

# WORLD CAR GUIDE

AUGUST  
1970



60¢

## NEW COLOR FOR BUGS

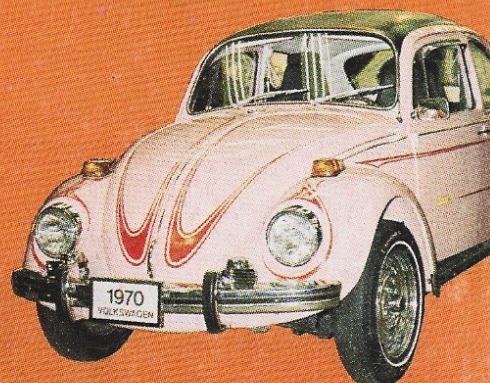
ROAD TESTS (ALL FWD!):

• saab 99E • audi 90  
• austin america

PREVIEW: TRIUMPH STAG V-8 SPORTS CAR

VW—STILL CHAMP IN DEPRECIATION DERBY

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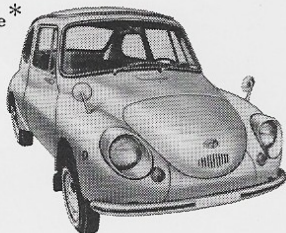


### Subaru 360

Scoots up to 70 mph, gets anywhere on a teacup of gas, and seats four in style.

**SPECIFICATIONS:** 4-speed transmission, heater/defroster, push-out rear windows, padded dash, concealed radio antenna, fully reclining vinyl seats, independent 4-wheel suspension.

**\$1,297** poe\*



### The Star 2-Door

Road-taming elegance and economy. Zero to 60 in 13.9 seconds, cruises at 70, and rockets to 90!

**SPECIFICATIONS:** Front-engine, front-wheel drive, complete safety package, hazard lights, reclining seats, 2-speed windshield wiper/washer, vinyl interior, back-up lights.

**\$1,699** poe\*



### The Star 4-Door

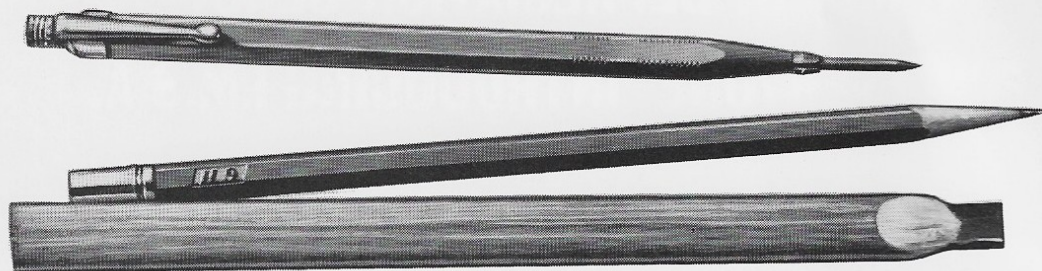
Luxury, comfort, styling with ultra-wide doors, flat floors in the rear for more leg room, and a unique dual radiator system.

**SPECIFICATIONS:** Independent 4-wheel suspension, front-wheel drive, courtesy lights, flow-through air, rear-opening windows, bumper guards, and 18 cu. ft. trunk.

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# OK Detroit:



## Grab your pencils and start copying...

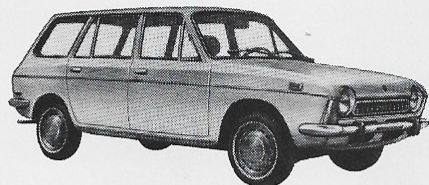




### The Star Wagon

Luxury and utility in a family-size station wagon. And, at a price any family can afford! SPECIFICATIONS: Seats two or five. Complete with 4-cylinder, 4-stroke, horizontally opposed engine, dual radiator system, 4-speed synchromesh transmission, heater / defroster, foam cushion seats.

**\$1,899** poe\*



We're not a bit surprised that the midnight oil began to burn in Motor City . . . once The Star arrived. The Subaru Star is something special. A sporty little car shining in a class all its own . . . an amazingly comfortable cross between a spunky sports machine and a luxuriously appointed family-sized automobile.

Carpeting, flow-through ventilation, all-vinyl interiors, reclining front seats and a gigantic 18-cubic foot trunk . . . these make The Star beautiful to own.

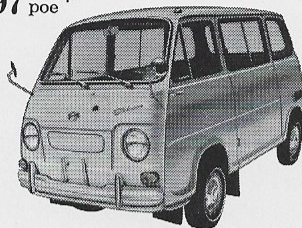
Front-wheel, front-engine drive, independent 4-wheel suspension, dual radiator system for faster warm-ups and no overheating . . . these make a Star beautiful to drive. And **\$1699** poe\* . . . makes a Star just beautiful!

### The Subaru Van

The only 5-door import van in the country—a mighty midget that'll haul four people plus a big payload, anywhere, on drops of regular gas.

SPECIFICATIONS: Hauls two or four with fold-down rear seat, 900 lb. payload capacity, heater/defroster, dual wiper/washers.

**\$1,397** poe\*



### The Subaru Truck

Perfect for deliveries in city traffic or suburbs, in-plant and between-plant transit or on-site construction jobs.

SPECIFICATIONS: Removable side gate, heavy gauge steel 2-level bed, hauls two passengers, 900 lb. payload capacity, heavy duty chassis, outside mirror, mud flaps.

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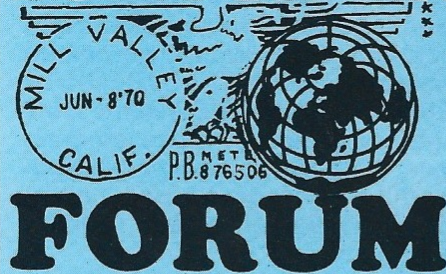
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\* Based upon manufacturer's suggested retail price. Federal taxes included. State and local taxes, destination charges, options excluded.

AUG. 1970 WORLD CAR GUIDE 3



# READER'S



## FORUM

### Volvo Enthusiast

Sirs: Regarding page 13 of June issue where your test discusses station wagon rear windows. Volvo 145S comes with a wiper and washer on rear window. I know because I have one and it is great.

Lt. J. R. Shannahan  
Andrews Air Force Base  
Washington, D.C. 20331

*Can't help but agree with you that wiper and washer on rear windows of current Volvo wagons are great. As a matter of fact, we think Volvos are great, period. WCG Editor ran one of the first Volvo road tests to be published 'way back in 1956.*

### Puzzled

Dear Mr. Jackson: After reading your May issue of WCG, I became puzzled because of the "Auburn Automobile Co." ad. Since this is my first time read-

ing your magazine, I didn't know if the ad holds true today or if it is a put-on or a joke. Please explain.

Dennis C. Hall  
22 Willoughby  
Somerville, Mass. 02143

*I don't blame you, but please don't blame Bill Jackson either. Bill's a highly competent automotive historian and he has nothing to do with using a reprint of a vintage era advertisement, nor did the present Editor. The old 1929 Auburn ad was used as a filler; someone forgot to identify it as "Not for sale."*

### Idea for Friends in Service

Dear Sir: I enjoy your magazine very much. I just wish it was easier to get it here in Vietnam because I have to depend on having it sent to me each month in order to keep up on automobile matters.

PFC John T. Pritchard 110-38-9861  
HHC 326th Engr. Bn.,  
101st Airborne Div.  
APO SF 96383

*Delighted we are that WCG is enjoyed by you. In fact your letter might just nudge some readers here at home to send a copy of WCG to buddies serving overseas. Use Air Mail; your friend is worth it.*

### And Now for VW Fans

Dear Sir: We have all read about high performance oils and super oil additives, all of which claim to make the engine run better and longer. I recently purchased a '70 VW Bug and the Owner's Manual calls for an oil change very 3,000 miles. It is also my understanding that, as a general rule, engine oils begin to break down after 2,000 miles. Do you feel that changing the oil in a VW every 3,000 miles is often enough?

Tom Ayres  
Mentor, Ohio

*Like many VW enthusiasts out yonder, we have learned to have considerable confidence in the official VW line with regard to servicing. VW tells us that when they say 3,000 miles is often enough for an oil change, it's often enough. Our own experience forces us to agree with the VW Manual. Just keep the crankcase full.*



(Continued on Page 44)

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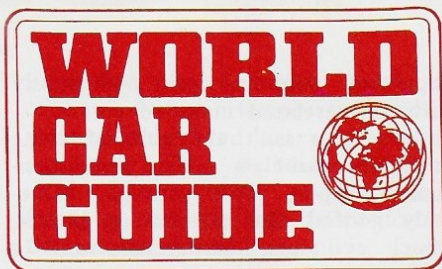
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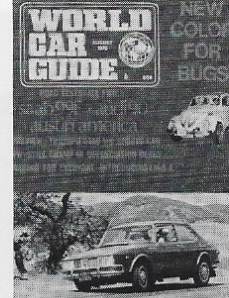
Zip \_\_\_\_\_

**Sears**





OUR COVER CAR: Photographed by the staff is an example of Volkswagen's new "Glitterbug" color schemes which are now available in many dealerships. Any color you want is the way the story goes. In action is your editor working out a new fuel-injected Saab 99E on one of California's mountain systems; photography is by Joseph Price Jr. Saab with injection goes good as our road test testifies.



August 1970

No. 150

READER'S FORUM .....	4
MEMO FROM THE EDITOR .....	6
ROAD TESTS	
Saab 99E .... Swedish Modern with Fuel Injection .....	8
Audi Super 90 .... notes on the 100LS .....	12
Austin America .... with Stick Shift .....	16
WORLD CAR NEWS .....	11
BABOW ON CAR CLUBS .... a different club each month .....	15
NEW CARS OVERSEAS	
Triumph Stag .... a Luxury V-8 Sports Car .....	22
Sunbeam Avenger .... Chrysler's New British Price Fighter .....	23
WCG WORKSHOP	
Charge — Your Car's Electrical Health .....	19
Let Dave Do It .... Helpful Hints for Happy Motoring .....	33
MOTORSPORT	
Schaefer Trans-Am at "The Rock" .....	26
Introducing I.M.S.A. .... Racing for Everyone .....	24
HUMOR ON WHEELS	
Beautiful One .... "If your wife has a friend ...." .....	30
VOLKLORE	
VWCA Newsletter .....	31
VW, Still Champ in the Depreciation Derby .....	36
THINGS FOR CARS .....	35

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## MEMO FROM THE EDITOR

Writing about automobiles is not without experiences which are very annoying at the time. Years later, however, even the worst take on an aura of humor.

What brought such experiences to mind?

Well, here's what happened. Less than a week before this issue closed, the editor dropped into the zone offices of a well known manufacturer of motor vehicles to pick

up the keys and sign for a make which shall remain unnamed for the time being.

About half way back to the office of WCG, the ignition system discharge light started to glow; then it flickered; then it stayed ruby red. Problems. A check of likely causes proved fruitless. The alternator had given up.

One road test delayed.

Curiously the same thing had

happened several weeks previously with an unrelated make of car.

Now this isn't the sort of thing one yells about on a road test. Accidents happen. True enough, somebody goofed. But alternators, brakes, wheel cylinders, carburetors and a host of other parts are not made by the car's manufacturers. They're "bought in" as the British say.

So this gives me the opportunity to mention some of the strange, funny and disgustingly ridiculous things that have happened during a number of years in this writing specialty. No names, just the happenings; they're worth sharing.

After flying to Detroit to pick up a well known make of car for a 3,000 mile cross-country road test for another magazine, I was assured that the new 1959 car had been gone over "with a fine toothed comb." The big wheel at the proving grounds said so. Back at my motel as I was loading the trunk, I made a noteworthy discovery: the fine toothed comb had failed to disclose that someone had forgotten to install a spare wheel and tire.

Then there was the time I started out the parkway from Manhattan on the Hudson (New York, not the late car). It was a sub-zero evening and I was late for dinner; we were living in Connecticut. Just about the time

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I reached the first toll booth, the cooling system temperature needle went sky-high and the engine rattled ominously. The radiator was frozen solid. The importer of the famous European marque had failed to feed the car anti-freeze.

A few weeks later I was tooling out of town toward Connecticut when a loud bang shattered the calm and the engine bonnet suddenly developed a little bulge. Investigation revealed that the air cleaner was the culprit, or seemed to be. What actually had happened was that whoever prepared the car—a domestic this time—had forgotten to inspect the tightness of the nuts which should have secured the carburetor to its base on the intake manifold. Had the preparator done so, he would have discovered that someone in the factory hadn't put the nuts on the studs. The carburetor had simply stayed down because of its own weight. Sixty mph and a curve or two took care of that.

Downright dangerous, though, was the factory-prepared car that almost put me in the hospital. After some 200 miles of lazy driving—the rig was spanking new needed breaking in—a highway pileup caused a sudden panic-type stop from about 45 mph. I could have used a seat and should-

(Continued on Page 21)

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**CAR AT A GLANCE:** Swedish modern, good looking with creature comforts and performance to match. Front wheel drive tenacity, sports car handling, maximum speed at the century mark, and all day expressway cruising with the economy of 25 to 28 miles per gallon. More legroom in the rear than many larger cars. A well built 5-seater.

That's right. A pleasant 1030 miles of hard freeway driving, mountain climbing, stop and go city traffic, shifting down on most corners and at all stops—that's what the Saab 99E ("E" for the Swedish equivalent of *einspritzer*) with 'four on the floor' delivered.

Including acceleration and passing time tests on an old airstrip, the worst fuel consumption was 22.73 mpg. That's good. Even better was 28.04 mpg during 234 miles of freeway driving at the maximum of 70 mph (legal limit) with down-shifting to 3rd gear for every pass. All this in comfort, often with two adults and two middle aged youngsters aboard, in a car weighing 2350 pounds wet at the curb and powered with a 1.7 litre, overhead camshaft, in-line 4-cylinder engine rated 95 brake horsepower at 5500 rpm.

As makes of cars go, the Saab is fairly young. Prototypes were built and tested during World War Two. At the end of the conflict, Svenska Aeroplan Aktiebolaget of Trollhatten, Sweden began cautious production.

By 1956 the first Saab cars, the 3-cylinder, two-cycle model 93 was introduced to urban areas along the East coast of the USA. Early that year the writer talked Bruce McWilliams out of one of the small handful of Saabs in New York City. The result was two weeks, a lot of hard driving and the first road test on this marque to be published in this country.

McWilliams is now with British Leyland Motors but that's okay; Lennart Lonnegren, Saab's national director of public relations won't mind. The two firms are friendly although highly competitive. British Leyland builds the engines for the type 99 from a design by Ricardo Engineering in the United Kingdom.

Saab is the exclusive user of this engine. If Ricardo sounds familiar, it's because that famous designer was associated with Alfa Romeo for many years. This engine has a good heritage and brings to mind more of the Saab's background.

Not too long ago Svenska Aeroplan AB (Swedish Aircraft Company) merged with AB Scania-Vabis, a major manufacturer of commercial vehicles. Scania cars were first series produced in 1902 in Malmo, Sweden



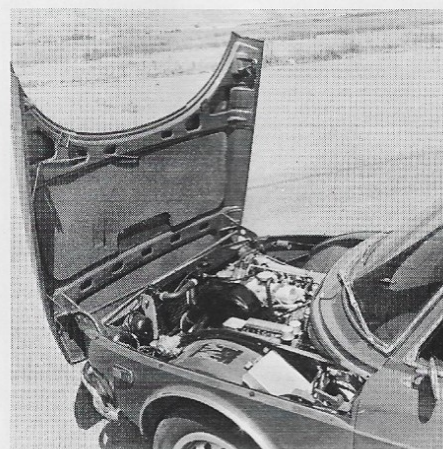
# SAAB 99E ROAD TEST

by Joseph H. Wherry

on which the "E" means FUEL INJECTION



Repeated hard stops failed to induce fade on four wheel disc brakes. Nose dive on panic type stop is not excessive; Note front tire deflection.



Bonnet unlatches by means of lever beneath dashboard. Fuel gallery replaces carburetor in this injected model. Rectangular light metal box below left side of windshield contains Bosche electronic computer that controls injection.

and Vabis cars began before 1900. The Saab cars had been the smaller part of Saab output; the firm began building fine aircraft in the 'twenties and their military planes have been among the world's best for three decades.

Now, due to the merger of the two big firms, Saab cars are made by Saab-Scania which has assembly plants as far afield from Sweden as Brazil. Scania-Vabis trucks are well known on every continent except North America and Australia. Consequently, we may expect that Saab

production will be increased dramatically from the 50,000 or so turned out annually.

I'm told that around 75,000 Saabs will be built this year, more next. Scania-Vabis built fine luxury cars prior to 1925. Thus it is within the realm of logical conjecture that Saab-Scania will be introducing larger cars—likely in the Volvo 164 class—before many more New Year Days.

But back to the model 99E, the best Saab yet for the family man. At about \$3,400 as tested—POE West Coast—this sounds like a lot of



money for a small car. One can buy the same car with carburetion for somewhat less; thus equipped, the model 99 is rated 87 bhp SAE at the same 5,500 rpm. That'll do a digit or so over 90 mph.

But with electronic fuel injection by Bosch, the torque curve is flatter, there are no smog emission problems, and performance is exhilarating. From the first, Saabs have been as sturdily built as the rugged Swedes can make them. Though light in weight, the monocoque structure incorporates a virtual roll cage.

A crash test stunt that Saab engineers like to talk about is dropping a loaded car upside down onto concrete from a height of six feet. Despite the impact speed of 25 feet per second, all windshield and door pillars, plus the roof, remain in such a condition that human occupants would survive with little more injury than a good shaking up.

It is also claimed—and I've seen motion pictures, some years ago, which prove it—that a Saab minus front and rear wheels and associated suspension components can be used like a toboggan. The underside is unusually smooth. The central ridge that runs longitudinally through the car's interior is a structural member which provides rigidity. This ridge looks like the drive shaft tunnel in most rear drive cars; it's not as large, however, and does not intrude or decrease interior spaciousness.

Another unique feature is that the handbrake, operated by a lever between the individual semi-bucket front seats, operates mechanically on separate drum units inside the front disc brakes. Now as all car buffs know, the front brakes do most of the braking. Thus, in an emergency, the Saab can be stopped by the handbrake.

Saab claims 50-percent braking efficiency by this means—that's around three times the effectiveness of the so-called "emergency brake" on most cars. It works too. I know, because our teenaged daughter, successful graduate of what humorously passes for "Driver Education" in the public schools, understandably lost her cool while doing a bit of 4-speed stick work with the 99E and Dad brought the car up short in the nick of time. The average hand brake lever would not have done the job.

The interior of the Saab 99E is common sense efficiency all the way. One can opt for an automatic box but that's no fun. ("Breathes there a man with soul so dead" who wouldn't rather shift for himself?) The clutch and brake pedals are well sized; at the left of the former is a

handy footrest. Nice. The accelerator pedal is also well sized and comfortably angled—something many European engineers manage to goof. The seats are comfortable, adjust horizontally through a long travel fore and aft—Swedes are known for the production of tall, long legged people, you know.

The backs of the front seats adjust easily by turning a large knob and the angle of the cushions is also variable. With two aboard, the squab of the three-people-wide rear seat can be folded forward and the backrest likewise. Then lengthy items 67 inches long can be carried. The luggage boot itself is amazingly large.

"Holds almost as much as my Plymouth when you consider that I have to remove the luggage to get at the tire," a friend remarked when I opened the cave in the Saab's stern. Saab's spare wheel and tire is stored flush with the rear end sheet metal at a 45-degree angle at the right rear corner.

The fresh air—I must remember to say 'flow through'—system is excellent; rivals that in the Fiat 124 wagon in last month's single road test. There are four fresh air inlets and thirteen for warm or heated air. Of

the latter, five are directed against the rear window, four heat the windshield, two are at the floor level, and one each defrosts the front windows.

Late one chill night I moved the middle of the three dashboard levers to the warm side. Without actuating the two stage blower, I had to switch off the heat within seconds. Saab 99E should be great in the Yukon and Alaska; that heating system feels like a blowtorch.

I do believe though—and I have to find something to carp about—that the efficient Swedish designers could discover a better way to indicate *Defr*, *Temp* and *Vent* than by applying sticker paper that comes loose. Everything else is done to such a high standard that stickers seem a bit something-or-other. But, as what's-its-name has said, "Nobody's perfect."

The first Saabs imported in '56 were good even with the two-stroke three-bangers. They were capable of running down a lot of big iron in rough country. This new slant-four is miles better; it's a real joy to drive anywhere under any conditions. The gearbox—it's in front with the engine mounted backwards in good f-w-d

Semi-bucket front seats are adjustable throughout a wide range of positions. Small white lever, bottom right, controls rake of seat back. Arrow points to foot rest beside clutch pedal.





fashion—is fully synchronized and the lever falls nicely to hand. The shift throws are short and there's absolutely *no* danger of jabbing toward the far right and back reverse position. Saab's efficient engineers opted for a slight pull upwards for reversing.

Beside the gear change lever is a short lever that, when pulled back, engages free-wheeling enabling one to shift without declutching, but there is no engine braking. Of course on long trips, fuel consumption can be decreased because when the foot is lifted from the gas pedal, Saab simply coasts.

Lennart Stahlhandske, zone manager in Northern California, stoutly maintains that free-wheel driving is superior to using the clutch. "Use the brakes in corners," Len says. The system works with Saab's sure-footed suspension system but I prefer driving with the clutch engaged at all times. More control. I like to keep the brakes cool too, even if there are discs at each corner. (Ettore Bugatti had the right idea; he preferred driving with the gearbox

and throttle; brakes were for emergencies.)

As is the case with all front wheel drive cars, everything behind the front wheels trails along for the ride. Once one becomes acquainted with f-w-d, once one masters this method, one generally prefers it. On Saab there is front wheel 'tug' only when one suddenly accelerates hard—really floors the accelerator—in 2nd gear in a very tight corner. Then the front wheels bite, and you sail around the corner without any problems except for a bit of understeer which seems to bother some drivers. Personally this tendency is to my liking—it's preferable to oversteer.

Saab's ride is exceptionally good for a car with a wheelbase of scarcely more than 97 inches. That wheelbase is deceptive. Independent front wheel suspension by unequal length A-frames (or wishbones if you prefer) and coil springs in front and a rigid rear axle on coils but positioned by four trailing arms and a transverse rod give a stable ride the equal of many cars with another foot of wheelbase.

