (6.5)	22.5
Dodge Coronet	OHV-6	225	1V	145	20.480 (7)	16.740 (6)	182.8 (4)	17
Ford Fairlane	OHV-6	200	1V	115	21.872 (10)	21.815 (2)	173.0 (10)	22
Mercury Montego	OHV-6	200	1V	115	21.759 (9)	20.845 (3)	173.9 (9)	21
Oldsmobile F85	OHV-6	250	1V	155	19.508 (4)	15.760 (9)	191.3 (2)	15
Plymouth Belvedere	OHV-6	225	1V	145	20.548 (8)	17.025 (5)	187.6 (3)	16
Pontiac Tempest	OHC-6	250	1V	175	18.585 (3)	15.840 (8)	180.4 ¹⁵ (6.5)	17.5
Rebel	OHV-6	232	1V	145	19.772 (5)	16.380 (7)	181.5 (5)	17
CLASS VII — COMPACT 6 CYLINDER								
American Rogue	OHV-6	232	1V	145	24.295 (10)	15.495 (10)	419.8 ¹⁶ (2)	22
American 220	OHV-6	199	1V	128	23.243 (7)	17.980 (7)	184.9 (7)	21
Chevy II Nova	OHV-6	230	1V	140	21.680 (3)	16.720 (8)	181.2 (10)	21
Corvaire 500	H-6	164	2X1V	95	23.432 (9)	22.320 (4)	185.9 (5)	18
Dodge Dart	OHV-6	170	1V	115	23.348 (8)	19.050 (6)	185.7 (6)	20
Ford Falcon	OHV-6	170	1V	105	22.243 (6)	24.690 (3)	188.5 (4)	13
Ford Falcon Futura	OHV-6	200	1V	120	22.135 (5)	19.170 (5)	190.9 (3)	13
Plymouth Valiant 100	OHV-6	170	1V	115	21.723 (4)	26.670 (2)	184.0 (9)	15
Plymouth Valiant Signet	OHV-6	225	1V	145	21.517 (2)	15.580 (9)	184.7 (8)	19
CLASS VIII — SPORTS INTERMEDIATE								
Buick GS 400	V-8	400	4V	340	16.396 (9)	8.045 (3)	191.3 (6)	18
Chevelle SS 396	V-8	396	4V	325	16.689 (10)	7.135 (4)	179.5 (10)	24
Dodge R/T	V-8	440	4V	375	14.760 (4)	5.895 (9)	219.3 (4)	17
Ford Torino GT	V-8	390	4V	320	16.196 (7)	6.915 (7)	223.4 ¹⁷ (3)	17
Mercury Cyclone GT	V-8	390	4V	320	15.368 (5)	7.050 (5)	182.0 (9)	19
Oldsmobile 442	V-8	400	4V	325	16.310 (8)	6.955 (6)	186.3 (7)	21
Plymouth GTX	V-8	440	4V	375	13.518 ⁸ (3)	5.875 (10)	197.1 ¹⁷ (5)	18
Pontiac GTO	V-8	400	4V	350	15.895 (6)	6.850 (8)	185.2 (8)	22
CLASS IX — SPORT COMPACT								
Chevrolet Camaro	V-8	327	2V	210	18.263 (7)	11.330 (6)	179.0 (10)	23
Ford Mustang 2 + 2	V-8	289	2V	195	19.492 (10)	10.895 (9)	191.4 (6)	25
Mercury Cougar	V-8	302	2V	210	19.319 (9)	10.745 (10)	225.1 ¹⁸ (5)	24
Plymouth Barracuda	V-8	318	2V	230	17.818 (6)	10.925 (8)	180.6 (9)	23
Pontiac Firebird	V-8	350	2V	265	16.788 (5)	11.160 (7)	181.2 ¹⁹ (8)	20
Javelin	V-8	290	2V	200	18.368 (8)	12.730 (5)	182.6 (7)	20