On a railroad crossing near where I live—a place that gives the shakes to a number of big domestic makes—the little Saab wades across the lousy

crossing without a shudder, no bottoming, backlash or anything more than a slight up and down motion that is controlled and smooth.

No fireball like those big 400-cub jobs, the Saab 99E is not a sluggish either. From zero to 45 mph (speedometer read 47 on test car) took 8.8 seconds. With 1st gear good for 31 mph and 2nd still capable of gaining a bit more speed at 65, there was no need to shift more than once to 45 or even to a true 60 mph (indicated was 62) which came at 13.8 seconds. Times were averaged after numerous runs in two directions to compensate for a light breeze of about 4 mph.

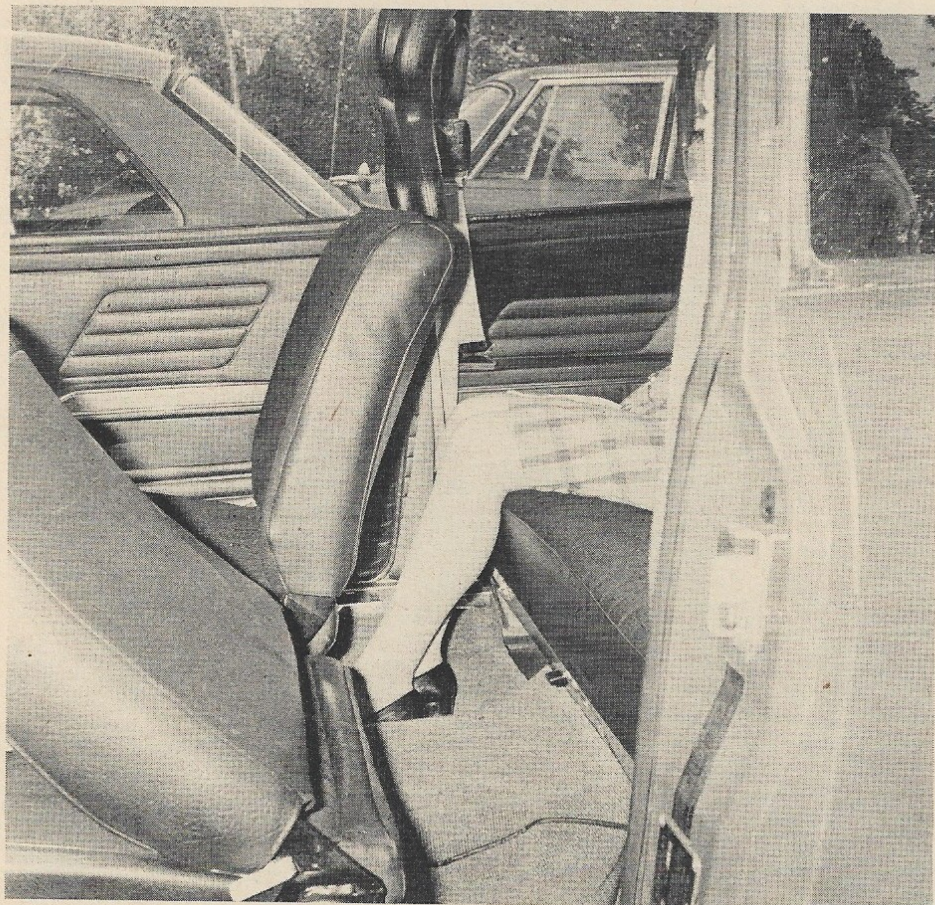
On the highway, Saab's effective 79 mph in 3rd gear came in handy for passing. Cruising at 50 mph, dropping to 3rd gear and hard acceleration brought a true 70 mph in 9.3 seconds. From 40 to 60 mph permits dropping to 2nd cog and by leaving it in that ratio, just 8.8 seconds was required to pass freeway dawdlers.

One can pop down into 2nd gear at any speed under 60 mph if you and your throttle foot are coordinated. Then you accelerate to right at 65 mph to take advantage of torque and then pop back up into 3rd to reach 70 mph in a fraction of a second less. All acceleration times were with two aboard.

Creature comforts abound in the 99 Saab whether injected or carbureted. The glove compartment is rather skimpy but the bottom-hinged door is recessed for a handy snack tray. Each front door has a full length map and gadget pocket. The door handles are recessed below the armrests which are—remarkably—at precisely the right location for relaxed driving. The sun visors swivel over the side windows and, wonder of wonders, the exterior rear view mirrors are located far forward near the front edge of the door on each side.

There are no vent windows—an oversight in my opinion. The side windows are of the now fashionable curved glass—a feature I believe should be deleted on all cars: often the curve of the glass does not quite match the grooves in the frames. I busted three finger nails pulling the top edge of the right front window back into place on Saab: the finger nails are growing back but that window is still stubborn.

The rear windows open; they swing outward at the rear and the cranked fittings hold them in place at up to 90 mph. Then air pressure pops them closed. Most cars with swing rear windows have such weak



Despite comparatively small exterior dimensions, rear seat legroom in Saab 99E is greater than in many larger cars. Here front seats are at rearmost positions.

(Continued on Page 42)





# World Car News

**MANY PEOPLE** seem to be amazed that a new make of car, new to the American market, would be introduced into a economy that some fear is headed for a serious recession. The new car of which we speak is the AUDI. Of course the Audi is an old marque in its native Germany—goes back to 1910. In next month's WCG we road test both models of Audi. But how come...

**JENSON?** We covered this marque very briefly in last month's New York Show report. This established British GT—costs a bundle—now is powered by an American engine but controlling interest is owned by an American. We have a Jensen test scheduled too; that car is a remarkable piece of craftsmanship. Which brings us to...

**LAGONDA**, a luxury marque with a great racing record and once the favorite car of England's Duke of Edinburgh. Lagonda was discontinued several years ago after a half-century of achievements. Now the word is that Lagonda's manufacturers, the David Brown Groupe of England, are tooling up and will resurrect the marque with the American market the target; its sibling, Aston-Martin, already commands a loyal following over here.

**PRINCE MICHAEL OF KENT** cousin of H. M. Queen Elizabeth II, is competing as this is written, in the mammoth 16,000 mile World Cup Rally from London to Mexico City. Could the entry of this adventurous member of the royal

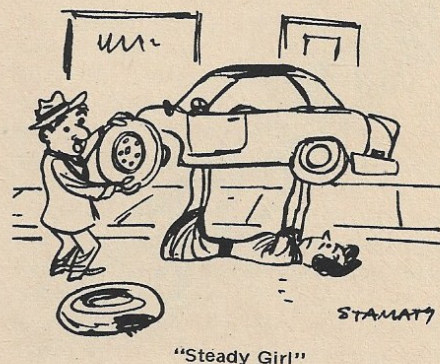
family herald a series of new forays by the British automotive industry? Royal patronage never hurt, you know.

**WATCH SWEDEN** where another ancient marque may be given a new lease on life. We refer to the SCANIA-VABIS cars which date back some seventy years but have not been built since 1924. SAAB, the huge aircraft manufacturing enterprise which has made cars as a sideline since 1944, merged with Scania-Vabis, maker of commercial vehicles used on every continent except North America, several months ago. With increased acceptance of larger European cars, the expanded private car facilities just could eventuate in the resurrection of Sweden's distinguished but little known Scania-Vabis cars; they were beauties but scarcely known outside of Scandinavia. Logical? Well VOLVO has the luxury 164 model.

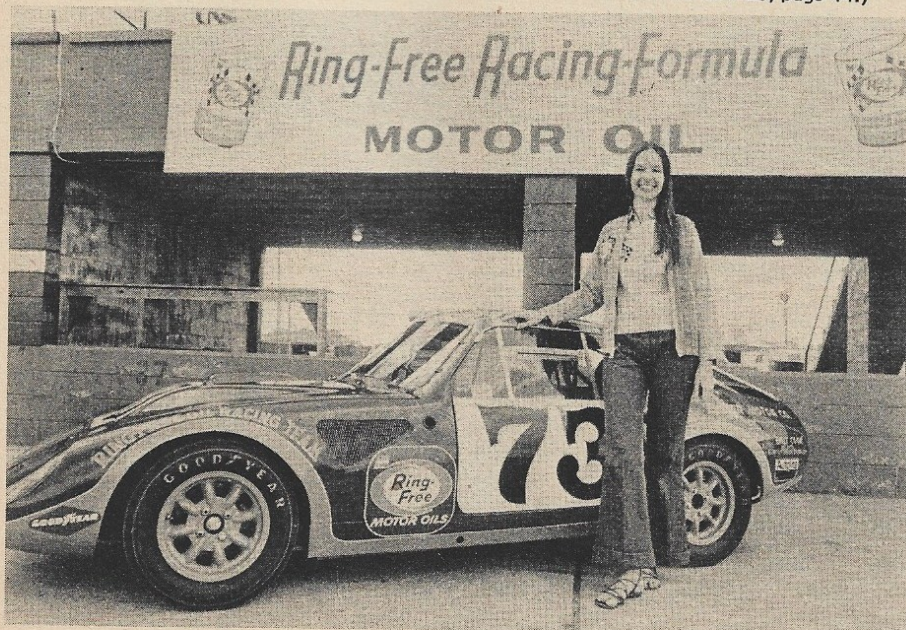
**IMPORTED CARS**, even the expensive luxury models, are increasing their share of the domestic market. They may well exceed the 1.1 plus million sold here last year to Detroit's dismay. Most recent luxury import to trumpet a sales increase over 1969 is ROVER. Only about 200 per month of this marque are imported, most of them the new 3500S V-8 which is in the \$5,500 range; even at that price, the V-8 Rover is the lowest priced imported V-8, and is a worthy latest in a line that began in 1904.

**DON'T WRITE OFF SUBARU** despite the slurs being bandied about. Malcolm Bricklin, a pleasant non-conformist who heads Subaru of America, scored a coup recently when he signed Kemmons Wilson, Board chairman of Holiday Inns, Inc., and former VW distributor Frank Pipe to an eleven state territory in the South where these two industrialists with know-how will vigorously market this latest import from Japan.

(Continued on Page 21)



Janet Guthrie heads all-girl racing team. (See AN OSCAR TO THE GIRLS, page 44.)



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# Audi super 90 with Notes

by Joseph H. Wherry



Either Audi in action at speed displays customary sure-footedness of front wheel drive cars. Both can be cornered hard with only moderate lean.

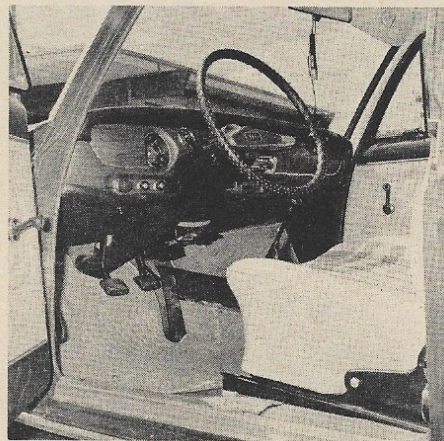
**CAR AT A GLANCE:** Quality and luxury plus sporting handling in a five-passenger family sedan at \$3,000 up. A shade over 100 mph maximum speed with zero to 60 mph in 12.4 seconds. Tough, quieter than most quality fours. 20 miles per gallon during 800 miles of extremely hard driving including performance tests. Another 500 miles in 100LS produced 22 miles per gallon.

Audi, a marque which goes back to 1910, has been unknown in the USA until very recently when domestic distribution began under the practical sway of Volkswagen of America. Selected—in other words, not all—Porsche dealers will sell the Audi. This gives them a quality family passenger car and it's a dandy.

In all frankness, I would disagree with Sloniger who reported from Germany on the larger version, the 100LS, in January WCG. From Europe, and before the cars began to reach salesrooms over here, Sloniger ventured the opinion that the 100LS was "The one for the U.S."

At around \$3,700 and up, the 100LS is a wonderful car; make no mistake about that. However, the Super 90 at about \$3,000 up gives the owner within a split second of as much performance, better han-

dling, a more practical interior, moveable vent windows for better air circulation, and saves him \$700 which is more than enough to cover air conditioning and the excellent but optional AM/FM Blaupunkt radio.



stage downdraft carburetor, both have the same compression ratios.

The additional power developed by the 100 LS is, I'm told by the service people, entirely due to ignition differences, timing, etc. Except on a handling course, both models



Arrangement of instruments and general dashboard layouts vary from Super 90 (above left) to the more expensive 100LS (right). Tape recorder microphone hangs from mirror in Super 90.

A glance at the accompanying specifications with attention to the suspension variations between the Super 90 and the 100LS and the overall dimensions will suffice to indicate my reasons for stating that the slightly smaller model is tops in the handling department. Both models have the same engine, a sturdy inline, pushrod operated, overhead valve four displacing 1760 cc. Each employ a single Solex type 32 twin-

give one the impression of identical power.

The 100 bhp of the Super 90 with its butter-smooth 4-speed stick shift on the floor—fully synchronized—took the test four-door sedan from zero to 60 mph (the speedometer said 62 mph) in 12.4 seconds. (The Owner's Manual says 12 seconds flat; I suspect this is right for the slightly lighter two-door sedan.)

From scratch to 45 mph took 7.4

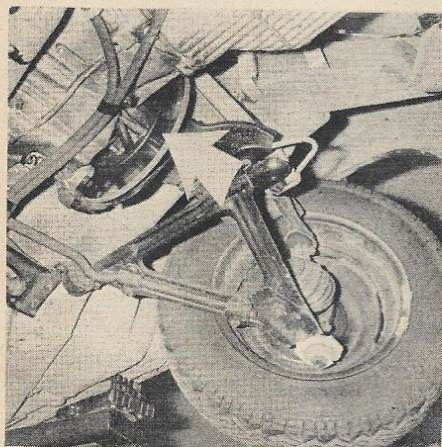


# on the 100 LS

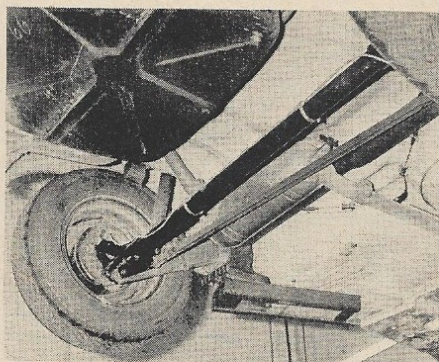


Both Audi models have front disc brakes mounted inboard near transmission (arrow).

Dual headlights mark the 100LS at left. Styling in rear is more rounded on Super 90, right, than on its slightly larger sibling. This Super 90 has towed a camping trailer.



One piece rear axle is positioned by trailing links and lateral stabilizing rod.



seconds. More important are highway passing times. These tests were accomplished by cruising in 4th gear, then dropping the box into 3rd gear for passing. Thus, to go from 40 to 60 mph took exactly 7.5 seconds.

In the 100LS these acceleration times came out as follows: zero to 45 mph, 7.2 seconds; to 60 mph 11.7 just what the Manual claims);

40 to 60 mph took 7.3 and from 50 to 70 was 7.5 seconds. Consequently, with consideration for properly breaking in a new car (both test cars had in excess of 5,000 miles when we obtained them for tests), slight atmospheric variations and tuning differences, one can see that there is little difference in performance.

## AUDI SUPER 90 SPECIFICATIONS (\* AUDI 100LS differences)

**ENGINE:** front-mounted (forward of axle), 4-cyl., in-line, OHV.

Bore and stroke 3.21 x 3.32 in. (81.5 x 84.4 mm),

Displacement 107.5 cu. in. (1760cc), BHP (SAE) 100 @ 5200

RPM (\* 115 @ 5500), Torque 115.7 lb. ft. @ 3000 RPM (\* 119 @ 3200),

Compression ratio 10.2 to 1. Premium grade fuel.

**TRANSMISSION:** 4-speed manual on floor; ratios: 1st - 13.22, 2nd - 7.562, 3rd - 5.288, 4th - 3.629. Front Wheel Drive with ratio 3.89 to 1.

**SUSPENSION:** Front: independent with upper/lower control arms and longitudinal torsion bars. (\* Independent with coil springs and stabilizer rod). Rear: solid axle with Panhard rod and transverse torsion bar (\* one torsion bar per wheel).

**STEERING:** rack and pinion, 4 turns lock-to-lock, turning circle 37 feet.

**WHEELS AND TIRES:** bolt-on steel disc, 6.45 x 13 Pirelli radials (\* 6.45 x 14).

**BRAKES:** dual circuit hydraulic, front disc, rear drum.

**CAPACITIES:** fuel 15.3 US gallons; oil 4.2 quarts; transmission and differential (transaxle) 2.1 quarts; cooling system 8 quarts.

**BODY AND FRAME:** integral.

**DIMENSIONS:** wheelbase 98 in. (\* 105.3); length overall 173.8 in. (\* 182.6); width 64 in. (\* 68.1); height (unladen) 57.2 in. (\* 56.1); ground clearance (loaded) 5.9 in. (\* 6.2); curb weight 4-door sedan 2235 lbs. (\* 2380).

**PRICE:** begins (two-door sedans) at \$2995 East Coast, \$3095 West Coast (\* \$3695 East, \$3795 West).

The Super 90 will do 101 mph maximum while the 100LS is good for 105. Both figures are according to the manufacturer's Manual. Outside of a drag strip, what's the difference? I know they'll each exceed 100 mph by enough to get anyone in trouble.

The manufacturer also claims an average fuel consumption of 26.4 miles per gallon of premium fuel, and on both models. I'll go along with this claim, but our tests were not conducted at the usual speeds commonly driven nor did we spare the gears. All 1,300 miles split between the two cars were hard miles and our 30 mpg (Super 90) and 22 mpg (100LS) figures include the fuel guzzling acceleration tests both on an abandoned air strip and on super highways.

Using the gears, in sports car driving manner, takes a bit more gas. Peaking speeds in the individual gears were 36 mpg on 1st clog, 60-62 on 2nd, and 77 (Super 90) and 82 (100LS) on 3rd. Braking hard after each acceleration run—more than twenty runs in each car, one right after the other—gave us a good test of the brakes.

Both models have drum brakes in the rear and discs in front, the latter inboard near the trans-axle which gives them excellent cooling. There was no fade, and each hard stop was conducted with the hands slightly off the steering wheel. Each stop was quick and in a perfectly straight line right down the center line on an old airstrip.

Seated in the semi-bucket driver's seat, the shoulder and lap belt holds one securely without restrictions to movements. Ingeniously self-adjusting regardless of a person's size or the position of either front seat, both lap and shoulder straps lengthen as required when placed across the body. The belts attach to a steel bracket on the floor between the seats. When one casually leans forward, even as far as to reach something on the floor, the shoulder straps lengthen. However, a sudden forward movement locks the strap. The rear seats have normal belts.

The Super 90 is an extremely comfortable car. At any speed in top gear, the noise level is unusually low for a 4-cylinder car, and the fresh air system is so efficient that on warm days in the 'seventies' ventilation is adequate with all win-



dows closed. The fresh air and heater system is operated by three horizontal levers centered in the dashboard. A plus in the inclusion of adjustable vent windows. On the costlier 100LS the vent windows do not open and the fresh air and heating system is operated by a rather complicated arrangement of five levers.

All controls for headlights and the like are push-pull units with semi-soft rubber knobs; very efficient. The headlight dip switch is combined with the turn signal lever on the left of the column. The 100LS adds a gimmick to the signal lever: a button on the end actuates the wipers through several cycles and water squirts the windshield simultaneously. You guessed it: during the first few turns in the 100LS, the windshield received an unwanted washing. The more modestly priced Super 90 has the washer control on the dash where it belongs.

The dashboard in the Super 90 merits more comment. The radio is within each reach of the driver (not so on the 100LS) and the glovecase (with a well-hinged door) capacity is sufficient to accommodate three, possibly four tape recorders of the type we use during tests. Again the 100LS has less: the glovecase is a drop shelf which comes down with a clatter, threatens to spill anything with weight onto the floor, and has scarcely any capacity for more than a pair of gloves.

Both Audies share a too-far-to-the-rear side view mirror location. Personally I drive with the seat as far back as is possible; even then I had to look far to the left side to see the mirror. When my 5 foot 2 inch wife drove either model, the seat was so far forward that she could scarcely see the side view mirror. Either could be conveniently located 10 inches farther forward.

For almost any driver, the armrest in the Super 90 is too far to the rear and about 3 inches too low for comfort. This irritation is corrected on the 100LS. The sun visors in the Super 90 are fixed above the windshield; they can not be swung to the side; those in the 100LS, on the contrary, are moveable to protect the driver's eyes from low morning or evening sun.

Steering is positive, light and slightly slow on both models with rack and pinion giving 4 turns lock-to-lock. On flat, straight highways, each car tracked roughly a quarter-mile hands-off before tending to drift to right or left. In hard cornering in 2nd or 3rd gears, there is almost no trace of that 'tugging' feeling usually associated with front

wheel drive cars.

Both models have the highway feel and sound of an expensive, heavy eight-cylinder car. As the specification show, neither model weighs much more than one ton, yet the ride in each is excellent by any standards. The front coil springs of the larger 100LS give a softer ride over railroad crossings or on gravel roads.

Accompanying this softness is less ability to corner hard without excessive lean. The smaller Super 90, however, with its torsional front suspension, corners flatter and faster and even on rough roads provides a moderately smooth ride. In fact the 90 corners furiously. Both, however, can be pulled through a tight corner in the lower gears without a tendency to break loose unless the approach speed has been suicidal in which case anything will leave the road.

Rear seat passengers—three can be accommodated—have scanty legroom when either or both front seats are positioned aft. Legroom in the rear is on par with most US sedans of grosser dimensions. Windows in the Super 90 require just four turns of the crank from open to closed or vice versa. Those in the 100LS take nearly six turns.

In the two-door sedans, the rear windows do not open. There is no folding armrest in the center of the rear seat but rear passengers do have hand grips above the doors. For the suicide seat occupant—right front—the hand grip is on the well padded dashboard.

A handy facility in the front compartment of the 100LS is the divided bin—about 2 inches deep—on the center console; excellent for sunglasses and the like. Centered beneath the dash in the larger 100LS is a parcel bin about 14 inches wide and half that deep. The ash tray is located therein.