COLOR DENOTES CLASS WINNER

FOOTNOTES
¹ .9 MPG Penalty Deducted (Overall Speed) ² 1.1 MPG Penalty Deducted (Speed Zone) ³ 1 MPG Penalty Deducted (Rolling Stop) ⁴ 1 MPG Penalty Deducted (Rolling Stop) ⁵ .3 MPG Penalty Deducted (Overall Speed) ⁶ 1 MPG Penalty Deducted (Rolling Stop) ⁷ 4 Extra Penalty Stops (Decelerometer) ⁸ 4 Extra Penalty Stops (Decelerometer) ⁹ 4 Extra Penalty Stops (Decelerometer) ¹⁰ 4 Extra Penalty Stops (Decelerometer) ¹¹ 4 Extra Penalty Stops (Decelerometer) ¹² 4 Extra Penalty Stops (Decelerometer) ¹³ 4 Extra Penalty Stops (Decelerometer) ¹⁴ 4 Extra Penalty Stops (Decelerometer) ¹⁵ 4 Extra Penalty Stops (Decelerometer) ¹⁶ 4 Extra Penalty Stops (Decelerometer) ¹⁷ 4 Extra Penalty Stops (Decelerometer) ¹⁸ 4 Extra Penalty Stops (Decelerometer) ¹⁹ 4 Extra Penalty Stops (Decelerometer) ²⁰ 4 Extra Penalty Stops (Decelerometer) ²¹ 4 Extra Penalty Stops (Decelerometer) ²² 4 Extra Penalty Stops (Decelerometer) ²³ 4 Extra Penalty Stops (Decelerometer) ²⁴ 4 Extra Penalty Stops (Decelerometer) ²⁵ 4 Extra Penalty Stops (Decelerometer) ²⁶ 4 Extra Penalty Stops (Decelerometer) ²⁷ 4 Extra Penalty Stops (Decelerometer) ²⁸ 4 Extra Penalty Stops (Decelerometer) ²⁹ 4 Extra Penalty Stops (Decelerometer) ³⁰ 4 Extra Penalty Stops (Decelerometer) ³¹ 4 Extra Penalty Stops (Decelerometer) ³² 4 Extra Penalty Stops (Decelerometer) ³³ 4 Extra Penalty Stops (Decelerometer) ³⁴ 4 Extra Penalty Stops (Decelerometer) ³⁵ 4 Extra Penalty Stops (Decelerometer) ³⁶ 4 Extra Penalty Stops (Decelerometer) ³⁷ 4 Extra Penalty Stops (Decelerometer) ³⁸ 4 Extra Penalty Stops (Decelerometer) ³⁹ 4 Extra Penalty Stops (Decelerometer) ⁴⁰ 4 Extra Penalty Stops (Decelerometer) ⁴¹ 4 Extra Penalty Stops (Decelerometer) ⁴² 4 Extra Penalty Stops (Decelerometer) ⁴³ 4 Extra Penalty Stops (Decelerometer) ⁴⁴ 4 Extra Penalty Stops (Decelerometer) ⁴⁵ 4 Extra Penalty Stops (Decelerometer) ⁴⁶ 4 Extra Penalty Stops (Decelerometer) ⁴⁷ 4 Extra Penalty Stops (Decelerometer) ⁴⁸ 4 Extra Penalty Stops (Decelerometer) ⁴⁹ 4 Extra Penalty Stops (Decelerometer) ⁵⁰ 4 Extra Penalty Stops (Decelerometer) ⁵¹ 4 Extra Penalty Stops (Decelerometer) ⁵² 4 Extra Penalty Stops (Decelerometer) ⁵³ 4 Extra Penalty Stops (Decelerometer) ⁵⁴ 4 Extra Penalty Stops (Decelerometer) ⁵⁵ 4 Extra Penalty Stops (Decelerometer) ⁵⁶ 4 Extra Penalty Stops (Decelerometer) ⁵⁷ 4 Extra Penalty Stops (Decelerometer) ⁵⁸ 4 Extra Penalty Stops (Decelerometer) ⁵⁹ 4 Extra Penalty Stops (Decelerometer) ⁶⁰ 4 Extra Penalty Stops (Decelerometer) ⁶¹ 4 Extra Penalty Stops (Decelerometer) ⁶² 4 Extra Penalty Stops (Decelerometer) ⁶³ 4 Extra Penalty Stops (Decelerometer) ⁶⁴ 4 Extra Penalty Stops (Decelerometer) ⁶⁵ 4 Extra Penalty Stops (Decelerometer) ⁶⁶ 4 Extra Penalty Stops (Decelerometer) ⁶⁷ 4 Extra Penalty Stops (Decelerometer) ⁶⁸ 4 Extra Penalty Stops (Decelerometer) ⁶⁹ 4 Extra Penalty Stops (Decelerometer) ⁷⁰ 4 Extra Penalty Stops (Decelerometer) ⁷¹ 4 Extra Penalty Stops (Decelerometer) ⁷² 4 Extra Penalty Stops (Decelerometer) ⁷³ 4 Extra Penalty Stops (Decelerometer) ⁷⁴ 4 Extra Penalty Stops (Decelerometer) ⁷⁵ 4 Extra Penalty Stops (Decelerometer) ⁷⁶ 4 Extra Penalty Stops (Decelerometer) ⁷⁷ 4 Extra Penalty Stops (Decelerometer) ⁷⁸ 4 Extra Penalty Stops (Decelerometer) ⁷⁹ 4 Extra Penalty Stops (Decelerometer) ⁸⁰ 4 Extra Penalty Stops (Decelerometer) ⁸¹ 4 Extra Penalty Stops (Decelerometer) ⁸² 4 Extra Penalty Stops (Decelerometer) ⁸³ 4 Extra Penalty Stops (Decelerometer) ⁸⁴ 4 Extra Penalty Stops (Decelerometer) ⁸⁵ 4 Extra Penalty Stops (Decelerometer) ⁸⁶ 4 Extra Penalty Stops (Decelerometer) ⁸⁷ 4 Extra Penalty Stops (Decelerometer) ⁸⁸ 4 Extra Penalty Stops (Decelerometer) ⁸⁹ 4 Extra Penalty Stops (Decelerometer) ⁹⁰ 4 Extra Penalty Stops (Decelerometer) ⁹¹ 4 Extra Penalty Stops (Decelerometer) ⁹² 4 Extra Penalty Stops (Decelerometer) ⁹³ 4 Extra Penalty Stops (Decelerometer) ⁹⁴ 4 Extra Penalty Stops (Decelerometer) ⁹⁵ 4 Extra Penalty Stops (Decelerometer) ⁹⁶ 4 Extra Penalty Stops (Decelerometer) ⁹⁷ 4 Extra Penalty Stops (Decelerometer) ⁹⁸ 4 Extra Penalty Stops (Decelerometer) ⁹⁹ 4 Extra Penalty Stops (Decelerometer) ¹⁰⁰ 4 Extra Penalty Stops (Decelerometer)

from Jan. 7 to 11. At Daytona, cars stayed on the track during their break-in period, but because of Riverside's road course, the cars were broken-in on the freeways and highways of Southern California, a more familiar break-in procedure. NASCAR-sponsored events are customarily "for-men-only." At Riverside the sex barrier was broken when Paula Murphy chauffeured three Pontiac entries.

As in the past, all cars were classified in an arbitrary manner using general body size, weight and price as yardsticks. Only options permitted were automatic transmissions and air conditioners. In the past, each manufacturer's line was represented by two cars in all classes in which they were eligible. In 1967 there were 86 cars but only 59 models were represented. In 1968 each car entered was a distinct model. Also new in 1968 was the fact that all cars were purchased by and titled to Union Oil. Manufacturers were invited to participate to the extent of breaking in the cars, tuning them and driving them in the tests.

Two of the three events were revised in terms of technique. In the economy phase, for the past several years, each car was provided with a single gallon of fuel. The contest was simply to see how far each car could run on that gallon. Because Riverside is a hilly course, compared to Daytona, a new technique was devised where each car in every class ran exactly the same distance and the mpg figure was computed from the total amount of gasoline consumed. Cars still maintained an average speed of 40 mph for the course, negotiated the 65 mph speed zone and made a full stop for each lap. Also, a container of fuel cooled to a specified temperature was attached to the car.

Several new procedures were instituted at Riverside for '68. Cars no

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What makes RISLONE CONCENTRATE different? It's the new *total oil additive* that's guaranteed to give you a new surge in power within 10 miles, or your money back. That's because RISLONE *actually* works to dissolve gum, sludge and varnish deposits. Other additives only coat these power-robbing deposits with a temporary film of lubricant. RISLONE permanently frees sticky valves and lifters, eliminates once and for all the causes of lost power and compression.

To prove it, we asked Ted R. Willy, owner of the nationally known, Willy's Carburetion & Ignition Laboratory, Chicago, Illinois, to test RISLONE. Result? "The addition of a can of RISLONE to the cars tested produced a notable increase in the operating efficiency of each engine... and a 10% or more increase in horsepower." Add RISLONE when you change oil... and every time you need oil. At Service Stations everywhere.

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MOTORSPORTS *continued*



Economy phase of the trials was revised for 1968. Insulated container of fuel cooled to specified temperature was attached to front of car and mpg computed from fuel consumed.

longer run until auxiliary fuel supply is exhausted. Carburetors are not drained. A cut-off valve is attached to the auxiliary fuel line. The valve is switched on at the start of the run and off at the end. When the valve is in the 'off' position, cars run on their regular fuel supply. In the 'on' position, the auxiliary, or test supply is used. Auxiliary tanks were weighed before the start of each run and again at the end. Miles per gallon were calculated from the weight differential. A measured distance was run over five laps. Two laps were 3.225 and 3.127 miles long respectively, and three laps were 3.215 miles long. Total lap distance run was 15.997 miles.

The other event to be changed was braking. In the past each car's stop was measured electronically from a digital read-out instrument inside the car. As the car decelerated to 65 mph the distance counter started. It stopped when the car stopped moving. In 1968 when the car reached 65 mph on the way to 0, a gun on the fifth wheel fired automatically, marking the pavement where the car reached 65. When the car stopped, a measuring crew with tape measure physically measured the distance from the mark on the pavement to where the car had come to rest. In 1967 Oldsmobile swept five of the nine classes. In 1968 FoMoCo dominated the scene, also taking five of the nine. Mercurys took three and Fords took two. Two Chevelles took their class honors and an American Rogue topped its category.

If you are looking for economy, Chrysler Corp. and Ford proved their cars can deliver top mileages in their fields. In the big, Super Deluxe class, mileage honors went to a Chrysler New Yorker. Dodges—a Monaco, a Polara and a Coronet—brought in top economy in three other 8-cylinder classes, with a Ford Custom taking bows in the standard 8-cylinder class. Ford also brought in two repeat wins in the Intermediate 6-Cylinder and Sport Compact class. Winners were a Fairlane and a Mustang 2+2, economy

winners in the 1967 event. Rogue was tops in the Compact 6-Cylinder category and a Chevelle SS 396 took the Sports Intermediate class for economy.

Big bore engines again proved they can deliver the horses when necessary. In acceleration tests, honors in each class went to cars with large engine displacements. Plymouths took charge in three of the nine classes. A 375-hp Plymouth GTX made the fastest run of the trials—5.875 seconds to accelerate from 25 to 70 mph. Outside the Sports Intermediate class, acceleration times were unimpressive. The American Rogue also took top spot in acceleration within its class, and probably would have taken braking as well except for a broken wheel cylinder.

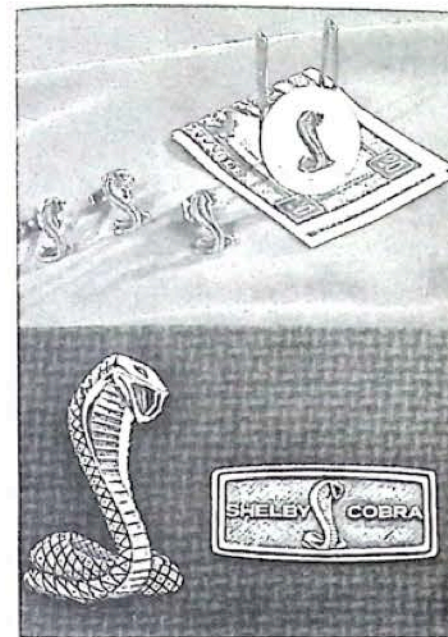
Braking was also unimpressive, and actually frightening, for panic stops from 65 mph, considering how relatively far advanced American cars are in other areas such as power, weight and comfort. Undoubtedly, the ratio of brake size to car weight had something to do with it. Winning distances ranged from 173 feet to 181.2 feet. The Chrysler New Yorker in the heavy, Super Deluxe class stopped in 160 feet to win its class, and should raise some eyebrows when comparing to the lighter Compact and Sports Compact classes.

The Union/Pure Oil Trials are definitely not to be considered spectator oriented, and the unseasonably cold, wet weather at Riverside this year further cut down attendance among the ranks of hardy, weatherbeaten journalists. Results are shown in the preceding chart and should prove useful as a basis for comparison if you're planning on a new family iron in 1968.

—Bill Sanders

Competition comes to Michigan
It looks like Michigan is finally going to get a major speedway. Michigan International Speedway Inc. hopes to hold its first race next Oct. 13, at the new track near Adrian, Mich., in the Irish Hills area about 60 miles west of Detroit. Work had been held up until the Securities and Exchange Commission approved sale of

PRODUCT TRENDS



in personal accessories...

Designed for sports car buffs and men who dig the emblem, miniature cobras, faithful reproductions of the Shelby insignia, have been handcrafted into cuff links, tie tacks, key chains and French money clips by Florence of California. The silver-plated jewelry is augmented by a Shelby Cobra Plaque and Cobra Escutcheon. Both can be attached to a car with adhesive. Retail prices are: \$1.75 for key chain; \$1.95, tie tack; \$3.50, cuff links; \$3.25, French money clip; \$2.95, plaque; and \$4.95, snake. Order from ACSCO Products, 826 N. Hollywood Way, Burbank, Calif. 91503.

in tune up...

New battery tester has flexible lead which simplifies and speeds testing. Flexible cable and prod can easily reach any battery terminal, even under auto body cowling. With flexible lead, spread between terminals is over 18 inches. You can test condition of any 6- or 12-volt battery under load in or out of the vehicle and also check the charging rate. One voltage reading is all that is necessary. Flexible lead stores in carry handle when not in use. Write Burton-Rogers Co., 42 Carleton Street, Cambridge, Mass. 02142.

in performance...

A new oil cooler designed for high-performance and race machines has been developed by Hayden Trans-Cooler Co. The new design allows it to operate on very low pressure to keep engine, transmission and differential oils running at safe temperatures in all types of race engines. They are vibration and shock resistant and are compact, light weight and easily fit tight configurations. A patented inner-fin component produces added cooling. Largest cooler in this series is only 15.5 inches long. Priced from \$95 to \$185. For complete data contact, Competition Vehicle Dept., Hayden Trans-Cooler Co., 20109 Valley Blvd., Rialto, Calif. 92376.

continued on page 101

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Grant Rambler Rebel SST. Courtesy Grant Industries and American Motors. Photographed at Orange County International Raceway, Calif. You'll find them wherever exciting people meet.

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For these are the exciting new cycles from Yamaha. If you want to "trip with the light fantastic," hang ten on this new 180 Street Scrambler. It comes with Yamaha's famed 2-cylinder, 5-port engine and 5-speed transmission. And it goes where you want to go—for a lot less money than performance like this has cost before. See all 20 Exciters at your Yamaha dealer's now.



While you're there, ask for your free copy of Yamaha's brochure of all the Exciters for '68. Or write P.O. Box 54540, Los Angeles, California 90054, Department MT-4-8 • Canadian Distributor: Yamaha Division of Fred Deeley Limited, British Columbia.



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NGK Spark Plugs have the widest thermal range of any spark plugs! They avoid both "hot" plug pre-ignition...and "cold" plug fouling problems. Save gas. Significantly improve street or speed performance!