In summation the Audi Super 90 seems to me to be "The one for the US" despite its slightly smaller wheelbase—98 inches in contrast to 105.3 on the 100LS. Overall length of the 90 is a parkable 173.8 inches, nearly 9 inches shorter than the 100LS. Trunk capacity in each is excellent.

The performance of the 100LS has a slight edge over the 90 but the 100LS could never keep up with the Super 90 on a road full of hair-pin turns. The dash controls in the pricey 100LS are of the rocker type, hence they require closer attention than the simple push-pull units in the Super 90. Of course the 100LS has dual headlights and suggests a boulevard ride while the Super 90 has the greater maneuverability.

Front seats in each model are fully adjustable through about 7 inches travel fore and aft and the backrests are lever-adjusted for rake.

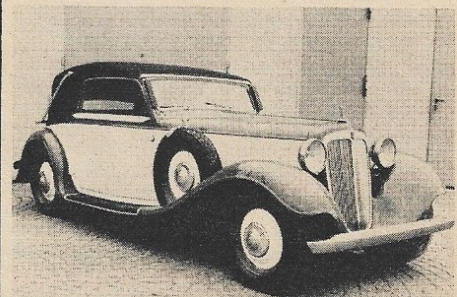
Excellent cars, both, but in my opinion the Super 90 offers more value than the 100LS. If the price of each were the same, I'd take the Super 90 and I have a hunch that most Audi buyers will, too, if they take the time to examine and drive each model.

Service will be excellent on all Audis because Volkswagen of America, the firm in charge, will maintain their already fine reputation. Distributors like the Reynolds C. Johnson Company in Pleasanton, the Northern California operation, have a fine service record too. The latter firm supplied the test cars; it's always a pleasure to deal with people like Hoby Landrith, a former professional baseball player now in charge of public relations, and his staff at Pleasanton.

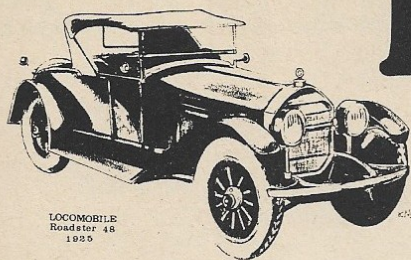
The WIFE says:

I found the dash controls in the Super 90 to be preferable to those in the 100LS and I prefer the agility of the smaller model. I believe I would want the station wagon Super 90—there is no wagon in the 100LS series. I also found the button on the turn signal lever bothersome in the 100LS—keeps squirting water every time one uses the turn signals. Both are quick, however, and are excellent for shopping and moving fast on California's frantic freeways. Nice cars and pretty. I like front wheel drive.—Bettye C. Wherry

The first Audi cars were built in Zwickau in 1910 by August Horch who also built cars named after himself. Always quality cars, by 1928 Audi came under control of J. S. Rasmussen who also made DKW cars. In the late 'twenties' the Audi used Rickenbacker engines after that American Firm went out of business. In 1932 Audi joined DKW, Wanderer and Horch under the Auto Union banner. To this day Audi is marked with the four loops signifying Auto Union but is now largely controlled by Volkswagen. This 1934 Audi cabriolet had a 2-litre, 40 hp engine, front wheel drive, and was a direct ancestor of modern Audis.







# Babow on Car Clubs

by Gene Babow

One of the most misused words in describing automobiles is "classic." Just what is a classic? According to the Classic Car Club of America (CCCA), a classic is a fine or unusual foreign or domestic motor car built between 1925 and 1942 and including Lincoln Continentals built through 1948 and distinguished for their fine design, high engineering standards and superior workmanship.

There follows an impressive and selective list of automobiles which are considered classic by the CCCA. For example, all of the marque Bugatti, Duesenberg and Rolls-Royce are classics, but only certain Packards, Cadillacs and Chryslers etc. It is possible to submit a car for classic status through the Classification Committee.

Any definition, especially one of limitation, is subject to controversy and such is the case with the CCCA. However, if time is considered an equalizer, then the CCCA definition does hold water. If monetary value is a further cri-

teria, then the definition becomes even more valid. More classics have attained five figure (\$10,000) valuation than all other cars combined.

So what is the CCCA and how do they rate using the word "classic?" Well, let's say they were first to apply the word to cars in the USA. The CCCA is devoted to the development, publication and interchange of technical, historical and other information about classics and encourages the maintenance, restoration and preservation of classic cars. It is a national organization divided into Regions throughout the United States.

On a national level there is a monthly bulletin, a superb quarterly called "THE CLASSIC CAR," and a directory listing owners and identifying their cars. National events are highlighted by the annual Grand Classic to be held in six locations: Monterey, California; Dearborn, Michigan; Tulsa, Oklahoma; Minneapolis, Minnesota; Pocomo Mountain, New York and Indianapolis, Indiana, on July 11, 1970.

By using tightly controlled judging and scoring procedures, the results of each of the six events are compared by

phone the evening of the event and the overall winners are determined. Since a maximum of 100 points is used, we have the term "100 point car." Very few cars attain this perfection because four judges must agree independently that the car is perfect both in detail and mechanically. It is interesting to note that each car stands on its own merit subjectively as no points are included for being elegant or beautiful.

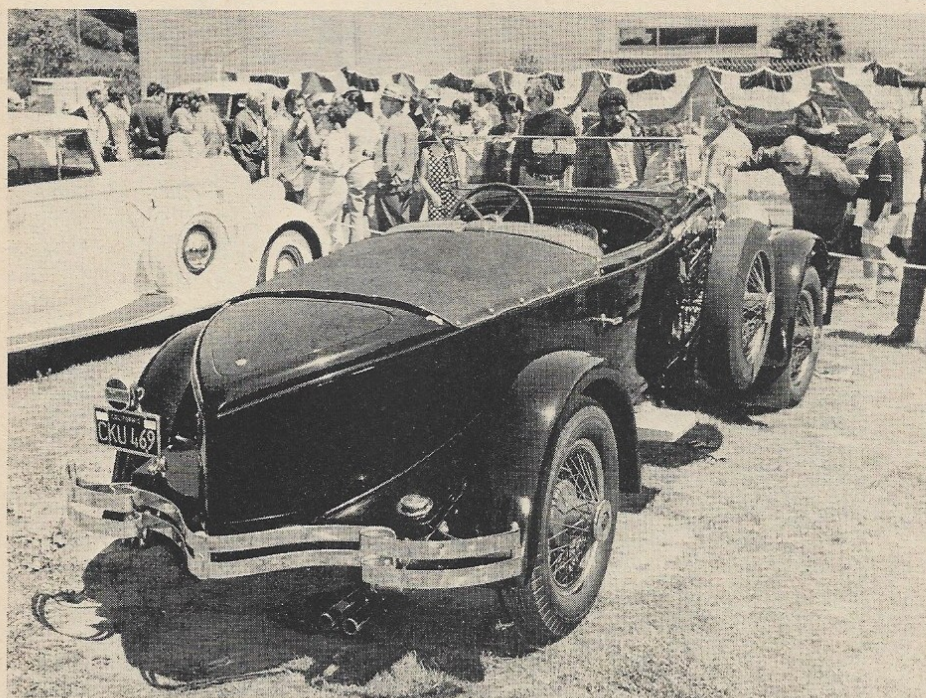
With such standards, a car advertised as a 90 point car as judged at a Grand Classic has more meaning than a Concours winner. In order to take a first place at a Grand Classic, a car must attain at least 90 points; to take second, 80 points and third 70 points. If there is only one car in a class, and the car scores 75 points, it takes third. Further, a first place car becomes a Senior Car and cannot compete in the Primary Division again.

The other national events of the CCCA are the Caravans. This year, for the first time, there are two separate tours. These are always subscribed to full well in advance. On July 25, one Caravan starts in Olympia, Washington. Seventy Classics will tour Mt. Rainier, Puget Sound, Seattle and British Columbia. In August, the second Caravan will tour historic South Carolina. On the regional level, many tours and other events will take place.

At national and regional events only classic cars may attend. While the CCCA has been criticized for this, it is only a logical move no different than the policy of the Rolls-Royce Owners Club, Studebaker Drivers Club or Porsche Club of America restricting their events. Club policy in no way precludes the "Invitational Meet" where other cars are allowed.

What is the future of the CCCA? Will more cars be recognized as classics? Or will membership decrease as the collectors absorb all classic cars? In the past few years there are more multiple owners of classic cars than before. Prices, because of supply and demand have become astronomical. It does not appear that large numbers of new classics will be recognized. It makes for very interesting predictions, but I'm near the end of the page. In each issue I'll discuss another club or series of clubs as the case may be. In September we'll survey the Antique Automobile Club of America.

CCCA membership information may be obtained by writing to P.O. Box 443, Madison, New York 07940.



Bernard Calkin's boat-tailed 1929 Stutz DV-32, an undisputed "classic" as seen during the Hillsborough Concours d'Elegance. (J.H.W.)

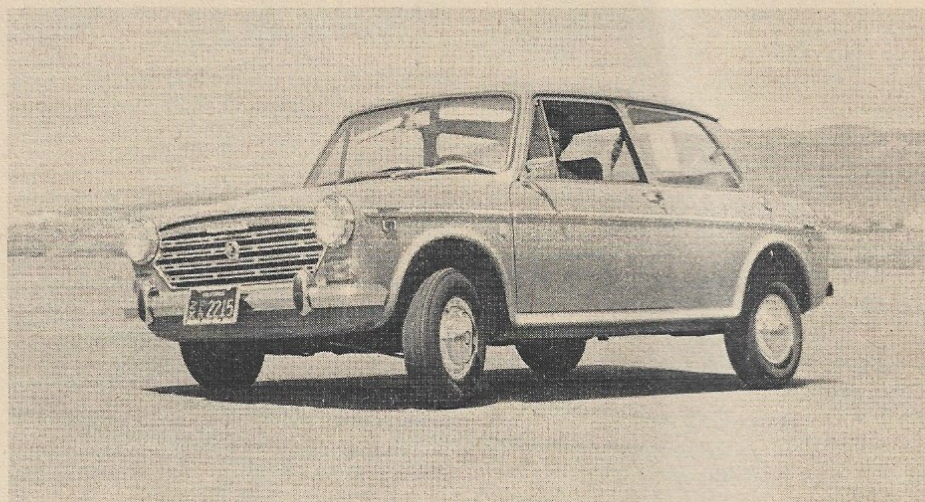




# AUSTIN AMERICA

## with stick shift

by Joseph H. Wherry



**CAR AT A GLANCE:** One of the very few imported cars offering a four-speed, fully automatic gearbox, the American can still be purchased with a four-speed stick shift. An excellent ride. Durable. Will top 86 mph when extended. Zero to 60 mph in 20.9 seconds. Pressed hard on California's busy freeways, will deliver 25 miles per gallon-plus consistently.

During the recent International Auto Show in New York City, there were only three cars out of the 600 displayed which featured fully automatic four-speed transmissions. Two of them were Mercedes-Benz and Rolls-Royce. The little Austin America was the other. Most people, Al Arth who is sales manager at British Motors in San Francisco tells me, who buy the popular little sedan made by British Leyland Motors select the automatic gearbox.

Arth tells me that getting an Austin America with a do-it-yourself gearbox is a bit difficult. Most of them are sold with the easy box. Al took pity on me and pried a stick job loose for our road tests. (I wonder whether Al can do likewise when time comes to run the new and lovely Jensen Interceptor?)

Basically the Austin America is a vastly improved and culturally refined development of the similarly bodied MG 1100 which was introduced in 1962—something I might get shot for saying.

The MG variant—the first of the then BMC line in this concept with the Hydrolastic hydraulic suspension system and the transversely-mounted engine—sat on a wheelbase of 93.5 inches and was 141 inches long overall. The little overhead valve engine displaced 1098 cc and developed 55 bhp at 5500 rpm. At the curb and wringing wet with all the tanks and sumps full, the MG 1100 weighed a bare 1850 pounds.

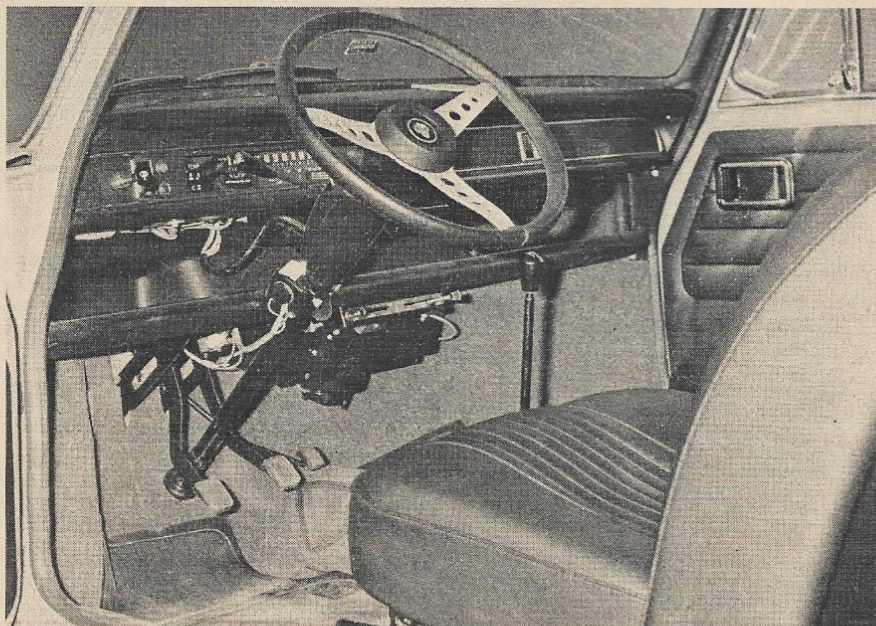
While writing the book, *The MG Story*, I ran tests on a well broken-in example which scampered from scratch to 60 mph in a split hair under 18.5 seconds. Well wound up, the same car could top 80 by 2 mph. Fuel consumption was upwards of 27 miles per gallon of regular fuel depending upon how furiously one tried to drive.

The little MG 1100 was a good car but there were few mechanics outside of BMC dealerships who understood front wheel drive and there were more service problems than the car deserved. Some mechanics adamantly refused to have anything to do with the car which raised Cain with sales after the initial popularity wore off.

A couple of years ago the English got smart, toughened up the gearbox, gave it a bit more length—5.5 inches to be

exact—beefed up the engine with tougher innards and increased the piston displacement to 1275 cc and touched it up in the ignition and carburetion departments. The improvements boosted the output to 58 bhp at 5250 rpm. Curb weight has increased only slightly to 1883 pounds. Therefore, it is not surprising that the Austin America will top 86 mph.

Our test car, unfortunately, was spanking new and even after 700 miles was still so stiff that acceleration times were not what we'd hoped. Limbered up with around five times that mileage, the zero to 60 mph (speedometer read 63) time would be considerably improved over the 20.9 average. No amount of urging or adjustments were able to improve upon that not-to-good figure. To 45 mph required 11.4 seconds.



Despite economy price, interior of Austin America is detailed extremely well.



Gear speeds were 28, 49 and 70 mph in 1st, 2nd and 3rd gears respectively. We made no maximum speed runs; the car was simply too new; checking gear speeds and running acceleration tests were tough enough. Owners we knew claim maximums all the way up to 92 mph; I suspect 86 or possibly 88 mph is a more accurate potential, however.

My objections to this car are personal; most owners are stout defenders of this Austin model and claim I'm prejudiced. I'm not; I'm just a bit too tall and long-legged to be comfortable in the driver's seat even after the seat rack has been moved as far to the rear as the structure permits.

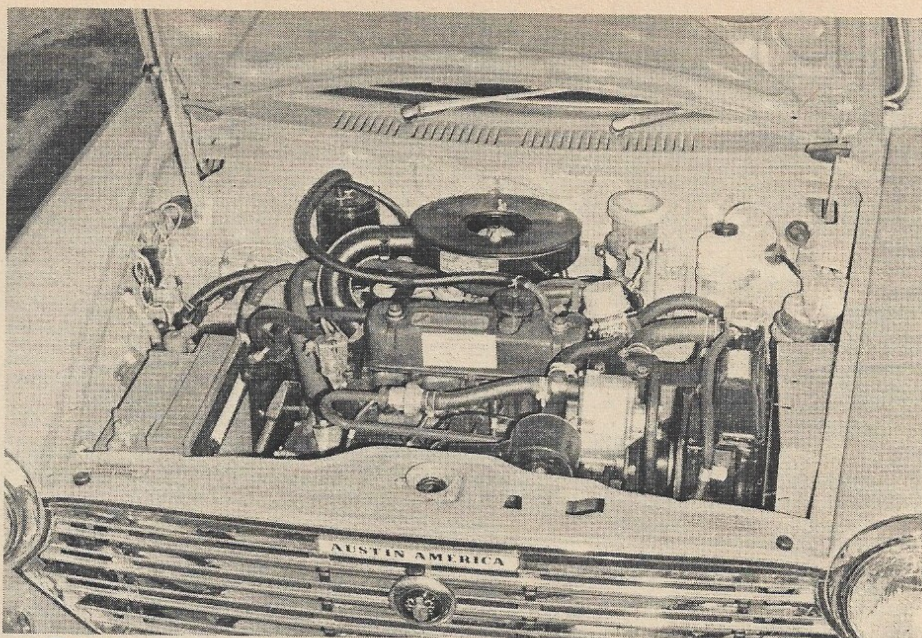
My other beef pertains to the steering wheel angle; it's a bit flat—the column is too steep. This can not be helped because of the extremely short nose. The wheel, on the contrary, has the best sized rim of any of the sub-compacts currently marketed in the States; there's no clenched fist feeling after hours at the wheel, and the rim is covered with a leather-like vinyl that gives a good grip without squeezing. The slightly more than three turns from left to right lock helps, too. The three flat metal spokes are drilled; very sporting.

The similarly bodied MG is not imported. In the United Kingdom, however, that running mate to the America is very popular. Styled for this country inside and out, the Austin America's grill has that wide look so beloved by most American drivers. Inside the touches of luxury include a folding armrest in the middle of the rear seat and a full width package tray beneath the dash. This is edged with padding to protect the knees. Missing is a locking glove case.

Individual semi-bucket front seats are comfortable, according to my wife. Wife, though does not have the length that must be reasonably comfortably accommodated that I have. Frankly, I have difficulty getting comfortable. The most annoying is not the lack of legroom but, rather, is the shortness of the seat cushion from where the tailbone rest to the front edge of the seat. I find the seat tiring, with half of each thigh hanging over the edge.

But, as stated above, most owners seem able to be not only comfortable in the car but to be downright enthusiastic about it. Quality, on the other hand, is excellent. The only faulting I can render on this score is that the bonnet latch needs adjusting to eliminate a tendency to bounce slightly at speeds in excess of 50 mph. Otherwise, the car is steady as a rock, stable under all but the most extreme conditions, and it gives a better ride than one would imagine possible on such a short wheelbase.

The Hydrolastic suspension system is ingenious. Interconnecting all four wheels, maintenance is virtually nil and

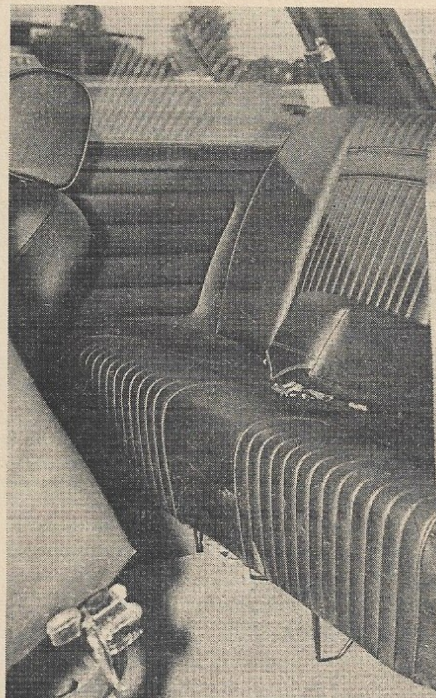


Transverse mounting of engine is responsible for the very short overall length.

road shocks, even sharp bumps and deep ruts, are automatically smoothed. Everything else being equal, only the French Citroens have a similar road feel and for the same reasons, a hydraulic suspension. There is no doubt in my mind that similar 12 inch wheels, if installed on other small imports in this car's range, would give a bone shattering ride. The utmost abuse to the Austin's suspension bothers it not at all.

The inside door latches are unique: a vertically spindled finned rotor device—precisely what one would call such a gizmo is beyond me—called the "locking plate" in the Owner's Manual, is moved toward the rear. In this manner the flat "lever arm" is covered thus effectively locking the door.

The turn signal lever is in the usual location but when pressed toward the steering column, the horn honks. Moving that lever on a plane parallel to the axis of the steering column controls the headlight beams. The speedometer is of the straight red line variety and for a small car was quite accurate being no more than 5-percent on the optimistic side during the entire range of speed.



Armrest folds into backrest in rear which will accommodate three youngsters.

#### AUSTIN AMERICA SPECIFICATIONS

**ENGINE:** front, transverse, 4-cyl., in-line OHV,

Bore and stroke 2.78 x 3.20 in., Displacement 78 cu. in. (1275 cc),

BHP (SAE) 58 @ 5250 RPM; Torque 69 lb. ft. @ 3000 RPM.

Compression ratio 8.8 to 1. Regular grade fuel.

**TRANSMISSION:** 4-speed manual on floor; ratios: 1st -12.85, 2nd - 6.94, 3rd - 5.49, 4th - 3.65. Automatic optional. Front wheel drive.