Other spark plugs today have an iron core. Fine for limited driving. But cannot give you top performance in both high and low speed driving. This is why NGK, selling over 50 million plugs a year in 80 countries, invented the exclusive "Heart of Copper" Spark Plug. Here's the story in a nutshell:

1. In a "cold" running engine, "hot" plugs with an iron core work fine at low speeds. But are overheated at high speeds. Quick erosion of the tip and pre-ignition will often result.
2. In a "hot" running engine, conventional "cold" iron core plugs run good at high speeds, but too often foul at low speeds. Misfire. Waste gas.
3. "Hot" engine or "cold," NGK's have the flexibility to keep up with demands of either slow or fast driving. At high speeds, NGK's "Heart of Copper" more easily dissipates heat—preventing pre-ignition. At low speeds, NGK's longer nose prevents fouling, waste of fuel.

Special Offer! Send \$1.00, get three NGK decals, big fact-filled booklet on racing spark plugs, plug conversion chart and heat range charts! Mail coupon today!

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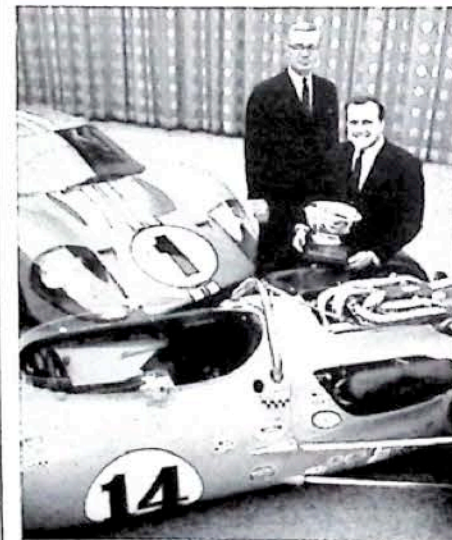
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MOTORSPORTS *continued*

several million dollars worth of debentures and common stock. The plant will include a 2-mile, semi-banked oval and a 2.75-road track. It's not certain yet what type of race will inaugurate the new speedway.

Foyt named racing man of year

Unflappable A. J. Foyt, a 15-year veteran of international racing competition, has been named Auto Racing's Man of The Year for 1967 by Ford. Foyt, 32, had a spectacular season in '67. He became the first driver ever to win both the Indianapolis 500 and the 24 Hours of Le Mans in the same year. In the latter event he teamed with Dan Gurney in driving a Ford Mark IV to a record-breaking triumph. At Indy, he became the fourth man to win that race three times, joining Wilbur Shaw, Louis Meyer and Mauri Rose. In addition to Indy, Foyt also won four other championship events to capture his fifth USAC championship. Foyt was given a silver bowl as his trophy, plus a '68 Lincoln Continental Mark III.



In accepting, Foyt said, "It's a great honor to accept this award. I really feel I should have won it last year. I had a terrific year then." Mario Andretti took the honors last year and Jim Hurtubise won in 1965.

Tire battle

Denny Hulme, Jack Brabham, Bruce McLaren, Dan Gurney and A. J. Foyt won the big ones for the men of Goodyear, but the overall box score of major 1967 races was close. Goodyear came up with 48 triumphs and Firestone pilots picked off 44 checkered flags. Now Firestone has lost both Roger Penske, its Eastern racing tire distributor, and NASCAR ace Richard Petty. Both are reported to have signed 3-year contracts with Goodyear at close to \$100,000 annually. In addition, Penske takes over Goodyear's Eastern racing tire franchise from the New York-based Go-faster Inc. Penske's Firestone-shod Lola, driven by Mark Donohue, overwhelmed last year's U.S. Road Racing Championship, but the car was at a considerable disadvantage tire-wise in the Can-Am series. It wasn't until halfway through the series that Firestone came up with a tire to

match the super-wide (12-inch tread) Goodyears used by Bruce McLaren and Denny Hulme. Donohue also used Goodyears on Penske's Camaro when he won the last Trans-Am race of the '67 season. Petty used Goodyears more often last year, but 21 of his 27 wins came on Firestone rubber. Firestone's decision last fall to drop out of the multi-million dollar tire war was obviously sensible, but now Goodyear goes into the '68 season with the USAC champion (A. J. Foyt), the NASCAR champ (Petty), and the road racing champ (Donohue).

Austria to get GP circuit

The first F1 GP of Austria was held in the mountain village of Zeltweg in 1964, Bandini winning in a Ferrari and Gurney taking the fastest lap in a Brabham-Climax. The old NATO runways lacked the crudest amenities and in '65 plans were launched for the construction of a GP circuit worthy of the name. Groundbreaking is due to commence this spring and it is planned to revive the Austrian F1 GP in '69.

Porsche plans big year

Porsche drivers for '68 are to be Vic Elford, Hans Hermann, Gerhard Mitter, Jochen Neerpasch, Lodovico Scarfiotti, Jo Siffert and Rolf Stommelen. Last year's 8-cylinder, used very cautiously for sprint purposes, is expected to lead a much more active competition life in '68. High interest will center on a new 3-liter model; a single example is slated to make its debut at Le Mans. The 910 Spider should continue to rule the European Mountain Championship. At last season's end it was pulling 273 DIN bhp from its two liters.

New formula for France

Formula France is the name of a new nationwide racing formula which will be finalized in that country in June. It is being organized by the ever dynamic and newly powerful French Federation of Automobile Sport, with the authority of the French State. The single-seater cars will have a minimum dry weight limit of 922 pounds, and will be powered by stock, 1255cc Renault-Gordini engines. Races will be contested on nearly every important circuit in the country and will be the basis for an annual French National Championship.

Racing pays off

The United States Auto Club reported that its total payoff of \$2,273,516 last year represented an increase of \$302,606 over previous years for the four divisions.

APRIL AUTO RACING CALENDAR OF EVENTS

- April 7 USAC Championship 150-mile Phoenix, Ariz.
- April 21 North Wilkesboro 250 (NASCAR) Gwyn Staley Memorial North Wilkesboro, N.C.
- April 21 USAC Championship 150-mile Trenton, N.J..
- April 28 U.S. Road Racing Championship (SCCA) Riverside, Calif.
- April 28 Martinsville 500 (NASCAR) Martinsville, Va.

(Dates listed are tentative at press time. Check dates locally before event.) /MT

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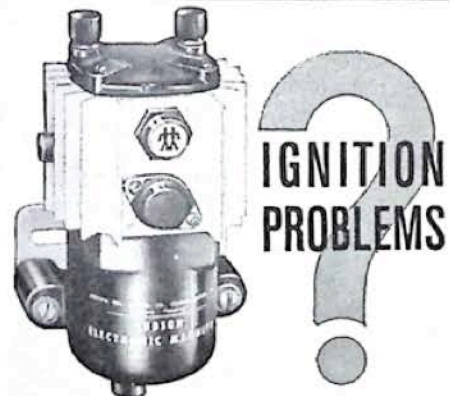
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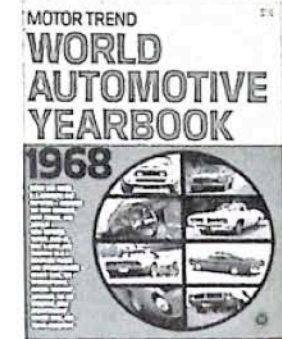
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FOR THE RECORD...

An automotive year is a fleeting thing. It passes all too quickly, and too soon can become only vague memory. The annual styling changes in Detroit-offered cars, the striking new models from overseas automakers, the season's heroes and feats in motorsports competition—all these can be easily dimmed by the ever-changing context of happenings. What's needed to preserve the image and enhance the recollection is a lasting record, in text and photos, of the season just past.



And that's the reason for—and the promise of—the 1968 World Automotive Yearbook, compiled by the editors of MOTOR TREND. This third edition of the annual automotive diary is more complete, more fact-packed, more enjoyable, more worthwhile than ever—with something for everyone.

Here you'll find all the 1968 domestic cars, from compacts to luxury specials—facts, photos, specifications, price ranges, engine and gearing data, option availability, body dimensions, etc. For ready reference now—and in the future—this is a definitive record of all classes of 1968 U.S. cars.

Then turning its attention overseas, the '68 World Automotive Yearbook presents a parade of the latest imported cars, from Abarth to Volvo... photos, specifications, models and body styles, engineering details, etc.

For the motorsports enthusiast, there are 62 exciting pages covering the past season's highlights of the Championship Trail, Grand National Stock Car Circuit, Sprints, Sports Car and Grand Prix Championships and the Trans-Am Series. The men, the machinery, the memorable moments—they're all here.

A special section presents the winners of MOTOR TREND's Annual Awards—Car of the Year, Outstanding Cars in Category, Foreign Car Awards, Accessory Achievement Awards, Individual Merit Awards.

The MOTOR TREND 1968 World Automotive Yearbook in its 192 pages captures the full flavor of the '67-'68 season. It's a volume your automotive bookshelf needs to be complete. Just \$2.00 at newsstands and bookstores, or order directly from Petersen Publishing Co. (see coupon, page 84). /MT

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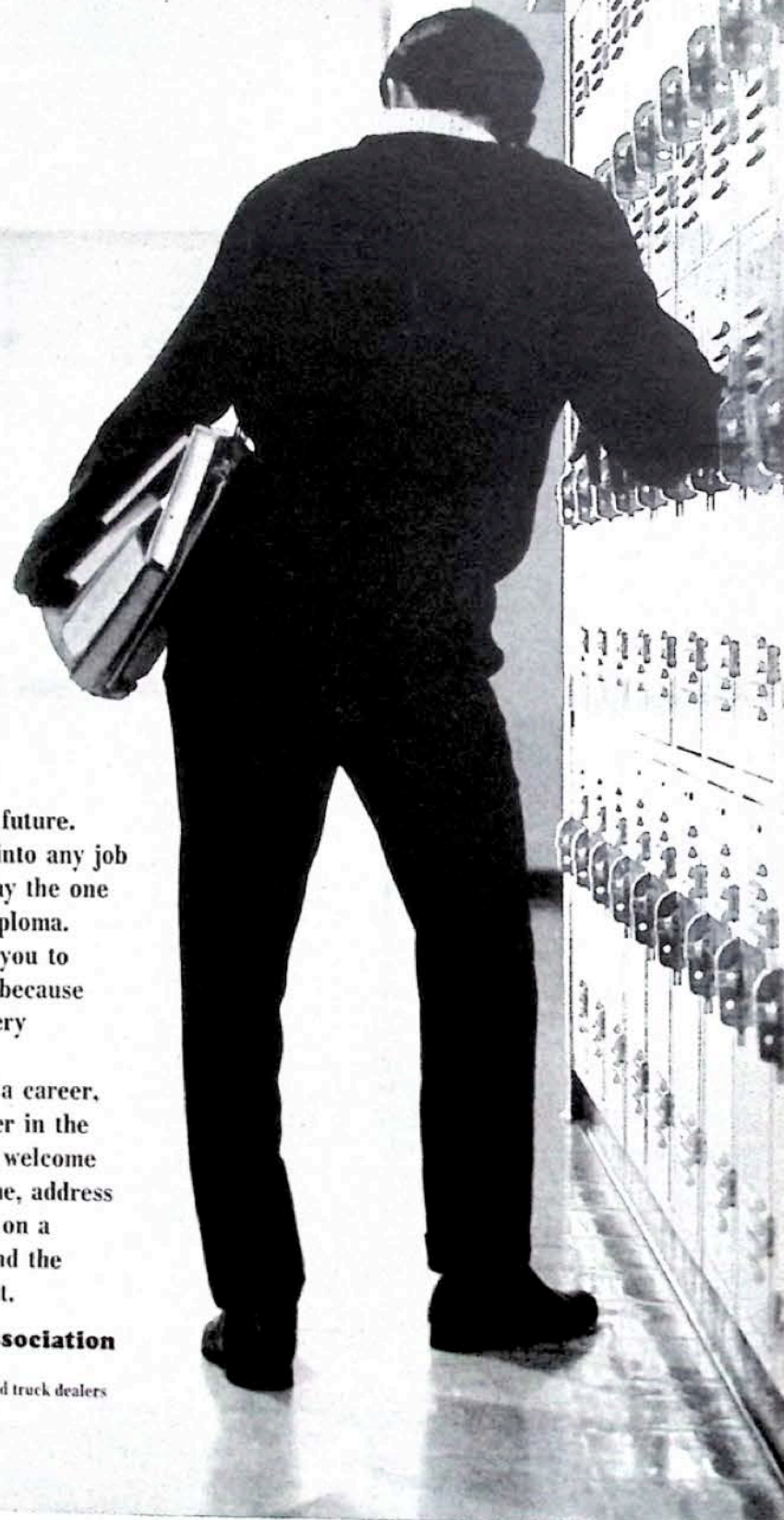
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A 1-piece bellhousing is now available for Chevrolet engines. Called the C-55, the unit is manufactured from Manganese-Moly, a special high-strength alloy with lightweight characteristics. Complete unit weighs only 36 pounds with list price of \$99.95. Included in the package are special high-strength bolts and a flex plate to protect engine block in case of explosion. For complete information contact: R C Industries, Inc., Box 356, Dept. 21, Medina, Ohio 44256.

A new series of street/strip camshafts has been unveiled by Crower Cams & Equipment Co. Called the Monarch Series, the new line carries a list price of \$57.50. Available now for most popular engines in either solid or hydraulic lifter grind. Designed especially for situations where a car is used both for street and weekend racing. Your cam contact is: Crower Cams & Equipment Co., 3333 Main St., Dept. 21, Chula Vista, Calif. 92011.