**SUSPENSION:** Hydraulic ("Hydro-elastic") inter-connected front and rear.

**STEERING:** rack and pinion, 3 1/4 turns lock-to-lock; turning circle 35 ft.

**WHEELS AND TIRES:** bolt-on disc, 5.95 x 12 Dunlop.

**BRAKES:** front disc, rear drum.

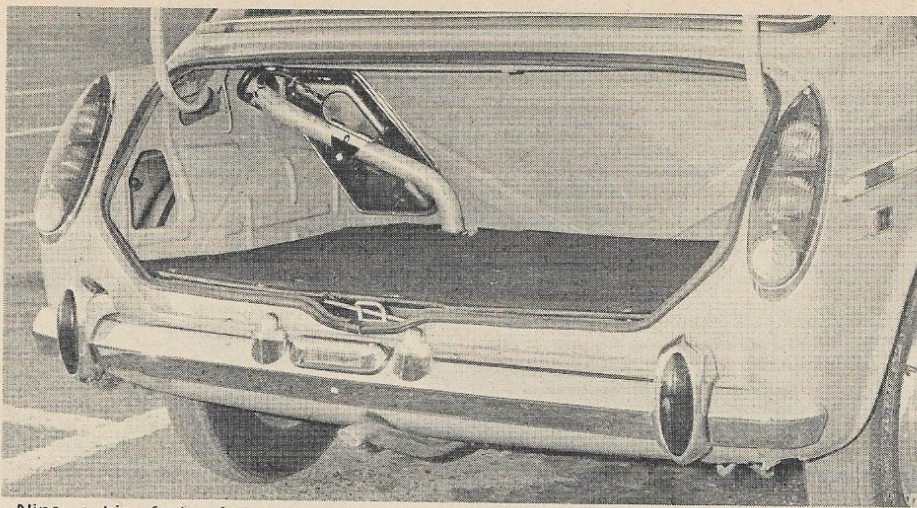
**CAPACITIES:** fuel 9 US gallons; oil 5.1 US quarts including transmission; cooling system 8 US quarts including heater.

**BODY AND FRAME:** integral.

**DIMENSIONS:** wheelbase 93.5 in.; length overall 146.5 in.; width 60.5 in.; height 53 in.; ground clearance 6 in.; curb weight 1883 lbs.

**PRICE:** begins at \$1815 East Coast, \$1865 West Coast.





Nine cubic feet of luggage space in the boot belies exterior size; just right for grocery shopping. Spare wheel is beneath trunk floor.

In the part of the country where the writer lives, most Austin Americans observed seem to be driven by women. As a second car this model offers genuine value. Handy for shopping—the luggage boot contains on the order of 9 cubic feet of space—there are few four seaters available which offer a more compact external dimension. Rack and pinion steering gives a quick response, and the 35 foot diameter turning circle assures parking ease, even alongside curbs in short quarters or in crowded parking facilities.

Having heard rumors as to poor finish, the outcome of an impromptu and undesired test was gratifying. Sandblasters know no schedule that is convenient to commuters traversing the Golden Gate Bridge. On the way out of San Francisco the day we picked up the car, a strong wind was blowing in from the sea and the sandblasting crew was busy on the seaward side. There was nothing to do but dash through with the windows tightly closed. Many cars have been scratched or have had a panel ruined. We could hear the sand striking against the left side of the car for an instant, could even feel the vibration. Inspection later disclosed no scratches; a casual wipe with a soft cloth removed the final specks of sand and no damage was done.

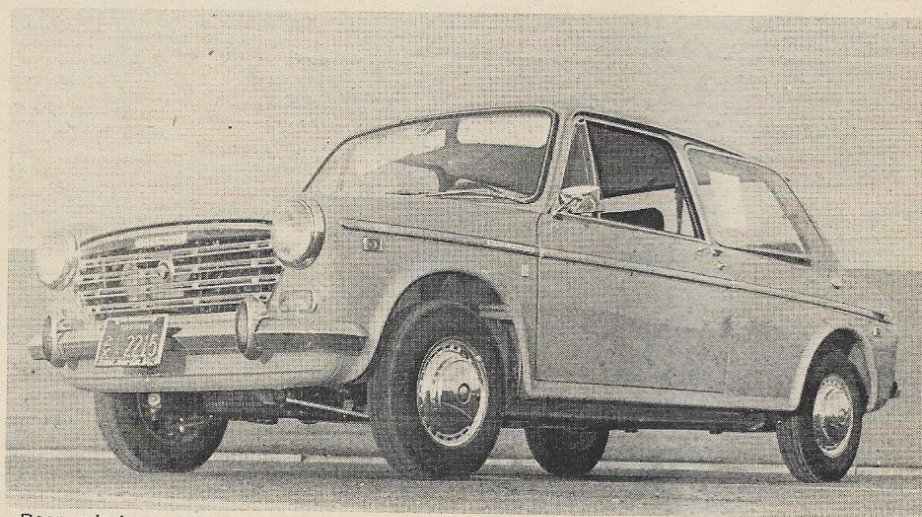
A spring rainstorm disclosed no leaks and the Austin was buffeted with driving rain for about 15 miles. The body was tight. There is some wind noise at highway speeds and during warm weather it is virtually impossible to get a good flow of fresh air into and through the interior. Open windows are a necessity. In cold weather, on the other hand, the heater should roast one to a turn if one likes lots of heat.

Austin sales are gradually increasing after a low point that all but wiped the sedans of the marque off the US market. This model is always compared to that other small sedan from the continent. That one is air-cooled; this one is

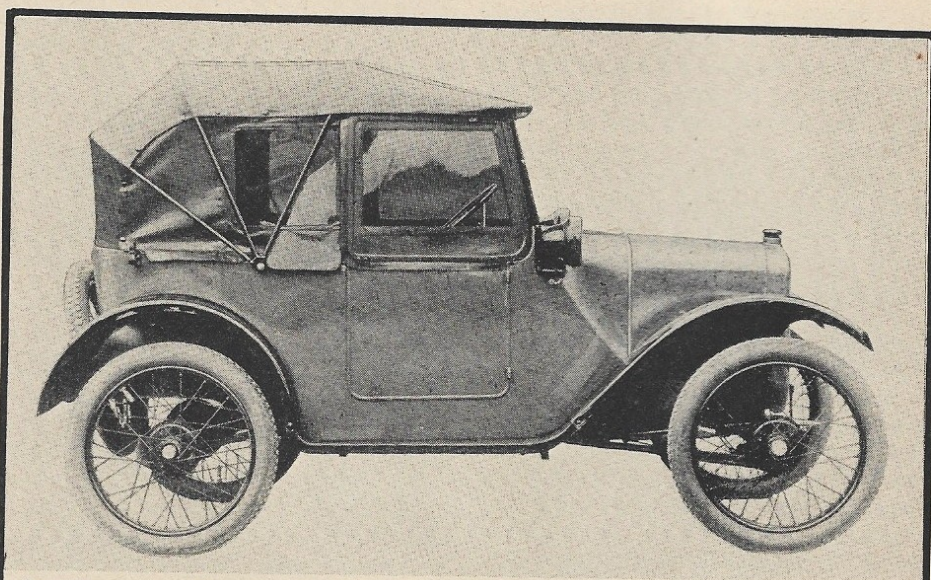
water cooled, and hence, is much more quiet and has a more efficient heating system on a dollar-for-dollar basis.

This one suffers in front seating space; that one is not quite as fast flat out. Each have their following; this one is just getting established. The other one has a reputation to uphold; this one is getting its rep and from the numbers of satisfied owners, it seems to be succeeding.

My less fussy RIB says: This is probably the softest riding economy car I've driven, and certainly the quietest. A very good 'round about town car for the woman with small children. One grows accustomed to the flat angle of the steering wheel. My only real objection is that the back of the seat does not adjust—a necessity for a short woman.



Rear windows open for ventilation. Car's name reflects its American lines including the full width grille.



Austins have been one of the most popular cars in England since the first Austin rolled from the shop of Herbert Austin. Later Lord Austin, this gentleman mechanic started his career with a firm that made sheep shearing equipment. One of the most popular of all Austins was the "Seven" which got its name from the taxable horsepower. This first "Seven" was produced in 1922. Developing 13 bhp from its little 747 cc 4-cylinder engine, this model saw continuous development until the mid-fifties and was the inspiration behind the ill-fated American Bantam Austin of Depression years.



# Charge

How to keep tab on your Car's

by David N. Wenner

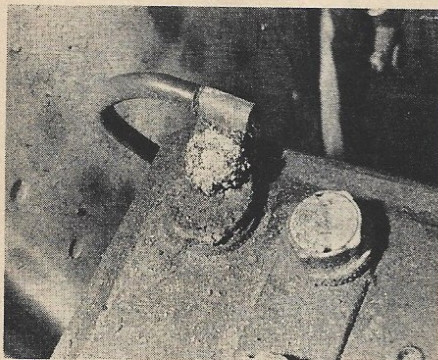
## ELECTRICAL

## Health

Battery, charging system, and electrical failures account for more disabled vehicles each year than all other breakdowns combined. The shocking thing is that most of these failures would never have occurred if the car owners had kept themselves informed about the state of their automobile's electrical healthy.

"Sudden" battery and charging system failures are as rare as portraits of Moshe Dayan at a Moscow May Day parade. There are always warnings of impending disaster, but you have to know *how* and *where* to look for them if you expect to stay ahead of the game.

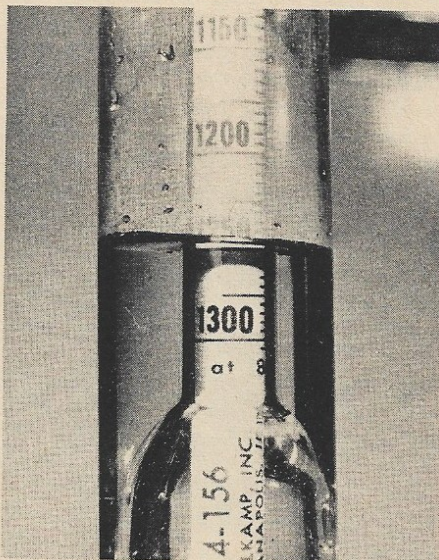
Most charging system miseries start with the battery or voltage regulator. Generators and alternators are basically simple, rugged, and reliable units that seldom create calamities without the outside agitation of a faulty regulator. Your dash-mounted ammeter is a valuable "window" through which you can keep a wary eye on the regulator's functions.



Dirty battery tops and corroded terminals cause a reduction in battery life and place an added burden on the entire electrical system.

Unfortunately, the ammeter is the very instrument that is most often missing from the modern car's dashboard. In most cases its absence has been dictated by styling considerations or simply cost cutting. However, car makers also tend to (1) feel that drivers do not understand what an ammeter tells them or (2) fear that car owners may try to adjust their regulator using the relatively inaccurate dash instrument, thereby precipitating even greater woes.

Whether or not your car has an ammeter, there is another instrument that is vital for keeping track of the charging system's operation. This is a



A battery hydrometer reading of 1.250 is the minimum that can be considered good. Remember to correct reading for electrolyte temperature, however.

good-quality battery hydrometer. The "bargain store" type may be okay, although some certainly deserve to be faulted for their accuracy. The somewhat more expensive hydrometers sold by better automotive supply stores are a better investment. Replacement parts are stocked for these so that when the glass barrel is broken, or the bulb begins



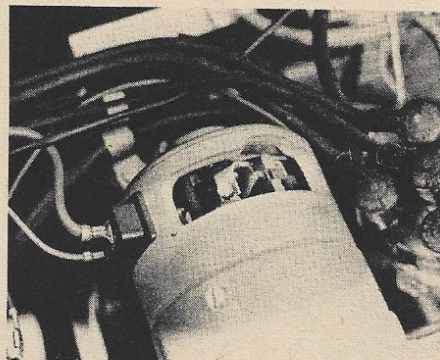
All generators come apart the same way. Remove the two long screws that hold the ends together. Most brush replacements must be done this way.

to show the effects of exposure to battery acid vapors, you can replace such parts separately without having to

purchase another entire hydrometer.

The level of acidity in the battery's electrolyte solution provides an extremely accurate picture of the battery's state of charge. A hydrometer measures the amount of acid in the electrolyte by checking the specific gravity of the liquid. Acid is "heavier" than water, so that a reading of 1.250 indicates that the electrolyte is .250 times heavier than pure water—water giving a reading of exactly 1.000.

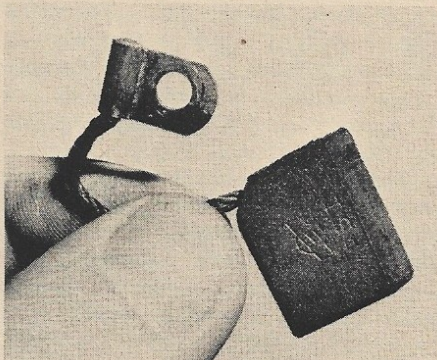
A fully charged battery will produce a hydrometer reading of 1.280 (anything about 1.250 is considered good).



Volkswagen generators have inspection ports that allow brush replacement with generator in car. Pressing down brush with engine running can detect worn brush.

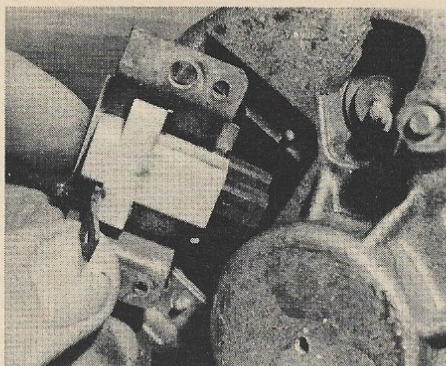
The reading 1.150 is typical of a fully discharged battery. The scale on most battery hydrometers, therefore, extends from 1.100 to 1.300, and often the decimal point is omitted from the numbers on the scale. Battery cells that are in "fair" condition will read 1.225 to 1.250, and anything below that range should be considered poor.

The health of your battery and charging system is greatly improved by



Typical generator brush has end contoured by the commutator. If old brushes are reinstalled, be sure they are returned to their same positions.

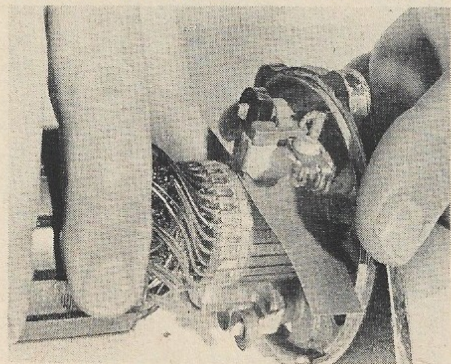




Brushes in alternators are housed in special holders. These can often be taken out without disassembling the alternator. Brushes last longer in alternators.

keeping the battery top and terminals clean. Dirt and conductive electrolyte salts that are allowed to accumulate on the battery can cause a constant discharge. This not only lowers the output and shortens the life of the battery but decreases the efficiency of the regulator and generator as well.

Terminals should be cleaned and tightened every few months and coated with a light application of grease after



New brushes must be sanded so that their tip contour will match commutator. Place sandpaper between brush and commutator and turn armature.

reconnecting the cables. Wash the top of the battery with a mixture of warm water, baking soda, and detergent, *but do not allow any of this cleaning mixture to get inside the vent holes in the battery filler caps!*

Use distilled water only in your battery. Don't listen to those who tell you that tap water is okay. With distilled water selling in super markets for about 80 cents a gallon, there is no reason to use anything else. The tolerable amount of copper in electrolyte is about 1/100 of 1-percent. Because copper plumbing is becoming more and more common, this is an impurity that is particularly troublesome.

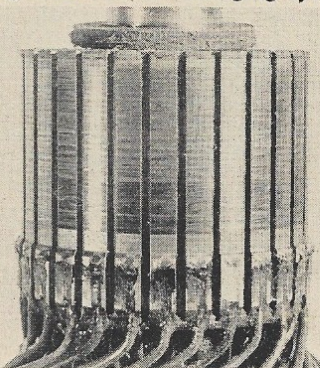
Bits of copper wire or other copper-containing debris sometimes get into the water container used around service garages. Iron, chlorides, and manganese—all very common in tap water—are also seriously harmful to long battery life.

If hydrometer checks consistently show all cells of your battery to be in the 1.125 to 1.250 *fair* range, yet the battery itself is less than three years old,

you should definitely have the charging system checked and the regulator recalibrated by a competent automotive electrical specialist. Batteries that have passed the three year mark may start to show some weakness even though the charging system is in top shape.

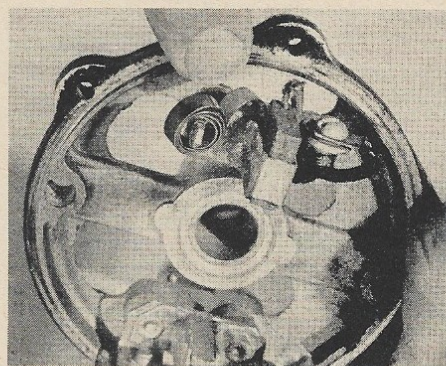
There is a good possibility that the plates of such batteries have acquired a coating of lead sulphate. Moderately sulphated batteries can be restored by giving them a long, slow charge, but don't allow a quick charge. That'll kill a sulphated battery deader than a dose of molten lead!

Hydrometer checks are the best means at the motorist's disposal for keeping track of his charging system's



Generator commutator has grooves between segments. If brass has worn down to 1/32" of mica dividing strips, armature should be turned and undercut.

condition. When readings fall outside the 1.250 to 1.280 range, one should have the system and the battery checked immediately. Thus one can prevent serious charging system failures and starting unreliability from ever occurring.



Springs that press down on brushes can be pushed off to one side until end plate is installed on generator, lifted into place later through end holes.

Finally, it should be remembered that battery hydrometers are calibrated for accuracy with the electrolyte's temperature at 80 degrees F. For every 5 degrees above this, .002 should be added to the hydrometer reading obtained. For each 5 degrees below 80 degrees, subtract .002 from the reading. Individual cells that test much lower than the others are probably shorted or have an electrolyte leak. A new battery before winter weather arrives is indicated.

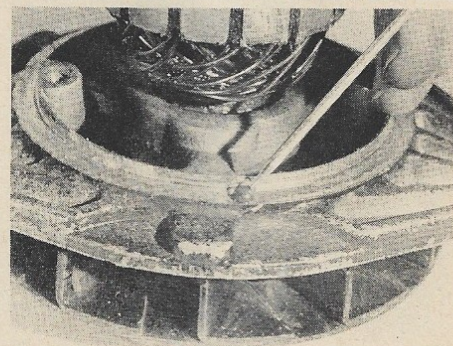
The ammeter is the most frequently

misunderstood instrument on the dashboard. A "zero" reading, which many drivers mistakenly think is an indication of trouble, actually means that everything is operating ideally. A zero ammeter shows that the battery is fully charged and that the generator is able to supply enough current to carry the electrical system's load.

Immediately after starting, or when the headlights or several electrical accessories are being used, the ammeter may show a "charge" condition. This means that the battery is not fully charged, and that the generator is charging the battery in addition to carrying the total electrical burden of the car. A "discharge" reading means that the generator is not able to carry the load of the electrical system by itself (due to low engine speed or to an excessive number of electrical accessories in operation) and is being helped by current flowing from the battery. Such a condition cannot be allowed to continue for long periods.

An ammeter that always indicates some degree of "charge" is a tip-off that the battery is never reaching a fully charged state. This is a major cause of sulfating. The reading could mean a weak battery that no longer can accept a full charge, or can indicate nothing more serious than low electrolyte level or an incorrectly adjusted, or faulty, voltage regulator. Any of these conditions should be corrected as quickly as possible.

Should the ammeter needle rise and



When reassembling a generator, the round-ended pin in the end plates must engage notches cut in the field housing. Otherwise unit will be out of phase.

fall with engine rpm, covering a wide band from well down into the discharge zone to high up in the charge range, the regulator is faulty and requires immediate replacement or adjustment to prevent serious damage both to the battery and to the generator. This symptom often indicates a cutout relay in the regulator that needs cleaning and adjusting, but it can also be due to a burned out resistor in the regulator which will require that the entire unit be replaced.

Charge indicator lights (popularly known as "idiot" lights) are of little use for detecting charging system problems



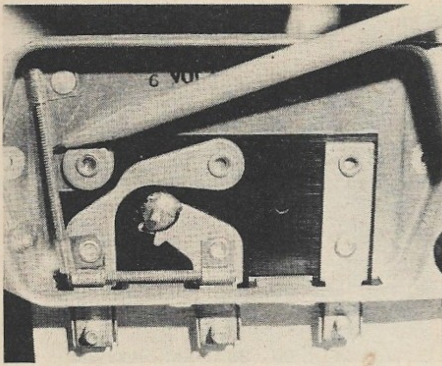
## WORLD CAR NEWS

**TOYOTA**, still in second place in the imported sweepstakes, is bidding to increase their acceptance. Shoji Hattori, President of Toyota Motor Distributors, Inc., has just signed his 800th dealer, Bud Jordan of Walnut Creek, California. What's more, this nifty from Nippon is running out of warehouse space so they've just broken ground for a new facility in Benicia, the original capitol of California.

**DATSUN U.S.A.** President Y. Katayama is convinced that his marque's success is due to: "Our basic concept on the amount of horsepower a car should have depends on the auto's use and its size. Since most cars are used mainly for commuting in which heavy traffic is encountered, it seems senseless to have too much power, power which is seldom used or ever needed. Just as senseless are underpowered cars that are not suited to high speed driving conditions." Katayama believes that 100 bhp per 2,000 pounds weight is sufficient. Watching the Datsuns go by, points to the logic of such a formula. Simplifies maintenance too and eases the strain on the wallet. Will Detroit learn? Datsun sales for April, most recent month tabulated, totaled 10,038 units with passenger types leading the spunky pickups by a 6-to-4 ratio. Could Datsun be after Opel's third spot?

**VOLKSWAGEN** has discovered bright colors. Roughly one-fourth of all VWs, Bugs, Ghias etc. sold through April of this year were finished in

(Continued on Page 34)



When installing new voltage regulators be careful not to damage the wound resistors on the underside. Breaking one means buying another regulator.

prior to the time when an actual failure takes place. Hydrometer checks, each week or two, are your best bet for stopping trouble in such cars before it becomes serious. Because their place in the circuit is different in alternator-equipped cars than in cars having generators, a glowing or brightly shining light can mean different things in different cars. Headlights that change brightness proportionally to engine speed are actually a better indication of charging system trouble than the indicator light.

On the other hand an "idiot light" can be depended upon to tell you when the generator (or alternator) brushes have worn out. This usually happens after midnight when you're miles from nowhere. An ammeter that stays in the discharge range regardless of engine speed will tell you the same thing—particularly if it holds steady with speed changes but shows an increasing discharge as more electrical accessories are switched on. A faulty field relay in the regulator produces similar results.

Generator brushes are easy to replace, and are the cause of most troubles in healthy charging systems. If the commutator on the generator's armature shows signs of unevenness or being out-of-round, it should be taken to an automotive machine shop for an inexpensive reconditioning. This is also

necessary when the brass commutator bars have been worn down to within 1/32" of the mica strips separating them. No such maintenance is ever required by alternators.

Usually you'll want to remove the generator from the car to replace the brushes, but this is not necessary on VWs. You may wish, however, to remove the four fanhouse bolts and loosen the generator clamp so that the VW generator can be turned from side to side to make the lower brush more accessible.

The flat spiral springs of Lucas generators may become corroded and weakened with age and it's not a bad idea to replace these at the same time as the brushes. After the new brushes are in their holders and the lead wires screwed to the terminals, slip a strip of fine sandpaper between each brush and the commutator with the abrasive side against the brush. Turn the armature and sandpaper under the brush, or repeatedly pull the sandpaper strip from between the two parts until the end of the brush is contoured to match the curve of the commutator.

The driver who keeps an experienced and watchful eye on his ammeter and checks the condition of his battery frequently with a hydrometer is not likely to be caught unaware by sudden battery failure or faced with the expensive replacement of a burned-out generator or alternator. While many car owners may be upset by the thought of replacing a \$7 voltage regulator, failure to do so when trouble is first detected may eventually cost them a \$50 generator or a \$25 battery.

If you are aware of oncoming troubles and take care of them as they arise, you won't be among the estimated twenty-million drivers with battery and electrical problems that Triple-A expects to greet with its tow trucks every year. That alone should be worth the price of a hydrometer and ten greasy fingernails.

(Continued from Page 7)



### MEMO FROM THE EDITOR

der harness: the front seat was not bolted in place and the steeply slanted windshield impressed me.

Funniest of all—not particularly dangerous—was the time a road test was interrupted by a safety check of cars by the State Troopers in the East.

The registered "owner" of the car I was driving was the public relations director of the manufacturer concerned. Everything was fine except for one item: the horn would not function. Now it's a rare PR man who is unable, when called upon, to toot his own horn.

So these little things happen. I could relate scores of instances. Even the people who make cars are human. At least that's what they claim. Quality control, proper inspections along the production line, and even the spot check road tests conducted on proving grounds never reveal everything that might malfunction on a new car.

The overall engineering, the road-

ability, the value and the usefulness according to the designed purposes is what most road testers concern themselves with; at least that's the way I see it. Poor engineering and sloppy planning are one thing—most of us report such conscientiously. Shoddy craftsmanship gets whacked.

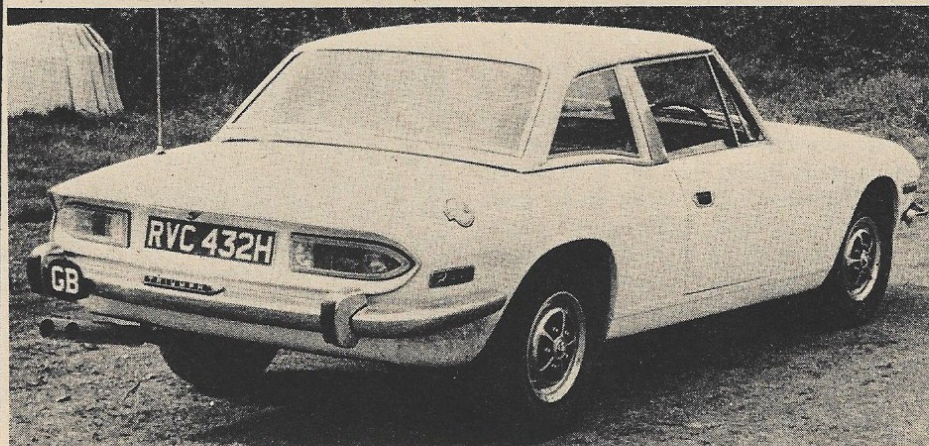
Overlooked items, when brought to the attention of a responsible official, always result in a tightening of the reins. That's as it should be. On the other hand, if there were not so many similar occurrences, current warranties would not have been instituted. The public is becoming more aware of poor value. Even some of the importers are recalling cars. It's high time! — JOSEPH H. WHERRY



# a luxury V-8 sports car

## Triumph Stag

by Joseph Lowrey  
(Photos by the Author)



The Triumph Division of British Leyland Motor Corporation sells mainly sports two-seaters in the U.S.A., mainly sedans in Europe. To bridge the gap it introduces the Stag "2 + 2" GT coupe, powered by a 3-litre V-8 of overhead camshaft layout, which will reach US dealerships late this year. At prices below Porsche and Mercedes Benz levels, the Stag offers a very high standard of comfort and road holding and a top speed of about 115 mph.

There is a strong family likeness between the Stag and the Triumph 2.5-litre 6-cylinder sedan. The wheelbase is cut 6 inches to 100 inches for the new GT, height is reduced 6 inches to 49.5 inches and width slenderized 1.5 inches to 63.5 inches. Beneath rather similar styling, the Stag has slightly larger disc-and-drum power brakes of similar design, the same telescopic strut front suspension, the same IRS by one semi-trailing link per wheel and a similar rubber-mounted sub-frame to keep rear suspension noise out of the car. Coil spring flexibility, anti-roll torsion bar diameter, damper settings and other details are of course tailor-made for the new car. Radially ply tires are on all examples of the Stag, as is power assistance on the rack-and-pinion steering, so it has been possible to set up the handling without compromises to suit tire and steering options.

An integral steel body/chassis underframe has been reinforced cleverly so that it is as strong as a steel-topped job. There are, in effect, two roll-over hoops braced to the front and rear body structures, a hoop around the windshield and another behind the doors.

Along the car centerline, another steel member runs fore-and-aft to brace the two roll-over hoops integrating them in one rugged H-shaped

superstructure of padded steel. This structure does not spoil the Stag as an open car, would give a great deal of protection in any crash, and holds the car firmly rattle-free over Belgian block torture surfaces.

Seating for "2 + 2" has its usual meaning. Two luxury seats in front, a roomy external-access trunk behind, and in between a pair of seats which are short of legroom and short of headroom too if the soft top is up or a hardtop is fitted.

The Stag is really a two seater which will carry kids or a very great deal of luggage. This is mainly a luxury car for one-time sports car lovers whose kids now have their own cars, and who have time to enjoy long-distance Grand Touring in a fine car. Emphatically the Stag does not replace the Triumph TR6, GT Six or Spitfire 4 sports two-seaters.

Power for the Stag comes from the second in a planned series of sohc Triumph engines. The first product of the automated transfer machines has been the 1.7-liter slant-four for the Saab 99 sedan, which has had to meet Swedish durability tests (see road test this issue).

Wedge combustion chambers have in-line valves mounted at an angle to the cylinder bores and operated by piston tappets from one overhead camshaft per aluminum cylinder head. With its 5-bearing crankshaft in an iron Y-block, this engine will probably go up in rpm thru the 1970s as the ex-Buick (now Rover V-8) from the same group goes up in displacement. At present, maximum power is developed at 5500 rpm, and the tach is marked with a red line at 6500 rpm.

The 145 horsepower, net as installed in the car, is a catalogued figure which most production engines are claimed already to be bettering. A balancer hole between two sepa-

rate halves of the cross-over induction manifold has been re-positioned to improve both torque and power.

At present, pistons with recessed crowns give a compression ratio of only 8.8 to 1, which seems to anticipate lead-free gas. A clean air package does not reduce this engine's power. Cams with 16-56-56-16 timing, in conjunction with two Zenith Stromberg CD carburetors, let the Stag accelerate cleanly from a mere 10 mph in 4th gear.

Uniquely, each aluminum cylinder head is held to the iron block by two angled lines of studs to keep the latter clear of an offset camshaft location. This also ties the head down firmly the way guy ropes secure a tent! One line of studs parallel to the cylinder bores is permanently screwed into the block: after a head has been lowered into place, the second line of slotted-end studs is put with a screwdriver, and bolts on the two lines of studs are tightened. Just don't plan on milling the head or block faces to increase that compression ratio!

A typically Triumph array of three transmissions is available behind this new motor. Four on the floor, with ratios closely spaced between 1-2 and between 3-4 but widely spaced between 2-3. An epicyclic overdrive which hot-shifts if you flick a switch (located in the gear-shift knob) can be added to this transmission. Or, there is the usual Borg Warner automatic which permits manual selection of 2 or 1 if you don't like the way it behaves in D.

Weighing from 2800 to 3000 pounds according to how it is equipped (and likely to cost between \$5,000 and \$6,000), the Stag could use plenty more horsepower than it has. Anyone who does a swap should find a TR6 Triumph sports car owner eager to replace his "six" with the little V-8.

As it is however, the Stag is just the sort of car I'd like (with the optional air conditioning please!) for a transcontinental trip such as I've not made other than by jet since a dozen years back.



Do I reckon the Sunbeam Avenger 1500, latest product of the Chrysler-controlled Rootes plant in Britain, to be good value for money? I answered that question with my check book, by purchasing one as family transportation.

Exciting this Sunbeam is not. Even the larger of two available motors seems unexciting for a 1.5-litre, although it fully matches cars of less displacement for which rival plants charge about as much money.

Mature this Sunbeam is, to an astonishing degree for an all-new design and extremely practical in its capacity for passengers and luggage within small exterior dimensions. The Avenger is well-finished to an extent which is rare in the first months of a model run.

Tires seem to make or break this car. The designers have put 5.60-13 cross-ply tires onto wheels 4.5 inches wide, the sort of rims that rivals offer only to order in conjunction with extra-wide radial-ply tires. These wide rims which spread the sidewalls apart do not seem to suit all tires.

Of those which I have sampled, Dunlop cross-plys give an excellent combination of easy riding with good cornering, so I opted for these on my own car. I am assured that compliance built into the suspension makes radial-ply tires behave excellently, but the 155-13 size listed as an option increases engine revolutions per mile.

Designing a car to fill a gap in their range and to win sales mainly from European divisions of Ford and GM, Sunbeam made the newcomer 7 inches shorter and 2 inches narrower than Ford's best-selling Cortina, but it is larger than the Ford Escort sedan. A remarkable amount of passenger and luggage space has been fitted into an essentially orthodox car of 161 inch length and 62.5 inch width. Curb weight is about 1850 pounds.

## CHRYSLER'S NEW BRITISH PRICE FIGHTER



Individual front seats are shaped to hold you around turns and have enough adjustment range to accommodate really long limbs. The seat location which I use leaves kneeroom for another man behind me, although a fully-back driving seat does not.

Four doors are big enough to let one get into any seat easily. Seats of rather more than fashionable height, which increases comfort inside a short car, provide just reasonable headroom, and the stylists have kept the sloped rear window well behind passenger's heads.

It's not unreasonable to put three passengers in back, and the trunk can swallow upward of 10 cubic feet of luggage.

The ventilation works well keeping the rear window mist-free with outlets along the edges. Heat is available very soon after starting a cold engine, and the slow setting of a two-speed blower is just about inaudible. The biggest nuisance on the car is the ignition and steering lock. Anxiety that nobody who has the throttle stick open should lock the steering when killing the ignition has led to the design of a very clumsy mechanism.

On suitable tires, instant rack and pinion steering is a surprise feature of this sedan. Rock the steering wheel a few inches to left and right, and the car zig-zags in response, almost like the tiny rear-engined Sunbeam Imp. On turns the car is stable, although its sensitivity to wind is of the Beetle order.

For a car of light weight, the Sunbeam has an unusual ride, soft and luxurious when you are alone but becoming firmer instead of over-soft when you carry a load of passengers. The ride could be quieter, and on unsuitable tires becomes downright noisy, this being, I suppose, the cost of suspension linkages with "sports" hardness of rubbers.

A real honey of a four-on-the-floor transmission has been designed for this car. Right off the assembly track, it shifts with one-finger pressure; I just hope it won't jump out of gear when it gets old! Ratios are good as well as quiet. The clutch is as smooth as the transmission, and has a ball thrust bearing instead of a carbon block. Disc-and-drum brakes work as smoothly as all the other controls of a car which is cheap, but does not seem to be.

The gas pedal response is a bit too smooth but there are no stumbles once you have the motor warm, thanks to a CD carburetor, although lean settings demand extended use of the choke after starts from cold. It's a long-travel gas pedal which only delivers full power when you push it all the way, and not quite as much power as you would wish even then! You can reach 66 m.p.h. in 20.5 second. A quarter mile took 20.5 seconds.

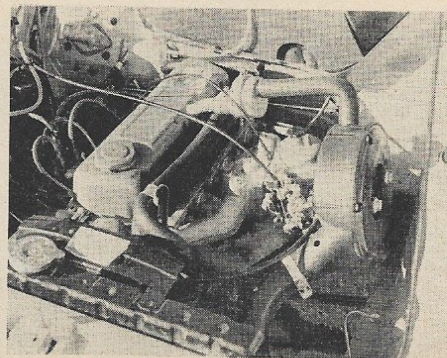
Economy seems quite good; it's not difficult to get 25 miles on each gallon in an 11-gallon gas tank, burning 97-octane. Retarding the spark to accept 94 octane harms warm-up more than performance. Top speed is just over 85 m.p.h., and permitted speeds of 30, 50 and 75 m.p.h. in the indirect ratios are well beyond the peak of the power curve.

What will this 1.5-litre Sunbeam cost in U.S.? The likelihood is that Chrysler will be able to offer very keen value. This is a compact yet usefully roomy economy sedan, with more refinement of furnishing, ride comfort and controllability than you would expect. At 1500 miles, my own car has needed only the replacement of faulty sealed-beam units, and seems to have been built remarkably well.

**Editors Note:** At press time it is not confirmed whether Chrysler will import the Avenger into the USA.

# SUNBEAM AVENGER

by Joseph Lowrey





**I-M-S-A**, the **INTERNATIONAL MOTOR SPORTS ASSOCIATION**, streaks into the '70's with a whole new deal for the independent racing competitor with limited resources.

Too long, attention has been focused on the exotic high priced racing classes at the expense of those that could be campaigned by the average enthusiast. Many have talked about giving these neglected classes a better break but up to now little results have actually developed.

Two of racing's most experienced and respected organizers have put into action a concept that brings a new era to the racing buff. John Bishop, former executive director of the Sports Car Club of America, conceived the idea of a race sanctioning association dedicated to establishing a series of professional races for categories that have the potential of being highly competitive within a practical budget. Bill France, famed president of the National Association for Stock Car Racing, contributed both ideas based on his vast experience with professional racing and the financial support that started the wheels turning.

After a thorough study of the racing scene, **THREE CLASSES** were selected as exemplifying the objectives of IMSA. The **FIRST** is Formula Vee, the VW based open-wheel racer that offers the highest degree of competition, per

dollar invested, available today. Although it is the most populated class in sports car circles, it has seen only limited star billing in relation to the number of registered drivers. Many a columnist has noted, in reviewing a day of racing, that the most suspenseful event was provided by the "Vees" with the win up for grabs down to the checkered flag.

Long time readers of this publication are well aware of our keen interest in "Vees" and the coverage that has been given this highly competitive class right from the start of its phenomenal growth. We look forward to keeping you updated on this new outlet for the Vee enthusiast that IMSA is providing. John Bishop is interested in adding the new "Super Vees" to the schedule as soon as their number is sufficient to provide a good starting grid.

Super Vee should provide some real hairy racing based on larger engines and more liberal design restrictions that allow more individual innovations while staying within a practical budget.

**THE SECOND CLASS** that met the basic aims of IMSA was Formula Ford, a more advanced open-wheel racer with a sophisticated suspension and a highly modified Ford Cortina GT engine that makes it the fastest of the selected classes. The rules are still tailored to making driver skill, not unlimited dollar backing, the winning factor. These

scaled down GP cars will provide the excitement for the speed devotee and a terrific ride for the advanced driver plus an excellent training ground for those who aspire to the exotic high powered Formula classes. Because of the similar feel to its more muscular cousins, most of the competition driving schools now use Formula Fords in their courses.

The **THIRD CLASS** with the potential of being the spectators' favorite, is for under 2-litre imported sedans. The fans in the stands can easily identify the competing cars with their own that are used for everyday transportation. Again the rules were designed for close competition between such popular names as Alfa Romeo, BMW, Datsun, Fiat, Ford Cortina, NSU, Opel, Renault, Saab, Toyota, VW and Volvo that have been sold in the U.S. within the past three years. These cars cannot be "junkers" either; they must conform to the standard production configurations, have good appearance and include such safety modifications as roll cages, fuel cells and approved driver restraint systems. Engine modifications, including boring and stroking, are permitted within the basic limits of the class rules; i.e. 2000 cc's maximum for push rod operated valve types and 1700 cc's for the overhead cam variety. You can be sure that there'll be a lot of action among the spectators as they cheer their favorite marque, which brings up a good

## INTRODUCING:

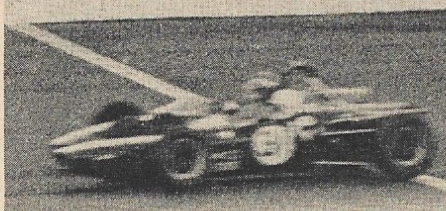
by John F. Peterson

# I.M.S.A.

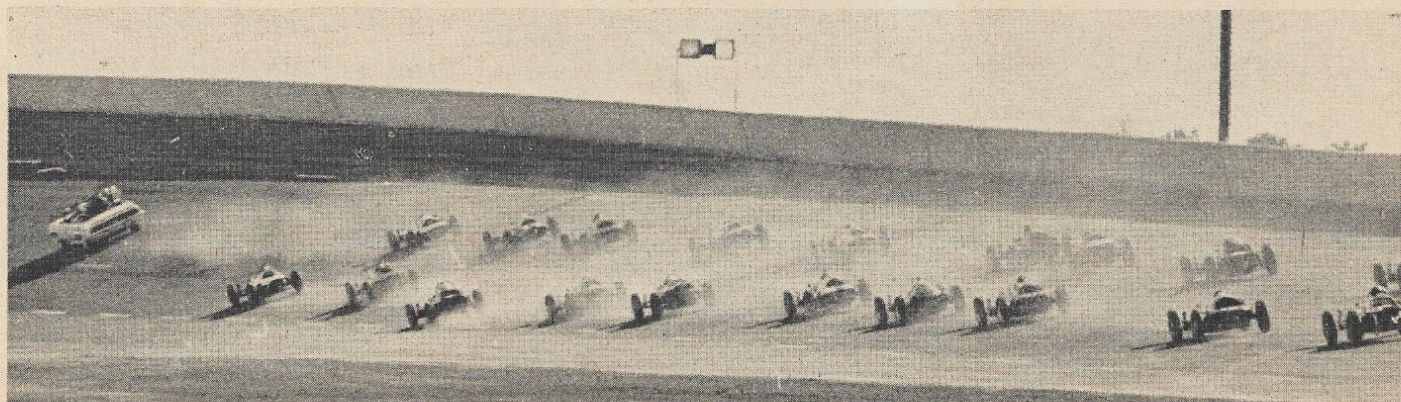
## A NEW RACING ORGANIZATION FOR EVERYONE

(If you're an average enthusiast, this may be your bag)

Left:  
Nose-to-nose for a photo finish at the end of the Formula Ford race: Sanborn in No. 31 (nearest camera) nosed out Jenkins by inches.



Vee pack roars into high banked section of the Alabama International Motor Speedway during pace lap.





question: How about local chapters of single make owners clubs, i.e. VW, Saab, Renault etc., sponsoring a Sedan as a club project to see what your vehicle can do on the Field of Honor? Drop us a note with your comments; a lot of fun can be had at modest cost.

**JOHN BISHOP**, the president of this dynamic new group, scheduled the first IMSA sanctioned race last October. This event was for Formula Ford and was run on the ¾ mile oval of the recently opened Pocono International Raceway. Yes, that's right! The drivers enjoyed every throttle bending second of this new experience. Jim Clarke driving a Caldwell D9 took the checkered flag and the honor of being the first winner of an IMSA sanctioned event. It was a hard fought 200 laps with the lead changing several times among the twenty-one contestants that included drivers from nine states, Canada and England, making it truly an International Motor Sports affair. It was a real meeting of the clan with such prominent FORDmula drivers as Jim Clarke, Skip Barber, Bill Scott, Jim Jenkins, Fred Opert, Gary Magwood and Kevin Glynn to mention a few.

**DRIVING ON AN OVAL** was new for these "sporty car" chauffeurs. Kevin Glynn of England, representing Climax-Royale, said that it was a complete surprise and that he's looking forward to more of the same. From the

hardy spectators that braved the chilling fall wind came comments such as, "It was like a junior Indy" and "Well worth the effort to leave a warm home."

**THE FIRST FULL CARD** of IMSA classes was raced on the Alabama International Motor Speedway's intriguing road racing circuit in November. Over one-hundred cars battled for their share of approximately \$30,000 in prize money that was divided among the three classes. With IMSA it's a policy of "Hardware's O.K. but Greenbacks are better." After all, a professional should get paid for his efforts and these drivers are "pros" in action. This attitude, and the general concept of the organization, has attracted many drivers who are eager to become a part of this new approach to motor racing.

Everyone who started received at least \$100 for his share of the purse; the class winners received \$1,000 and there was a \$75 bonus for the fastest qualifier in each class plus a lot of Contingency Prize Awards. The four mile Road Course, in addition to the twisting infield layout, included Talladega's famous high banked tri-oval which gave most of the drivers a thrilling new racing experience. There were many happy IMSA members that headed for home after a very enjoyable, and to some a very profitable weekend. Twenty-nine states were represented plus two drivers from Canada and one from England.

**THE FIRST IMSA VEE** blast set the pace for what should be an outstanding series. Forty-six Vees followed the pace car around the course with Buddy Cox holding the pole position with his rapid Austrian Austro-Vau. Wayne Purdy made a formidable challenge with his ASP to Cox's lead but had to retire with problems at the three-quarter mark. Veteran Vee jockey Jim McDaniels and speedy Steve Pieper, both in Zinks, ran wheel to wheel in pursuit of the leader but it was Cox's day all the way; he took the checkered flag with a safe distance ahead of McDaniels who held firm title to 2nd for the last six laps. Ed Zink's terrific product accounted for seven positions out of the top ten. Hank Caldwell, driving a Rathman, captured third. The fourth and fifth slots were filled by two long time Zink campaigners, Harry Ingle and Bill Greer. Starting in twenty-seventh and twenty-ninth positions, they steadily worked through the pack for a typical Vee finish that saw them cross the finish line almost together. Remember when Vee viewing to not focus all your attention on the top four cars but keep abreast of what is going on back in the pack. There's always a couple of good dices going on and the eventual winner may be fighting his way up through the crowd.