Now available at speed shops throughout the country for 1968 Chevrolets, including all models of Chevelle, Chevy II, Camaro and Corvette are the popular Schiefer clutches and flywheels. For both street and competition use, these units insure maximum clutch torque efficiency, increased holding pressure, and no chatter or linkage deflection. All have Schiefer's lifetime guarantee. Write or call Schiefer Mfg. Co., 508 Monterey Pass Rd., Monterey Park, Calif.

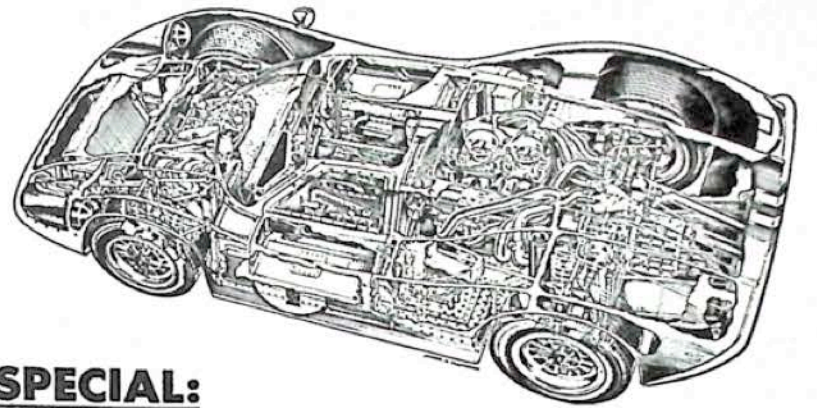
Holley Carburetor Co. is out with a new line of higher performance 2-bbl. street carburetors designed to fit 1964-67 Chevrolet, Ford and Chrysler engines. They have been expressly designed to fit 283-, 289-, and 318-cu.-in. engines. The new pots are said to provide better acceleration, better performance and even improved gas mileage. Available now from Holley Carburetor Co., 11955 East Nine Mile Rd., Warren, Mich. 48090.

in safety helmets...

Cragar Industries has added a safety helmet to their line of specialty equipment. New helmet is available in both full and partial coverage configuration, and is approved by the U.S.A. Standards Institute, Snell Foundation, American Motorcycle Assoc. and American Assoc. of Motor Vehicle Administration. Helmet shell is fiberglass with non-resilient and resilient liners. Chin strap, with both snaps and D-ring is double-riveted to helmet. Full coverage model is \$36.50, partial coverage, \$24.50, from Cragar Industries, 5829 Firestone, South Gate, Calif. 90280.

"Aggie 98" is a new helmet bearing the nickname and lucky number of J. C. Agagianian. Helmet shell is made of fiberglass cloth bonded with special plastic resin to withstand impact. Shock is absorbed by layer of vinyl covering helmet interior. Foam padding adds protection and snug, comfortable fit. In white or metalflake red, blue and gold, from Dunleer Corp., 16400 Ventura Blvd., Encino, Calif. 91316.

Sterling's "Pro" is a new design with one size helmet to fit all size heads, automatically. Headband resizes itself everytime it is put on, regardless of size or shape of head. New Sterling model is made of formulated fiberglass with headband of a special polyfoam, and meets all safety standards. For more info write: Sterling Products Co., 1689 Oakdale Ave., West St. Paul, Minn. 55118. /MT



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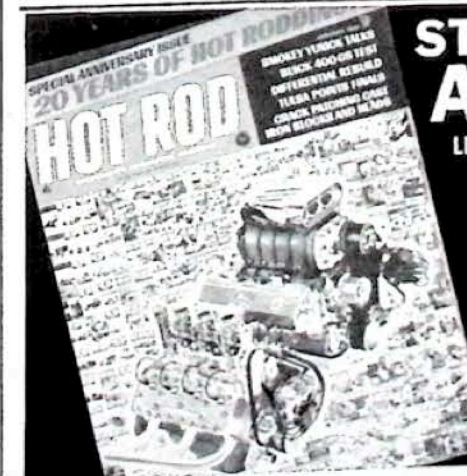
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Q & A

413 vs. 429

Q On the basis of overall quality, dependability and performance, which engine would you choose: Chrysler's 413 360-hp V-8 of a few years back or T-bird's new 429? I read your report on the 429 in the Dec., 1967, issue, and would like to know how the two compare? Also, why was the 413 taken out of production?
Gayle Neeley Golden, Colo.

A Overall, the T-bird 429—simply because it incorporates several more years of technological advances. There may be some specific instances where the older 413 may have used better materials, such as forgings instead of castings. But within the design life and operating limits, the newer materials perform at least as well. A fairer comparison would be to pit the new T-bird engine against current Chrysler products, where differences are much less.

Of course only Chrysler knows the exact reason the 413 was discontinued. (We would use "dropped" advisedly because this engine was stretched to 426 cubic inches without any basic changes.) Public demand because of association with the engine size used in NASCAR races is most likely the answer. People figured if it was good enough for Richard Petty, it was good enough for them.

4 barrels for 2

Q I own a 1965 Buick Riviera that averages 8-10 mpg overall with the standard 4-bbl. carburetor. What are the pros and cons of preventing 2 of the 4 bbls. from opening? Will this improve gas mileage?
F. Martin Sultan Briarwood, N. Y.

A It depends on what your driving habits are. If you normally soft-pedal the accelerator, disconnecting the secondary pair of barrels won't help much. On the other hand, if you like to always be first away from traffic signals, do lots of passing, digging out, and the like, it definitely will. The reason is that only the primaries are open except at high speeds or under hard acceleration. You might have your carb checked by a competent mechanic—the secondaries might be opening too soon.

4-4-2 plus

Q I have persuaded my parents to purchase a '68 Olds 4-4-2 with Turbo Hydra-Matic, power steering and disc brakes. I would like to give the car more punch but still have it serve as a good family car. What do you suggest?
Jay Halliday Des Moines, Iowa

A Your parents are good sports. We would confine any "modifications" to, at the very most, a ram air kit. Merely removing the belts and air cleaner is usually good for a few tenths of a second at the strip and costs nothing. Just about every other modification that we can think of will void your warranty and most would definitely not suit everyone's notions about what is a good family car.



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\$queeze your trouble\$ away
On a weekend trip in my '62 Ambassador I was plagued with what turned out to be a clogged float valve in my carburetor, causing excessive gas consumption, flooding and ultimate stalling. This was particularly annoying, because I had just had the carburetor overhauled. I was able to locate a good samaritan who, suspecting what the trouble was, performed the following task with the accompanying explanation:

"Some dirt particles lodged in the needle valve, preventing its closing and causing the flooding. Let the raw gas evaporate from the cylinders, then start the engine. Squeeze shut the flex hose in the gas line leading from the fuel pump. The gas in the carburetor reservoir will be used up, allowing the float to drop and opening the needle valve wide open. Just as the engine begins to falter, running out of fuel, release the flex hose. The surge of gas will wash the dirt from the needle valve. Use pliers to squeeze the flex hose."