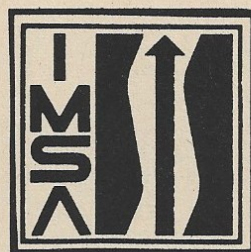
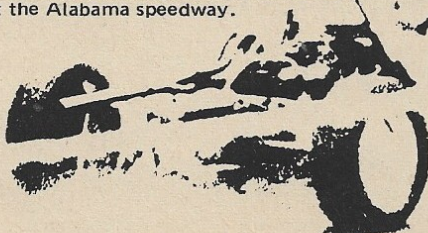
**THE INAUGURAL IMSA SEDAN** contest provided an interesting variety of "shoppers specials" even though the

(Continued on Page 43)

A happy Jim Clark receives congratulations from Ray Caldwell, designer of the first car to win an IMSA event.



A pair of winners being prepared: Cox's Austro-Vau (No. 41) and Andrey's Alfa (background) take advantage of the excellent facilities at the Alabama speedway.



Split second reaction is vital when driving fast, open wheel racing machinery.



# Schaefer MOTOR



# SPORT

by John F. Peterson

Photos by the Author  
And Charles Peterson

The Trans-Am Series has gained tremendous popularity due to spectator identification with the competing cars. This year promises even greater appeal due to two rulings that were put into effect. The first and most important new rule by the directors of the SCCA has separated the two categories that comprise Trans-Am so that the powerhouse ponies can flex their muscles without worrying about the little fellas getting in their way.

This permits under 2-litre cars to display their superior dexterity unhindered by the pony car set hogging the course. More thrills are provided for the followers of this dynamic series whether they are devoted to brute speed or flexible maneuverability as each category is given maximum opportunity to flaunt their thing.

The second rules change was actually instituted by the FIA and adopted by the SCCA and will contribute to a greater interest in the Under 2-Litre category. Porsche 911 that has dominated the group for the past couple of years has had its "Sedan" classification rescinded by correcting a loophole that existed in the classification, making a new ball game out of the series. The exotic coupe is just about the ultimate in compact, two passenger, high speed touring but for four people it's a mite too cozy. As a class B or C Sports Car, Porsche 911 is a great competitor and a joy to watch in combat.

These two decisions renew our interest at WCG in Trans-Am and we look forward to a great future in Sedan Racing.

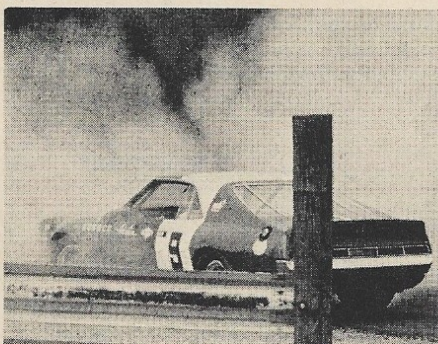
Lime Rock in Northwestern Connecticut was chosen for the first eastern showcase for the new double event program and it was a fitting choice as the "Rock" long has been a booster of sedan endurance racing dating back into the fifties.

An overflow crowd packed the scenic 1.53 mile course on an abnormally hot day and was rewarded by such extra features as a parade of exotic cars and a sky diver contest. The well known collector, Austin Clark, lead the dozen

# TRANS-AM



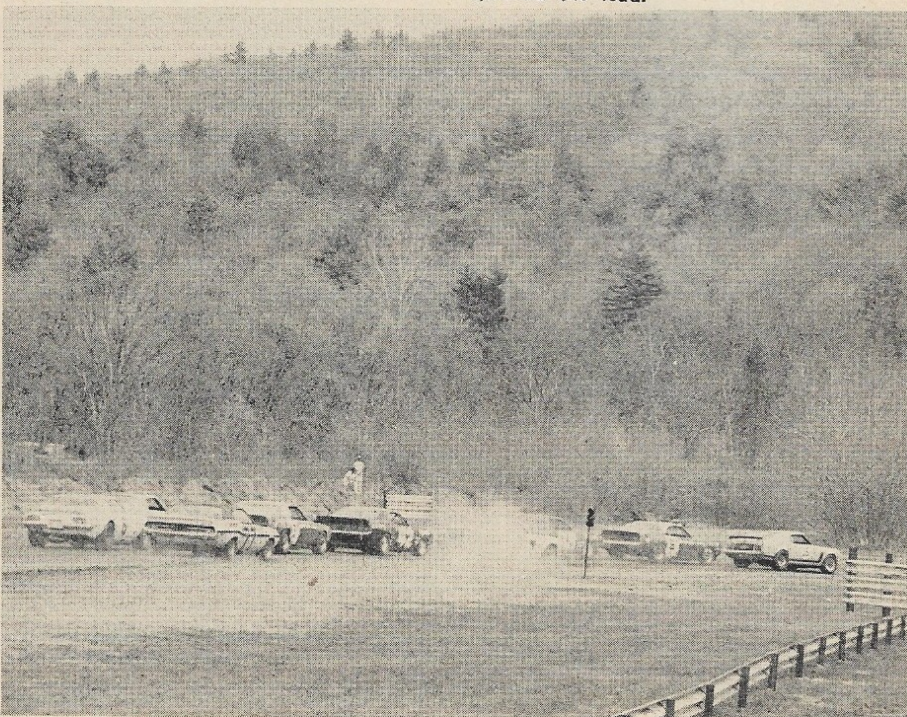
**BELOW:**  
The No. 9 Penske Javelin spins at the pit entrance as the engine blows in a cloud of smoke. Peter Revson was the driver.



**ABOVE:**  
Donahue pits his No. 6 Javelin for tires and the precision crew takes over. On the 72nd lap the engine blew.

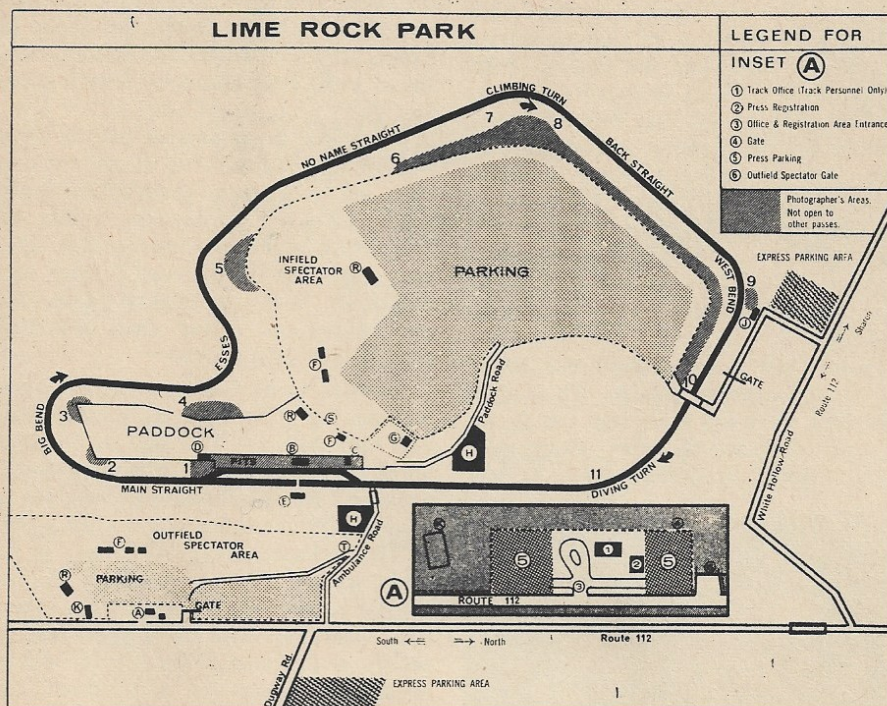
exotics in his favorite 1928 Lincoln dual cowl phaeton during the pace lap but was passed by some of the younger participants which included a Ferrari, a couple of Siatas, and a pair of rare HRG's before the checkered flag signaled the end of the three lap exhibition. It was a great thrill to see these majestic machines in action.

The call went out for the Under **BELOW:**  
In his No 15 Boss 302 Mustang Parnelli Jones leads the pony pack into the big bend on the first lap; he never relinquished the lead.





# at "The ROCK"



The lead changed hands on the lap chart seven times in the first twenty-two laps between Andrey and Pike until the BMW succumbed to exhaust and body damage. Gus maintained the lead for the rest of the event except for three laps in the last quarter of the one hour sprint when Horst managed to outbrake him going into the big bend for the lead.

Andrey called on all his vast knowledge of the course (he believes he's driven it in about two hundred events) and regained the lead on the forty-first lap and managed to hold the lead for the checkered flag as the clock ran out on the fifty-fifth lap.

Thirteen cars finished this suspenseful bash. Even those spectators who came to see the big guns perform appreciated the spectacular show they had just witnessed by the smaller cars.

The air rang with the pony cars' crisp exhausts as they assembled on the grid. Donahue's Javelin occupied the pole

Henry Austin Clark at the wheel of his dual cowl Lincoln phaeton is flanked by Siata Torino coupe and a Maserati spyder; behind them is an HRG, a Ferrari and assorted other delicious machinery of various vintages. This performance was a bonus for the fans.

2-Litre event to bring their cars to the grid as time had run out for the last little tweak of carburetors and checks of tire pressures. Seventeen cars lined up two abreast. Dominating the field were five Alfa GTA's and five BMW 2002's; three Volvo 122's, two Mini-Coopers, an NSU TTS and a Fiat-Abarth comprised the balance.

Don Pike had qualified his BMW 2002 for the pole position with 86.33 mph qualifying speed. Gaston Andrey sat beside him in his Alfa GTA with 86.06 mph on the books. Horst Kwech tied Gus with his GTA of the Wetson Team for third spot. At the rear of the pack was the FAZA Fiat-Abarth driven by Canadian Craig Fisher who had not been able to take part in the qualifying runs.

Horst swept past the front liners going into the big bend with the inside front wheel high, making it obvious that this would be a brisk race punctuated with lots of excitement.

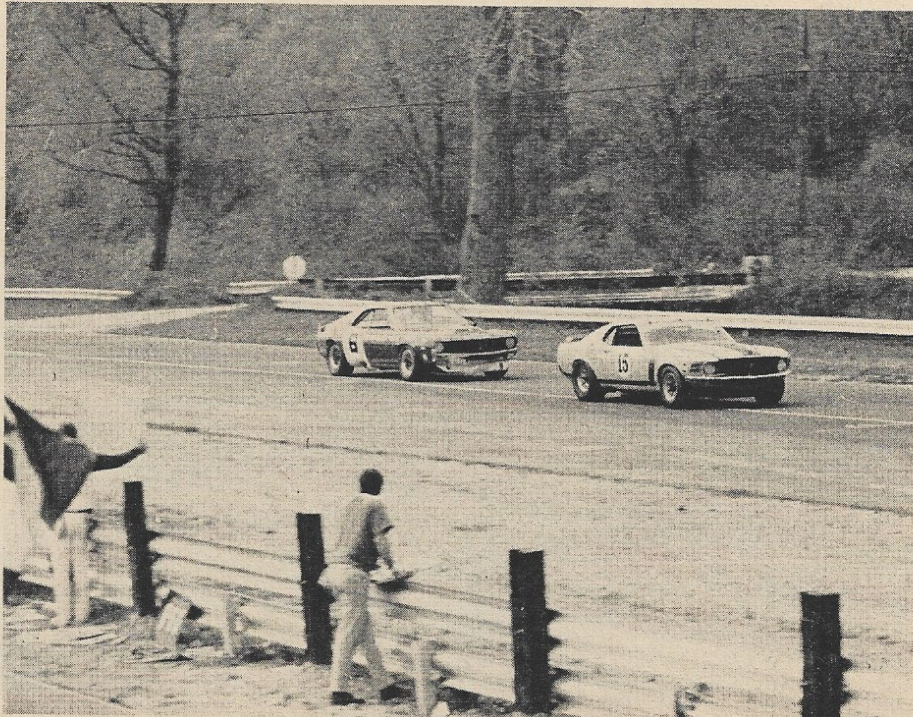
Pike took over the lead on the second lap and held it until the fifth when Gus Andrey got the jump on the BMW only to lose it on the next lap. Horst maintained third followed by his Wetson Teammate Harry Theodoracopulis' GTA. Harry, by the way, is also the owner of Lime Rock. Peter Schuster held his BMW wheel-to-wheel with Harry. As the race progressed they changed positions many times.

Meanwhile the little Abarth in Craig's capable hands was moving up through the pack like an angry Bumble Bee, by the seventh lap he held tenth spot, ninth by the eleventh and seventh by the Twenty-sixth lap. Like the bumble bee who doesn't know that technically he

can't fly, the Abarth aggressively passed bigger machinery as he buzzed up the chart.



Donahue in his No. 6 Penske Javelin shadowed Jones' No. 15 Bud Moore Mustang in a vain effort to take the lead for many laps.





after qualifying with a 58.8 second lap (93.67 mph). Dan Gurney's 'Cuda was number two with a 59.2 second run. Parnelli Jones' Mustang was unhappily in third position with his 59.3 seconds, a time he thought was in error compared with stopwatches of the Bud Moore team. Ed Leslie's 59.4 second lap placed the Chapparral Camero next to Jones.

The big ponies broke formation while approaching the starting line from the pace lap. Parnelli pulled to Donahue's right, Leslie swung to Gurney's left and they got the Starter's Flag. Entering the big bend, Jones assumed the position he thought he should have had on the Grid. Donahue was only inches behind, a position held most of the time until approximately the half way point when his engine

blew, ending Parnelli's last real threat.

The attrition started early in the two and one-half hour contest, within the ranks of the big name drivers. Swede Savage who had run as high as second for several laps, had the engine of his AAR 'Cuda blow as he entered the pits on the thirty-fourth lap. Peter Revson's Penske Javelin repeated the same act on the forty-sixth. George Follmer, Parnelli's teammate, ended his drive on the fifty-seventh lap when his Boss 306 engine let go. And even Dan Gurney's mighty 'Cuda developed clutch problems on the sixty-fourth lap and dropped out.

Sam Posey made a good showing in his Autodynamics Dodge Challenger. The dice between him and the Leslie Camero provided the main excitement during the last third of the event as they

battled for the second spot vacated by Donahue. Jones dropped his speed about 5 mph during this period to ease the wear and tear on his Boss 302 and still finished better than a lap ahead of Leslie. Posey finished a commendable third, eight laps ahead of fourth place Jim Hall's Chapparral Camero.

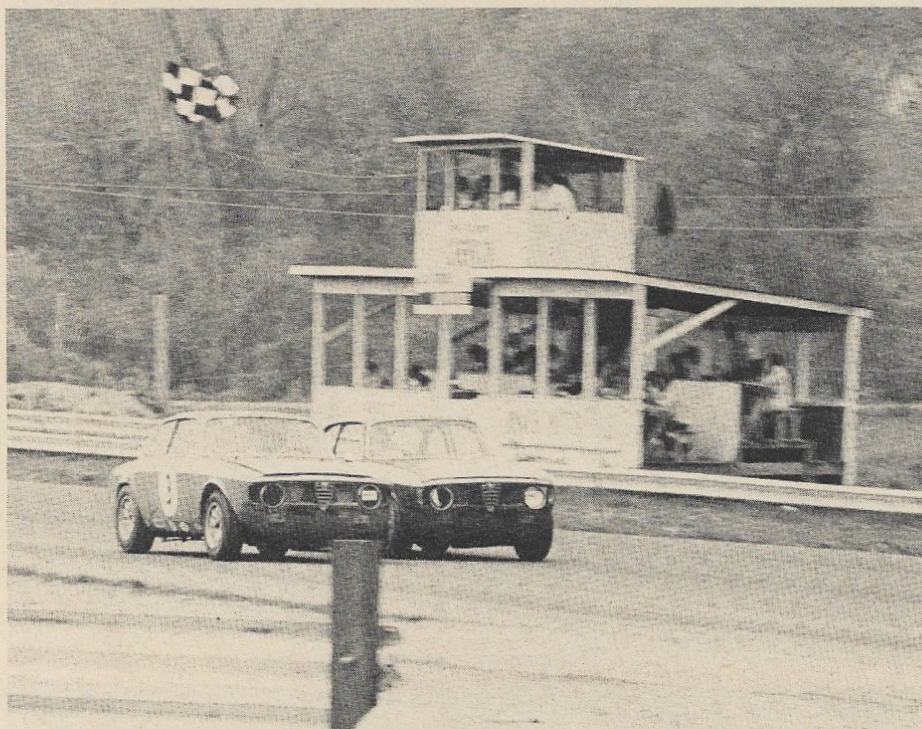
Only ten of the original twenty-three starters finished showing the extent that these cars have been modified for maximum potential within the rules. An interesting point of conjecture is that only the first three over 2-Litre cars finished with a higher projected minutes-per-lap factor than the first three under 2-Litre cars.

In fact, Craig Fisher, the only driver to compete in both events, accumulated 112 laps with his T/G Racing Firebird while in the FAZA Fiat-Abarth his projected laps would have been approximately 127 including normal pit stops.

The Schaefer Trans-American was a great success by providing a day of terrific racing with something for everyone. Mustang now has a good lead in points as this was Jones' second win in as many events for a total of 18. Camero now has 8 points, thanks to Leslie's second place; Javelin has 6, Challenger 5 and 'Cuda 3.

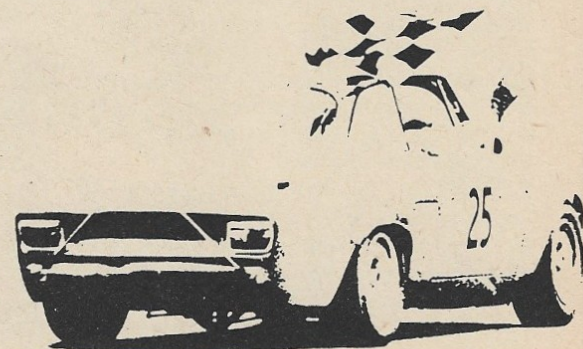
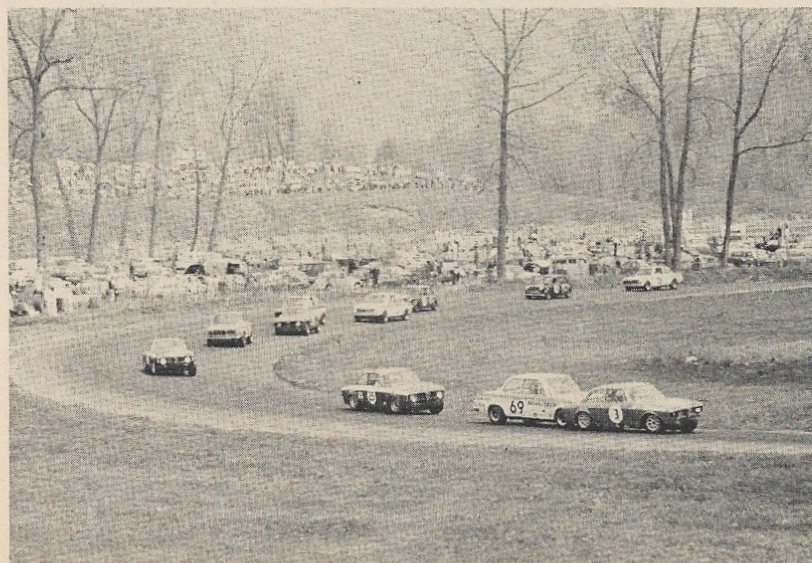
In the Under 2-Litre group, Alfa has 18 to BMW's 10. Austin Cooper made it for 2 points at Laguna Seca and Fiat-Abarth has 1.

The season's still young with eleven more events to run at this writing. Come out and cheer your favorite marque to victory if they race in your area. The excellence of the racing is well worth the effort. Among the most interesting event to be run is one scheduled north of the border at the famous St. Jovite track in Quebec on August 2nd. The course is a real challenge, the scenery beautiful, the facilities excellent and the hospitality is C'est Manifique.



Wheel-to-wheel duels were common throughout the Under 2-Litre race. Kwech in No. 3 Alfa and Andre in another GTA make things difficult for scorers in this pass.

Kwech's No. 3 Alfa Romeo leads the under 2-litre pack on lap one.





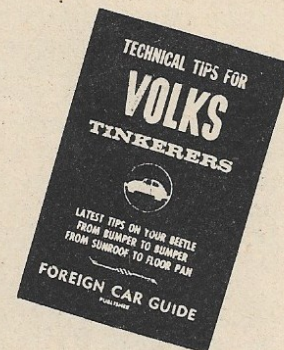
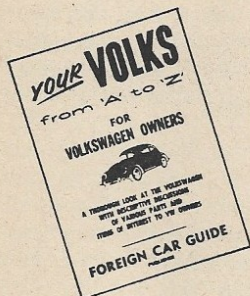
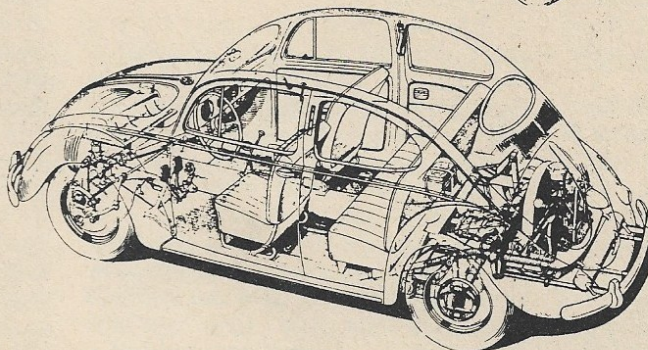
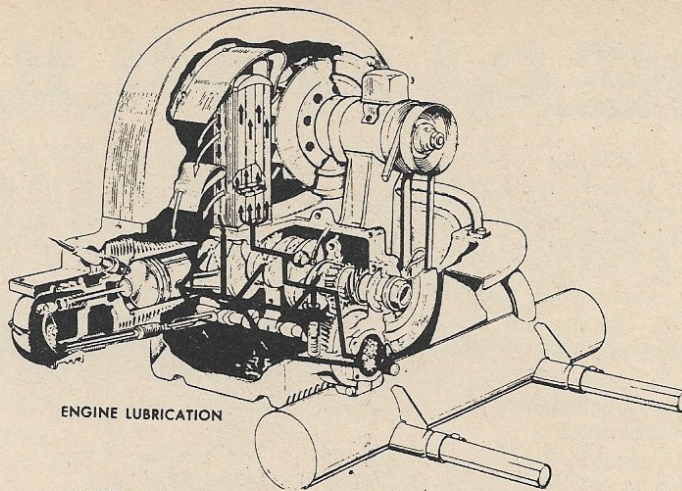
# VW

## FACTS

## INFORMATION

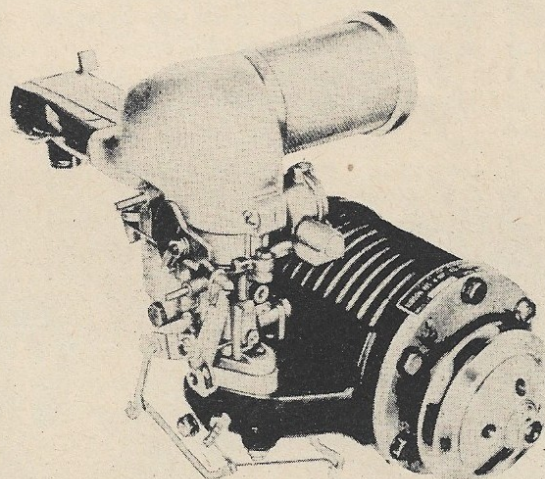
## INSTRUCTION

### VW

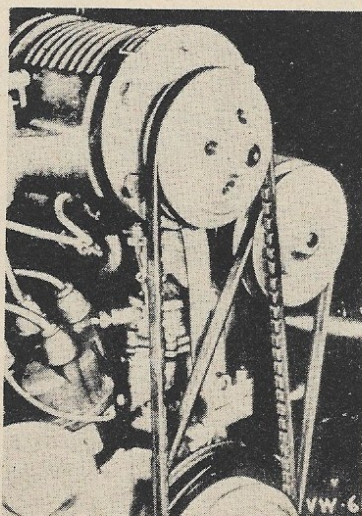


#### contents

Let's Take a Look the Beginning History of VW	2
It's All in the Running Gear Body, Chassis, Suspension	10
It's the Steering that Counts on the Corners Facts on Steering	18
When It's Time to Stop Look for the Brakes VW Hydraulic Brakes	24
The Engine Provides Power and Economy About the Engine	30
The Fuel System and Carburetor VW Carb and Fuel System	38
A Little Lube and a Lot of Fire Lubrication and Electrical	46
A Look at Gear Boxes and Shafts VW Drive Train	52
When Things Go Wrong Trouble-Shooting in VW	58
Build This Simple Tach Easy-to-build Tachometer	63



Complete supercharger and air cleaner for 40 hp VW of 1961 and after is basically the same, as earlier model but differs in detail so the two are not directly interchangeable.



## VW

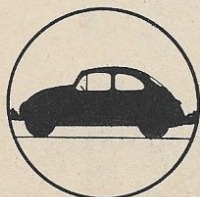
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## VW

#### contents

A Look At Your Plugs Choosing the right plug	2
What To Do In The Clutch Cure for Hard Winter Starting	6
1300 vs 1600 VW Guide to the VW 1600	12
Blowing Your Own Horn Sounds for Safety	18
Auxiliary Lights Typical Installation Hints	24
Dolling Up The Dashboard Appearance and functional Improvements	30
VW Trailer Compact Carryall	36
Supercharge Your Beetle Living with a Blower	44
\$50 Engine Analyzer Kit Home Motor Tuning	50
Converting VW Windshield Washers Installing a Bulb Pump System	54
Put A Radio In Your Beetle Music for the VW	56



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# BEAUTIFUL ONE by Ralph Shaffer

If your wife has a friend, then you are going to have problems.

That might sound all right to Dear Abby, but it doesn't set very well at the beginning of this article. What you mean is, you know your wife has lots of housewife friends. But if she has one like this jewel, that's a number one reason for you to take one of those men-only construction jobs in Libya. You will be happier.

This friend is the one who calls up any time at all. Usually on weekends. "Mable? Is the husband home? Tell him I got the paint. It's all mixed and ready. I'll bring it over in a minute."

In the first place, she lives too close. San Francisco or Denver, even would be too close. But this is only down the block. You see, she not only loves foreign cars, but she knows all there is to know about them. Especially the one she owns.

Now, greater love hath no neighbor who doesn't talk you into buying one of the same things. It's the Beautiful One — with *curvopedic* seats tuned to your individual metabolism, load-leveling swing axle that abolishes all bumps, and hubcaps with fourteen coats of paint and one primer on the inside. That's what she did. Talked you into owning one yourself.

Now, it wouldn't be so bad if she would have just let you use it properly. Like any car was made for: to drive to work maybe on car pool day or to go to what somebody thinks is a nearby convenience market at 11 p.m. for milk and oatmeal maybe. What you bought it — or any other car — for, was to get around town. It's what the sports car magazines keep calling straight transportation.

Of course, being an imported car, that's not her idea.

You know how they always say you spend one-third of your life sleeping? In her case, the other two-thirds must be spent on car care. What she has in her garage has got to be polished daily with jeweler's rouge and wrapped all around in sterile cotton every other night. So you have the picture. Or part of it.

The paint she was talking about was a tiny can of aluminum touch-up. She arrived with the lid open and a child's paintbrush at the ready. "Here," she said, "what you do is — open your hood up — what you do is just daub a little of this carefully around those bolt heads. That seals off this cover from any more oil seepage. Give me a rag, will you?"

In your garage, you had to go some place else to find one.

"I hate to tell you this, friend," she goes on, "but this engine is positively unsanitary. All it takes to clean it up is a little solvent, you know. You'd think this was a three-year old junker or something. You should wipe everything under here — even up and under the side of the hood."

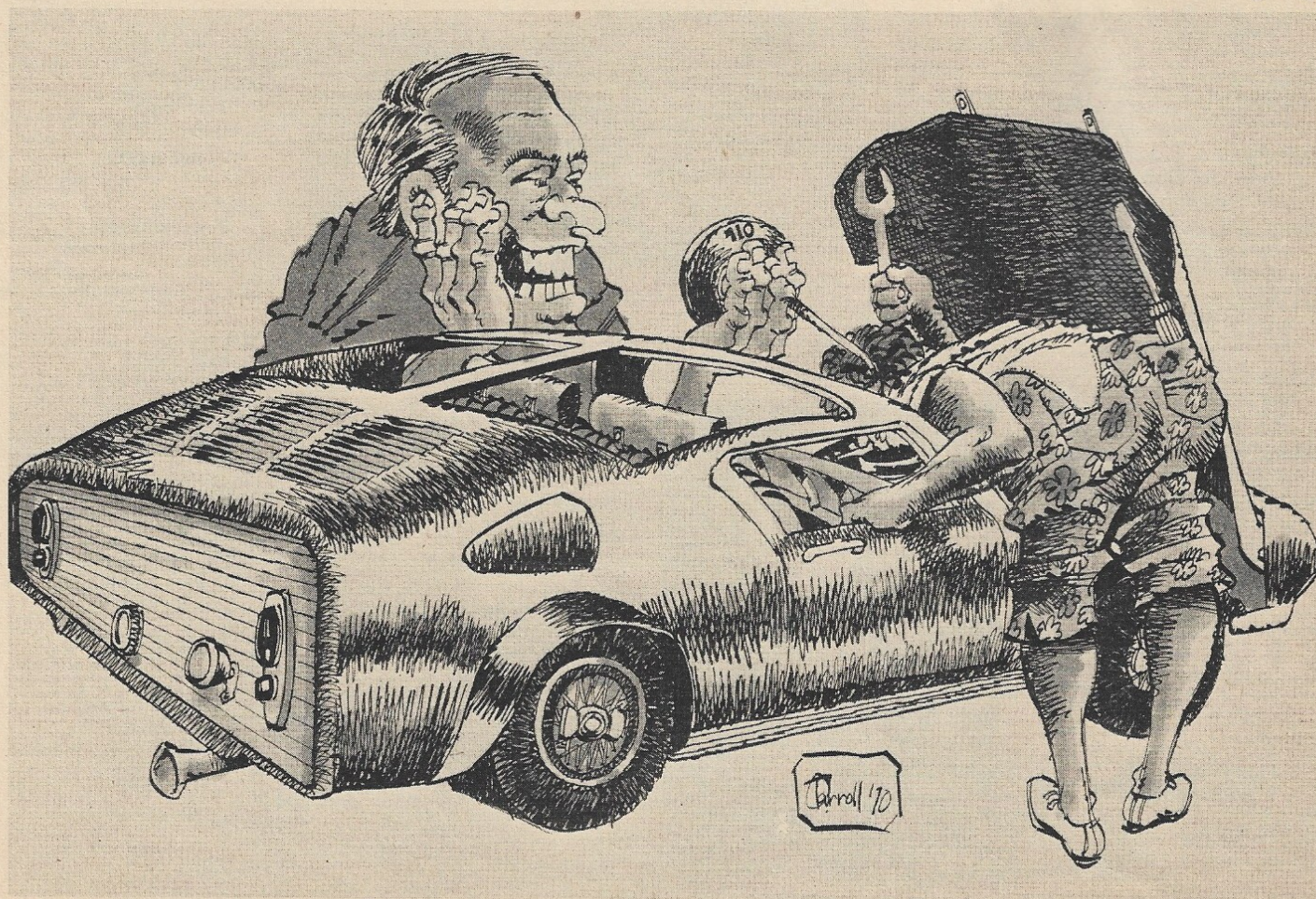
Why should some woman, and a friend of your wife's to boot, know all about caring for foreign cars. This wasn't the first time she had told you, either. "Well, look," you say, "it runs all right. Besides, it's all open down there under the motor and all this desert dust and dirt just settles right back there, anyhow. I don't see the point."

You almost got the roller derby elbow.

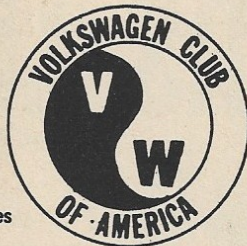
"Why even your battery terminals are badly corroded. I was going to show you how to paint them with this aluminum too. But not while they are in that condition. What you have to do is take an ordinary baking soda solution — ask Mabel — and brush the whole top with a stiff brush."

It wouldn't do any good to tell her that nobody in your house can ever find the headache tablets most doctors recommend or the breathing overkill for

(Continued on Page 40)







Compiled by Carole Kepes

The VWCA, P.O. Box 963, Plainfield, N.J., 07061 is a non-profit organization dedicated to helping the VW owner enjoy his car to the fullest. For more information send 25 cents for postage and handling to the above address. Annual dues \$7.00 plus \$5.00 initiation fee first year. Dues include subscription to this magazine, WORLD CAR GUIDE.

## FIFTH ANNUAL IOWA CUP INVITATIONAL RALLYE

The Iowa Region Volkswagen Club of America has scheduled the fifth annual Iowa Cup Invitational Rallye for Saturday, August 8, 1970. This rallye is an all-night event starting at 10:00 p.m. and lasting until sun-up.

Much effort goes into this rallye and the Iowa Club feels they have a winner with the Iowa Cup. This is the fifth year for this particular event and each year it increases in size and scope so that it has put the Des Moines VW Club on the map as far as organizing an outstanding event. Many participants are drawn from out of state as well as members of surrounding clubs. The rallye is sanctioned by the Volkswagen Club of America as one of its national events for 1970.

The approximate length of the rallye will be 200 to 300 miles with a running time of 6-8 hours. The rallye will be a straight time-speed-distance event, and the committee guarantees it to be accurate to the nearest 1/100 of a mile and 1/100 of a second. This should prove to be most challenging to both the experienced and novice rallyist.

At last year's Iowa Cup, \$800 in trophies and merchandise was presented. This year's event will present that much or more in trophies plus merchandise.

Trophies will be awarded to the first six places, plus best Mustang, best Corvette, best Volkswagen, best three-car team, longest distance travelled to attend the event, etc. Merchandise bags or "goodie bags" as well as two dash plaques, will be given to each car entered.

After the rallye, everyone will meet for breakfast where the results will be announced and trophies presented.

The Iowa Region VWCA feels sure you will find the Iowa Cup V to be one of the most challenging and fun type rallyes of the season. Entry fee is \$5.00 per car, with an additional fee of \$1.00 per car for

cars running as part of a three-car team.

For more information on registering, contact Sally Frus, 1808 55th Street, Des Moines, Iowa 50310.

The 1970 convention in Atlantic City, New Jersey, was a huge success. Look for the complete story in an upcoming issue of WORLD CAR GUIDE. The Dogwood City Club states the 1971 convention in Atlanta, Georgia will be even better. Can it really be. Plan now to go and see!

### NATIONAL TRUSTEES MEETING

After considerable discussion at the last Trustees Meeting, it was decided to continue to hold the meetings in Dayton, Ohio. The next meeting will be November 7, 1970, at 2:00 p.m. All interested local club members and members at large are invited to attend. Contact Glen Wells, Chairman of the Board of Trustees, for more information. His address is R.R. 2, Ankeny, Iowa 50021.

### HAVE YOU ANY QUESTIONS?

If you have any questions concerning VWCA activities in the following areas, write directly to the committee chairman listed:

**MEMBERSHIP** - VWCA Membership office 10100 Gregory Ct., St. Louis, Mo. 63128.

**ACTIVITIES** - Bill Morris, 12447 Sharon Rd., Oakley, Michigan 48649.

**CLUB HOST** - Ted Ubbelohde, P.O. Box 395, Davenport, Iowa 52805.

**CLUB TOUR** - Carl Ziemann, 910 S. Stewart, Lombard, Illinois 60148.

**RECRUITING** - Maria Grayson, Rt. No. 1, Box 174, Dittmer, Mo. 63023.

**MEXICAN CARAVAN** - Florence Killian, 6123 Lillian Ave., St. Louis Mo. 63136.

### DATES TO REMEMBER

Aug. 8 - Iowa Cup Invitational

Aug. 27 - Flight No. 2, returns Sept. 20

Aug. 30 - Flight No. 3, returns Sept. 27

Oct. - Oktoberfest, Heart of Illinois Club, Peoria, Illinois

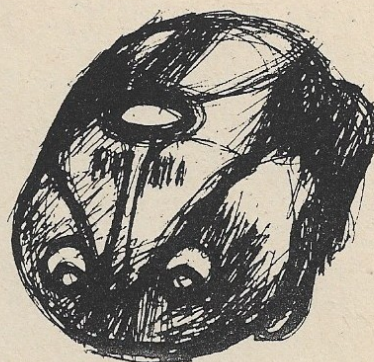
Nov. 7 - National Trustees Mtg., Howard Johnsons, Dayton, O.

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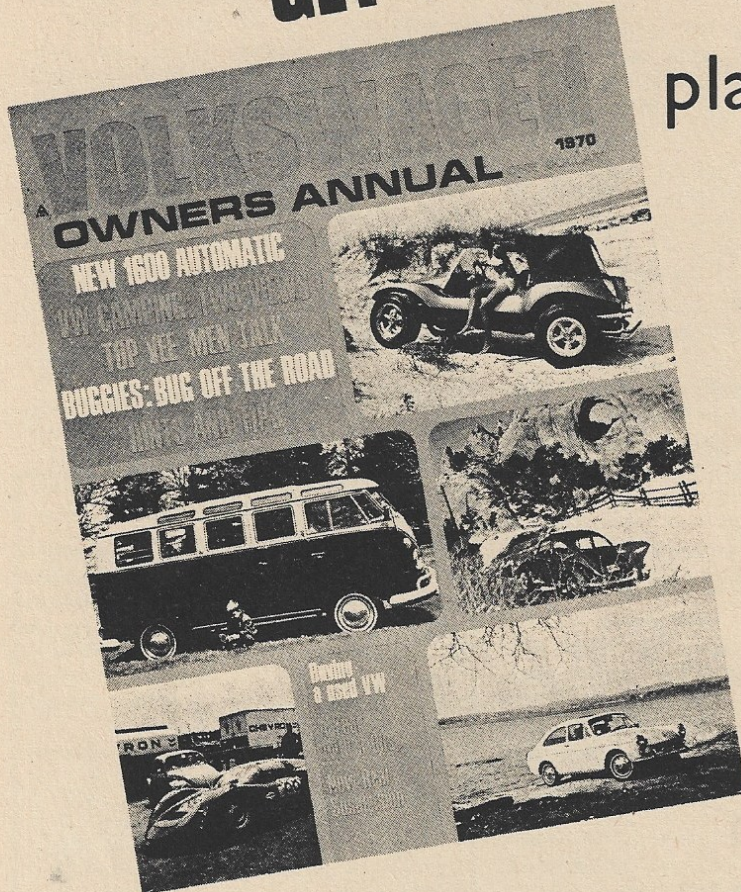


THE 1970

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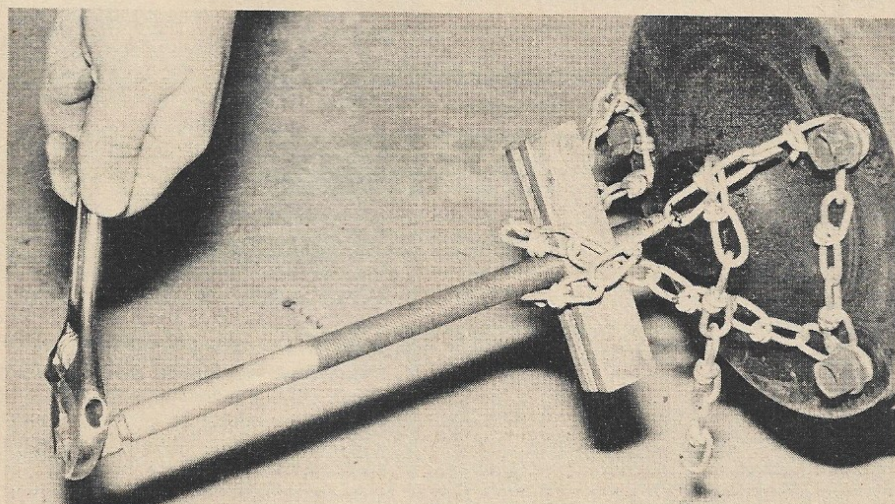
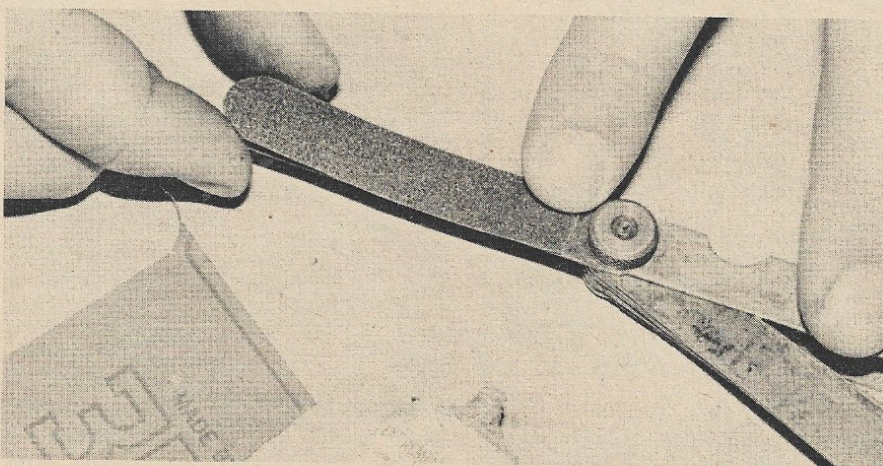




**LET DAVE DO IT**  
**LET DAVE DO IT**  
**LET DAVE DO IT**

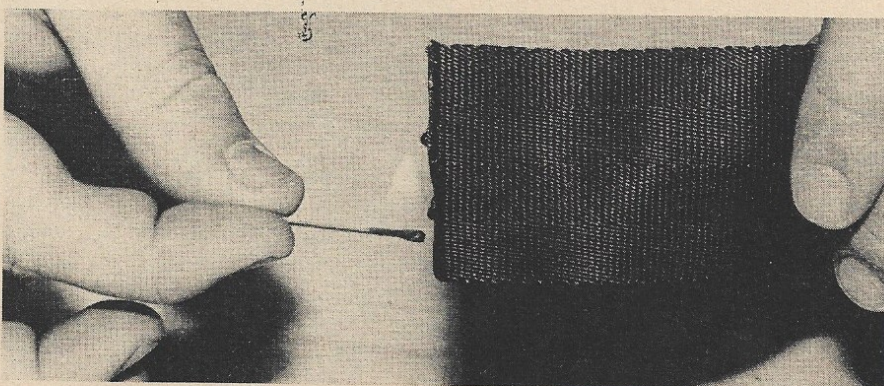
**CONSCIENTIOUS** car owners check their distributor point gap regularly. Most are wary of cleaning up only mildly pitted or heavily frosted contacts with anything so rough as a point file. Similarly taking the points out to polish them on an oil stone is a nuisance. The quickest and handiest tool is one of the infrequently used blades of your feeler gauge set after a strip of fine abrasive paper has been cemented to it. No.320 wet-or-dry body finishing paper is good. How's that for "true grit?"

**SHEET METAL SCREWS** that keep working loose due to engine or road vibrations can be kept in place permanently, yet removed easily by using this little trick. Obtain some "PAL" nuts from a hardware or automotive parts and supply store in sizes to match the screws. Run these down tightly over the exposed threads and they will act as very efficient and inexpensive lock nuts. Longer screws can be substituted if the length of the originals is not adequate. Takes some of the stops out of that weekly walk-around with the screwdriver.



**HAVE A VW WHEEL** to pull, but no VW wheel puller? Save the seventeen bucks that one would cost you for a new set of brake linings! All you need is an ordinary inexpensive gear or wheel puller plus about 25 cents worth of "porch swing" chain. You might have to expand the links slightly so that the wheel lugs will slip through, but once you've done this you can loop the chain over the puller's cross bar and bolt it to the brake drum. Heave ho and away she goes.