This quickie treatment solved my problem, and I've not had any trouble since. Even the flex hose didn't seem to suffer.
Robert M. Clark Fresno, Calif.

those cool vibration\$

Perhaps I can help N. Svendsen of Decatur, Ill., who had a letter in your Jan., 1968, Q & A. His problem was vibration over 75 mph in a 1964 Cadillac. I went through the same kind of thing with my 1958 Cadillac and after first spending hundreds of dollars and countless hours, finally cured the problem.

After having checked or replaced just about every component in the suspension and driveline, I resorted to the following procedure: after removing the driveshaft and laying it on the floor in a straight-line position, I took three pencils and put them on the end cup of each universal joint, all pointing in the same direction as the driveshaft. If the shaft is true, all three pencils will line up as in a gun sight. When I got down and sighted, I found that the rear U-joint was slightly twisted around.

Cadillac used a 2-piece shaft up to and including 1964. The last two feet or so of the rear section consisted of an outer shaft and a separate inner shaft bonded together with a layer of rubber. What happened is that this allowed the outer shaft to turn a few degrees in reference to the inner shaft, destroying the factory balance. The cure is the elimination of the rubber bushing setup and replacing it with a single piece of tube. I used a 1957 driveshaft and it fit 100%. If a '57 shaft won't fit a '64, a machine shop can make up a new rear section. (That is if yours has turned as mine did.) Incidentally, fan blades or a faulty crankshaft vibration damper can cause similar problems.

Neil Nettleton Needham Heights, Mass.

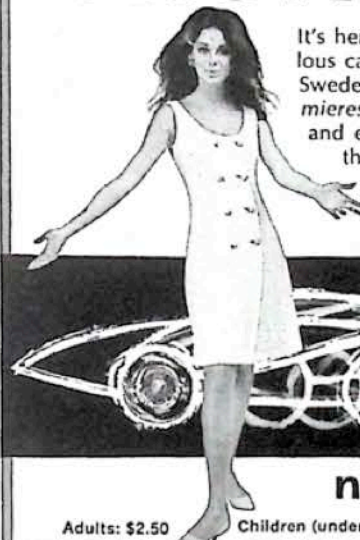
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Want to make a quick ten-spot? All you have to do is jot down an automotive performance tip and send it to "Q&A," MOTOR TREND Magazine, 5959 Hollywood Blvd., Los Angeles, Calif. 90028. For each tip selected and used in this column, Q&A will award \$10, but none submitted can be returned or acknowledged, nor can MOTOR TREND assume any liability.

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VOLKSWAGEN OWNERS: World-wide VW owners assoc. Get more enjoyment, save money, hints, tips, service bulletins, technical help, newsletters. Satisfaction guaranteed. \$6. Join Volkswagen International Association, P.O. Box 261, Claymont, Del. 19703.

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'49 CADILLAC 2-door (stbk. 3700 mi. on completely rebuilt o'hauled engine. Hydramatic, xlt perf. solid, drive anywhere. Very good cond. \$625 or trade for/on motorcycle. William Herbold, 2415 N. 45th St., Milwaukee, Wisc. 53210. Phone (414) 442-3085.

WANTED

PRE-WAR AUTO sales catalogs, manuals, Motor Annual Show Issues, Boyce auto nameplate motors, radiator mascots, defunct auto stock certificates. Top prices paid. Sheldon J. Lewis, 154-62 71st Ave., Flushing, N.Y. 11367.

\$100 REWARD for information leading to purchase of unadvertised antique or classic auto. Large size convertible cars of pre '39 vintage preferred. Samuel Sherman, 88-08 32nd Ave., E. Elmhurst, N.Y. 11369.

'57 THUNDERBIRD, completely restored or in restorable original condition. Please send detailed description and price. Gordon R. Stone, Bunker Hill, Ill. 62014.

ANDY TACKLES INDY... AGAIN! Grana-telli's saga of the silent screamer comes down the straightaway in Motor Trend's story of the LOSER OF THE YEAR, coming up next. It's an in-depth look at the man and his car, along with his views and news on turbo-cars for racing and street. Also in the May issue, CURTISS-WRIGHT'S WANKEL takes a turn for the better in an up-to-snuff report on the rotary-piston engine's qualifying race for emission standards. The next issue is also the annual OPTIONS AND ACCESSORIES SHOPPING GUIDE. All about factory and dealer-installed options — past, present, future and way out. You'll want to keep this one as reference. And speaking of extras, get a good look at the bolt-on kits now available for that HOTTER LOOK on the Camaro, Barracuda, Cougar—even Eldorado! Then there's a special LUXURY ROAD TEST which includes a dollar-value comparison. "Traditional" luxury cars (Cadillac, Continental and Imperial) square off against the "low-priced three" luxury lines (Chevy Caprice, Ford LTD, Plymouth VIP). Its one of the most exciting issues of the year, with a Chevy II vs. VW 1600 TOUR TEST, three FOREIGN SPORTS CAR TESTS (Porsche Sportomatic, Toyota 2000 GT and Cortina GT) and a DAYTONA 500 and Cortina GT) and a PRIZE OF THE YEAR... your chance to win Motor Trend's CAR OF THE YEAR, a '68 GTO! Pick up the May issue of Motor Trend on your newsstand April 18th. It's a winner!



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SUPER TOO. "I'm getting bored with so-called 'Supercar' tests. They are interesting, but in performance, these cars are hardly 'super.' Cars such as GS 400s, GTOs, 442s, and all the Fords are too heavy and too bogged down with accessories as the so-called 'enthusiasts' purchase them. All they offer is good looks, high payments and big gas bills. My car is a '67 Camaro with 275-hp, 327-cu.-in. engine and 4-speed transmission. Options are radio, 3.73 posi-traction, and F70 x 14 wide oval tires. I have added lift bars and a distributor advance kit. From street races, drag meets, and 'drive-in money runs,' the only 'super' car to beat me with less than 440 cubic inches was a GTO with 4.33 gears and no power equipment. Only cars set up like the above GTO will offer the 'super' performance as advertised. For \$3064 I have a good performing, good handling car which will get 19 mpg on a trip. A \$4500 supercar. BAH!

Bob Scott, Miami, Fla.

HUMBUG! The Editors.

MISSING PLYMOUTH. "I was disquieted upon realizing that you ignored the '64 Plymouth 426 wedge as a supercar in your article 'Buying a Used Super Car,' MT, Dec., '67. Not only was it produced prior to the Tempest that year, it too was a homogeneous package of balanced performance with grandiose brake swept area, modified torsion rates-shock dampening, new Herculean 4-speed with Hurst linkage, larger tires and rims, an increased capacity electrical and cooling system, plus a non-restrictive, silenced air cleaner as an integral part of the engine option. It was a complete grand touring machine, not to be ordered bit-by-bit. Though not an advertised intermediate, even the size and mass are in the mode: 119 and 3480. And the warranty, 5/50,000 — was astonishingly super in itself, at the time.

G. W. Aschen, San Antonio, Tex.

We agree, but evidently you missed the note in the article that stated not all cars were tested due to space limitations. The Editors.

SEX SYNDROME. "When I started reading the December article on supercars, I thought I had picked up my December Playboy. You stopped short of stating the theory that the automobile is an extension of the aggressive sex drive in males. Insurance rates of young males with supercars would indicate some people in the insurance business subscribe to the theory. The Road Runner test did hint at this total concept of man and his machine by favorable comments on performance and the advantages of a bench seat. Supercars now come in such a wide variety that a supercar of the month is almost a numerical possibility. The car could be posed in its everyday usage accompanied by a large, 4-color centerfold. Centerfold could emphasize the best features such as a long, well tuned exhaust, expensive wheels, or a raised hood exposing a smiling 4-venturi carburetor and well made, chrome valve covers. Since cars are probably the second most popular ac-

tivity among your readers, a centerfold could possibly enhance your excellent magazine."

David S. Curb, Gatesville, Tex.

The imagination goes wild with all the exciting possibilities this suggestion evokes. Just think of how the svelte, provocative lines of the Charger would look, or, stepping down, a semi-nude Mustang. We're sure everyone would be turned on by a properly tantalizing Nash Metropolitan. As Sherwood Anderson put it, in "Winesburg, Ohio," "I am a lover and have not found my thing to love." To each his own bag. The Editors.

GREAT ONE. "Your evaluation of the '68 GTO in the December issue is a highly accurate description — we agree that GTO is 'the leader of the supercars.' I have to point out, though, that the GTO leaves all the other cars in its wake when it comes to sales, too. In the '67 model year (from Oct. 1, 1966 through Sept. 30, 1967), GTO outsold Chevrolet's SS 396 by some 17,000 units (80,828 to 63,863). This proves, I think, that we do try harder. We don't call the GTO the Great One for nothing."

John F. Malone, Pontiac Motor Div., Pontiac, Mich.

Oops, our goof. When we stated that the SS 396 had outsold GTOs in '67, we mistakenly lined up the Chevelle against the Tempest, when actually the SS 396 should have been compared to the GTO alone. The Editors.

DODGE REVISITED. "I was very much interested in the description of the 1916 Dodge 4-cylinder car, as I owned one of them. I also owned a 1918, 1919 and 1920, the last of which I drove for over seven years. The Northeast starter-generator was most reliable and was a source of surprise to owners of larger cars, in that with that silent chain drive, there was no grinding noise when starting the engine. However, it soaked up too much power, and when lighter, faster engines came out, it was abandoned. The starter was activated by a foot-operated switch. When the engine stalled, the starter did not come into action automatically, you had to step on the switch again. The cars were equipped with 32 x 3 1/2 tires, and at the recommended pressure of 20 pounds per square-inch or 70 pounds, the riding qualities were nothing to brag about. The outstanding performance of Dodges in WWI caused a lot of veterans to want one when they came home, and it got so you'd have to wait a year or so for delivery."

Wm. L. Davidson, Kansas City, Mo.

Thanks for the additional information on the Supercar of its day. The Editors.

FAST FORD. "You guys will probably read a letter sent by me with your boots on from now on, but I swear these times are accurate. That is, as accurate as I could make them with a sweep second hand and the car speedometer. Car is a '67 Fairlane 390 with a 4-bbl. and 4-speed. Speeds were: 1st gear, 35 mph; 2nd gear, 65 mph; 3rd

gear, 105 mph (so help me!); and 4th gear, 115, and I let off. Zero to 60, 6 seconds. I took some pretty tight corners at 50 and all I had to do was put my foot down in 2nd gear to come out of any slide. Now comes the best part. All this was with four people in the car. If you don't believe it come out sometime and I'll show you. Enjoy your magazine, but I don't think you guys push the cars to their full potential. I've had opportunities to drive several of the hot ones you've tested and have gotten better 0 to 60 times and 1/4-miles."

Maurice Brandt, West Fargo, N.D.

Now that you have your BS degree, Maurice, why don't you go back to college and get your MS and PhD. That's "More of the Same," and "Piled Higher and Deeper." The Editors.

WHAT MAKES A CLASSIC? "While reading the article on 'Classics of the '50s,' MT Jan., '68, I had the feeling I had seen the picture of the T-bird on page 59 before. Wasn't that Juan Fangio behind the wheel? A check through some back copies gave an affirmative answer. There was the picture in the June, 1954 MT. Since I had all those dusty magazines out, I decided to do some re-reading and came across some interesting points in regard to classics. In the Feb., 1954, MT, Robert J. Gottlieb wrote, 'If classics are being built today, they aren't being built in America. Because distinction is lacking these cars will never be classic.' In Sept., 1955, he said, 'Most likely none of the American cars being built today will be considered classic in the future. This statement will definitely be true if cars progress from a mechanical design and engineering standpoint in succeeding years...' From these and other statements I came across it would appear that the now ossified opinion of the CCCA was shaped in part by the MOTOR TREND attitude of 10 to 15 years ago — an attitude which was much more restrictive than that shown in Lewis C. Markley's winning definition of a classic published in your Nov., 1955, issue."

C. H. Carter, Alexandria, Va.

If that ossified opinion had been more permissive, can you imagine how many other tubs from that era might now be considered classic? As it is, don't you relish the thought of looking into the future and seeing some of the 1960 and 1961 offerings of the Big 4 being judged 'classic.' Perhaps even that shipping crate parked next to the jungle bars down at Herbert Hoover Elementary school... but no, it couldn't happen. The Editors.

CORVAIR FINI. "Is it true that General Motors plans to drop the Corvair by the 1970 model year? It is alarming that GM omits this fine car from their 1968 advertising campaigns and the dropping of their 4-door sedan and convertible models."

Roger P. Sanderson, Augusta, Ga.

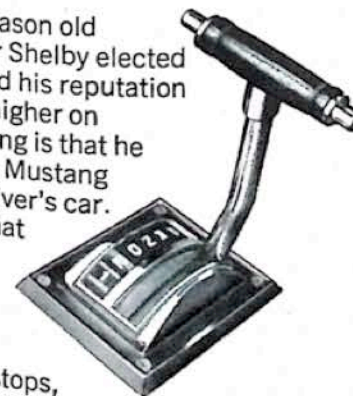
We suggest you write to Ralph Nader for the answer to that one. If 1970 does see the demise of that potentially excellent car, he may well be one of the reasons. The Editors. /MT



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