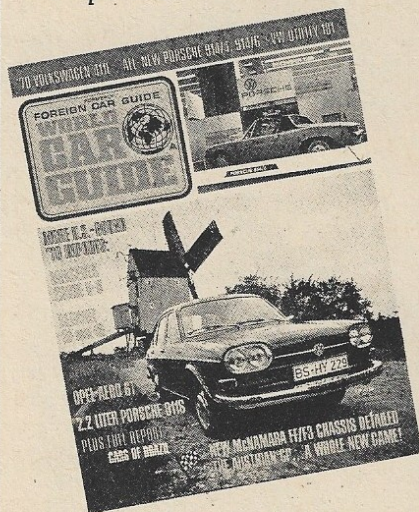
**NERVES FRAZZLED** by fraying seat belt ends? If you've installed your own custom harness built up from a bulk roll of belting or if the factory worker who assembled the standard set for your car was nursing a Monday morning hang-over, you could very well have this problem. Once the nylon webbing starts to go, you'll see more strings hanging off the end than a jellyfish has tentacles. However, holding a lighted match near the end of the belt will melt and fuse the nylon cords, completely eliminating this problem. Dave lights the way again!





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WCG

## WORLD CAR NEWS

bright yellow; tan was second and light blue came in third with red, green, dark blue and white following in that order.

**EMPI PRODUCTS**, familiar to all VW fans, will be more widely distributed due to a new arrangement with BAP/GEON which has a nationwide chain of more than 200 distributors. Bap/Goen, headed by Bjarne Qvale and Michael Pace respectively, is the leading supplier of parts for imported cars. EMPI, holder of numerous racing records, was the originator of "dune buggy" kits.

**CANADA SWINGS TO IMPORTS.** Though a much smaller market than the USA, there are some 30 makes sold in Canada; half are imported cars which hit the local assembly plants which build variants of Detroit cars. VW holds seventh place in the overall sales battle and outsells both Buick and Chrysler, longtime favorites north of the border. 20-percent of all cars sold in Canada are imports; Vauxhall and Ford of England's Envoy are favored by many buyers. Two marques sold in Canada which are not marketed here are the MAZDA and ISUZU, both made in Japan.

**ECOLOGY AUTHORITIES** frequently point to big displacement engines as emitting much more atmosphere contaminants than smaller engines. It's fairly well established that a 400 CID engine spews out twice as much pollution as one displacing 200 cubic inches. Chrysler Corporation's John J. Riccardo, the president, says as WCG goes to press: "The public also expects us to help protect the environment from any harmful impact of our production methods and our products." This was just part of Riccardo's speech to a national meeting of the Society of Automotive Engineers. (Look for a withering of the horsepower and displacement race in 1971—Editor.)

**LEAD IN GASOLINE** is less dangerous, potentially, than unleaded gasoline according to the U.S. Bureau of Mines which reported recently: "If the photochemical effect is considered, the fuel factor is shown to exert significant influence. The fuel alterations from leaded to unleaded (gasoline) changed emission characteristics so that the pollution effect was increased by as much as 25-percent." This bureaucratic statement delighted Lawrence E. Blanchard, Jr., the executive vice-president of Ethyl Corpor-

(Continued on Page 38)

## MOTOR CAMPING IS GOING PLACES!

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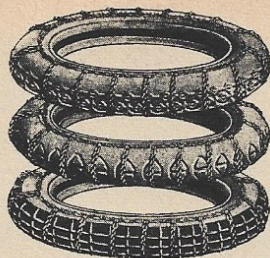
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# THINGS FOR CARS

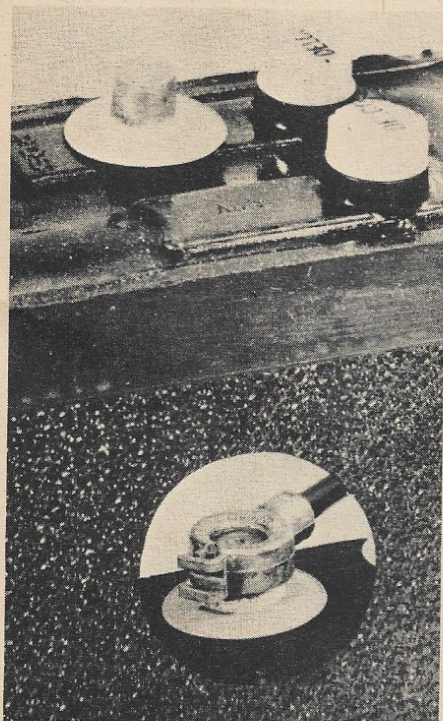


## NEW PRODUCTS SERVICES IDEAS

This is an editorial report and not an offer for sale on the part of the publishers. Every effort has been made to ensure accuracy, but please note that prices and availability are subject to change without notice. Manufacturers who wish their new products considered for publication in this section should send a brief description like those below and a glossy photo to: World Car Guide, 4207 Palos Verdes Drive South, Palos Verdes Peninsula, Ca. 90274.

### ORESTIMA MAIL MART OFFERS NEW BATTERY SAVERS

which fit all standard automotive and truck-type battery posts and are guaranteed to prevent corrosion formation or build-up if installed as directed. Installation is simple, fast, and can be performed by anyone.



Secret of the new device is its vinyl honeycomb core construction which suspends standard motor oil and provides a continuous flow of anti-corrosive lubrication by capillary action to the area between the cable clamp and the battery post where it is needed most. Price is \$1.00 per set, postpaid, from Orestima Mail Mart, Dept. WCG, P.O. Box 488, Newman, California 95360.

**VANGUARD INC.** has just released the newest addition to their line of VW Competition Shifters. This unit is said to be ideal for installation in VW based Dune Buggies where low dash boards tend to interfere with the operation of normal shifters.

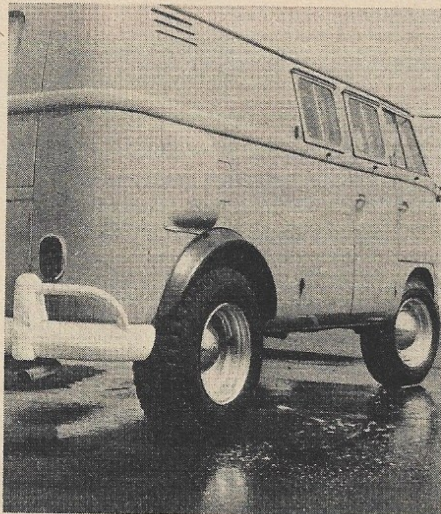
The design of part number 804DB has also been found to be perfectly suited to tall drivers of Bugs or



Ghia's who must keep the seat well back and as a result have difficulty reaching third. Priced at under \$45.00. Vanguard Automotive Enterprises, Dept. WCG, P.O. Box 405, Medina, Ohio 44256.

### MILLER-HAVENS ENTERPRISES

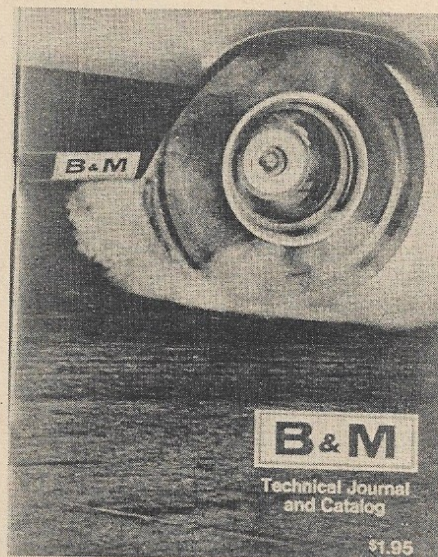
Innovators who created the Baja Bug conversion kit for the VW "Beetle", have come up with a nifty add-on treatment for the Volkswagen Bus and Van. Their "Baja Bus Fender Kit" makes practical the use of wide



wheels and fat tires on the rear of the VW buses.

The new kit contains two molded fiberglass fenders that have a higher arch and outward extension to cover the added width of off-road tires. The \$24.95 kit includes fender welding, attaching screws, instructions for increasing the wheel arch, and a decal. Kits are shipped FOB. Contact Miller-Havens Enterprises, Dept. WCG, 2944 Randolph Ave., Costa Mesa, California 92626.

**B&M AUTOMOTIVE PRODUCTS**, for over 16 years the pioneer and leading manufacturer of racing transmissions and components, announces the immediate availability of its unique new 1970 Technical Journal and Catalog.



Easy to Understand charts describe 48 different models of converters — the much talked about bolt on equipment making such an impact on both the 1970 street and strip scene. All this and data on complete transmissions, components, shifters for all automatics... for only a dollar. Write to: B&M Automotive Products, Dept. WCG, 7700 Woodman Ave., Van Nuys, California 91402.



As the leading import of the 1960's, the Volkswagen "beetle" compiled an amazing track record in the Depreciation Derby. In years gone by, owners of the bug could rest assured that their car would hold its value as tenaciously as a bulldog clings to a T-bone steak. With the arrival of a new decade, however, complete with new and different competition, the time seems ripe to re-examine the resale value performance of the Volkswagen to see if it's still as good as ever.

With the preceding objective in mind, a number of leading used-car price books were consulted and the average retail prices of the various models and years compared. While many used-car sales take place at a figure somewhere between the average retail price and the average wholesale price, the retail price quoted remains a fairly accurate indicator of what the typical buyer will end up paying for a particular used car.

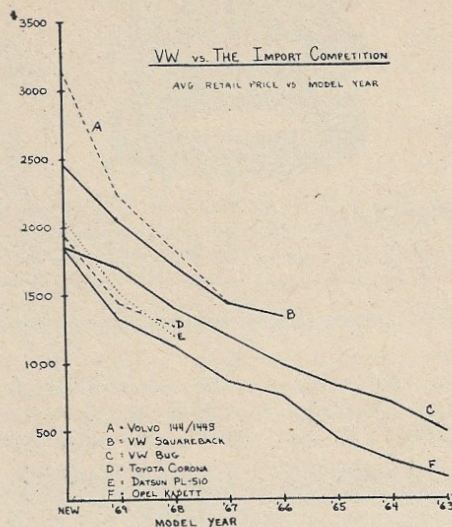
First on the agenda was a look at the resale performance of the other members of the five-most-popular-imports group (See chart, "VW vs. the Import Competition"). Because of new model introductions and rapid sales growth, two (Toyota Corona and Datsun PL-510) of the top five have been in existence in this country only since the 1968 model year.

In addition, another (Volvo 144/144S) new model dates back only to the 1967 model year. Thus, resale values for these cars are observable only for the past three or four model years. That three of the top five are relatively new models is, in itself, worth considering, as the VW beetle appears to be bucking a trend. Can it continue to succeed? Read on.

Although only a limited time span of data is available on these three cars, their performance in the years they have been in existence appears to indicate a relatively rapid rate of depreciation compared to the Volkswagen. Model A (no kin to Ford's former product) in the accompanying chart loses its value at a slower rate than the other two, though much more quickly than the Volkswagen Squareback (model B). The Squareback, although \$700 cheaper at the outset, commands the same selling price as "A" after only 3 years.

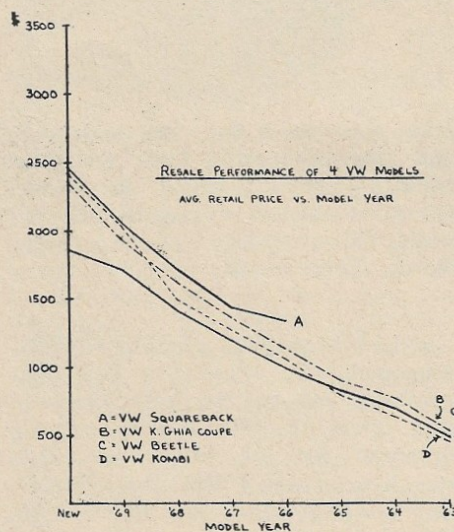
The only other member of the top five which has been in existence since 1963 is car F (Opel Kadett), the unfortunate possessor of an extremely rapid depreciation record. Although it sells for the same price as the VW bug, this car is, on the average, worth about \$350 less after 3 years of ownership.

In summary, the resale value race between the Volkswagen, both bug and Squareback, and the imported competi-



tion appears to be no contest. This is, as we shall see, not due to the poor performance of the other imports, but rather a result of the apparently superior resale characteristics of the Volkswagen models.

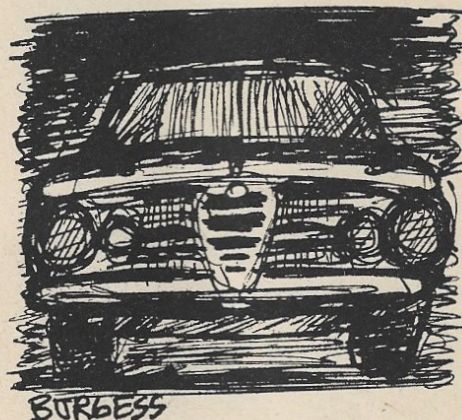
As is indicated in the accompanying chart, "Resale Performance of 4 VW Models", all four Volkswagen models are most respectable in terms of their ability to hold value over the years. While the Karmann-Ghia and Kombi



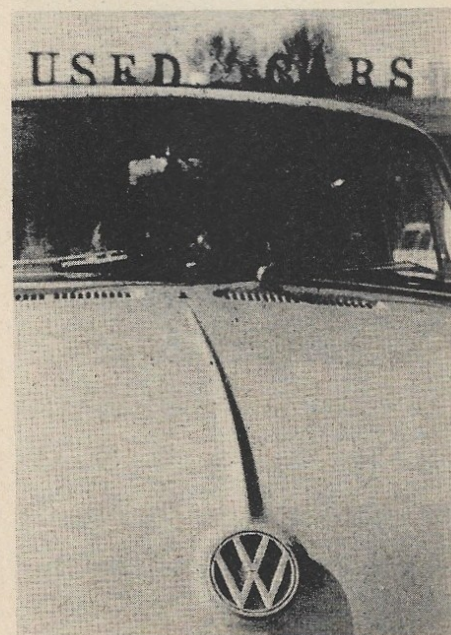
models do not appear to hold their value quite as well as the beetle and Squareback, both are competitive with others in their price class.

The Kombi, while a rapid dropper over the first two years, changes direction sharply at this point. This reversal is probably due at least in part to the vehicle's appeal as a multi-purpose camping/business/portable warehouse unit. On the basis of the Squareback's resale value over the four model years since its introduction in this country, it would appear that it will also continue to exhibit a respectable record in the Depreciation Sweepstakes.

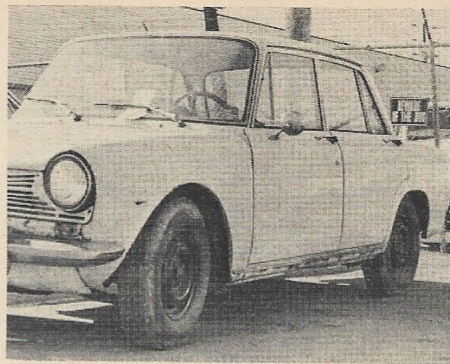
# VW still



The VW emblem really has no magic to ward off the spectre of depreciation. It just seems that way.







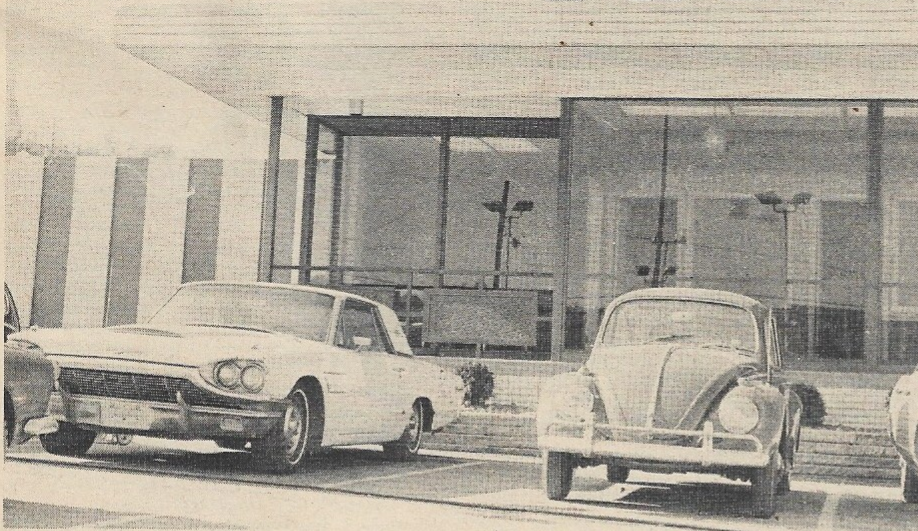
Rapid depreciation of some imports in the past has caused buyers to beware. Such market caution has led to even more rapid loss in value of some worthy cars. Note bedraggled appearance.

# champ in the DEPRECIATION DERBY?

by Ronald M. Weiers  
(Photos by the Author)

This '65 VW already commands a \$300 premium over its luxurious '65 competitor.

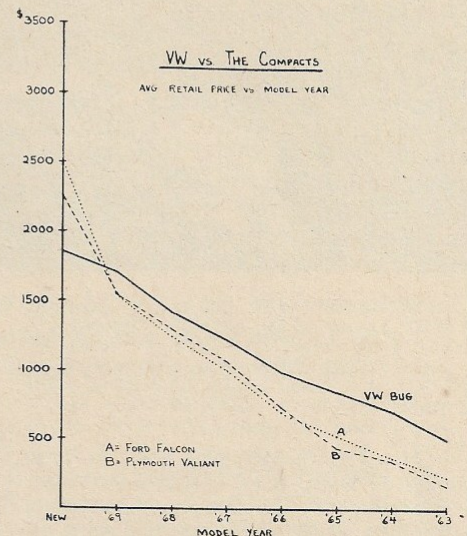
## USED



If this '65 bug seems to be smiling, it's probably because of the "SOLD" sticker on the windshield.



In the chart, comparing the Volkswagen beetle with two popular domestic compacts, is a clue to the lack of success of the compacts in providing the bug with strong market competition. After all, who wants to buy a small car only to watch its value drop like the proverb-



ial lead balloon? Whereas the compacts cost about \$500 more than the beetle at the outset, the passing of only one year finds them to be worth \$150 less, and after the singing of only five more rounds of "Auld Lang Syne", they command \$300-400 less than the Volks.

It will be interesting to see if the new domestic sub-compacts, some yet to appear, will exhibit a better resale record. From this writer's vantage point, it seems rather doubtful. Remember how the original 1960 compacts rapidly became "bigger and better" during the last decade? The technique of preserving a car's value does not, contrary to the opinions of some, go hand-in-hand with offering the public a bigger, more powerful, more prestigious means of transportation each model year.

Is the bug still king of the Depreciation Derby? The answer is a resounding YES. Why is the bug still king? The answer to this question is not quite so simple, being a combination of workmanship, many years of practice in making and perfecting the same basic model, and the security felt by the bug's owner who knows that Volkswagenwerke is going to continue quietly to make improvements in an already-good product rather than make his beetle "obsolete" year after year after year through infinite styling permutations and verbal hullabaloo. The bug is king; long live the king!



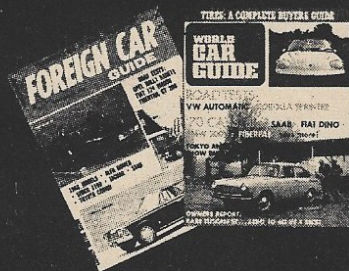
## WORLD CAR NEWS

ation which is the leading maker of lead-based anti-knock compounds. Blanchard then announced that "the 1971 model cars of lower compression ratios, proposed by Detroit, with their reduced engine power and efficiency, would increase—not decrease—total exhaust emission." (Now Detroit must really be confused—Editor.)

**PIRELLI TIRE CORP.** which markets the famous Italian tires got an award recently. For years old tires have been burned, much to the damage of the atmosphere, and old cars have been used often as breakwaters in rivers and harbors, much to the damage of sea life as the hulks rust. What did Pirelli do? Gave 3,000 scrap tires to the builders of an artificial reef off Atlantic City much to the delight of biologists at the Sandy Hook Marine Laboratory who

says that old tires "...are readily available at no cost, easy to handle, and as rubber, last indefinitely in the sea." Everybody wins, even the fish.

**GENERAL MOTORS**, late but not last, will test market an exhaust emission control kit for pre-1968 models in Phoenix, Arizona. The effort will be in full swing as you read this. The kit costs \$9.95 plus installation which takes less than one hour..



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**FRAM'S EARLE FULFORD**, manager of that firm's Product and Technical Services division, says that "fully legislated car maintenance" may not be far off. "Environmentalists are already zeroing in on poor vehicle maintenance as a target in their anti-pollution war" and he goes on to sound the warning that anti-pollution devices require careful maintenance in order to be effective. In other words, car buffs, if we don't discipline ourselves, Big Brother will take us into the woodshed. And

that, fellow enthusiasts, is our ecology lesson for this month.

**PLYMOUTH LEADS**, as we go to press, in points in the NHRA's 1970 World Championship Series. In five races, Plymouth jockeys amassed 2,800 points, 700 more than Oldsmobile. Mercury (800 points), Dodge (700), Buick (500), Ford (300), Pontiac (200) and Chevrolet (just 100 points) trailed. What an upset! Chevy had led in point standings for the past four years. But, the season is

young with 35 races yet to be run as this is written.

**FORD LEADS IN SALES**, however, which might mean that racing victories, drag strip points and the like, are losing their punch with the public. During the first six months of the current model year, Ford outpaced the rest of the industry with 934,577 new cars sold. Those are passenger cars, but Ford trucks lead in their race too.

(Continued on Page 44)

## and WORLD CAR GUIDE

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## BEAUTIFUL ONE

(Continued from Page 30)

lovers, let alone a box of whatever ordinary soda is. Brush? What stiff brush?

But she was like that about everything when it came to the car. Worse than the manufacturer's official Operation and Instruction Manual. That was reading matter that you had taken time to review. That was a historic first, really, after a mediocre life of owning seven or eight cars you never knew anything about. This time you know you'd feel pretty silly if she asked. You couldn't tell her how many Imperial pints for an oil change, including a new filter. You started reading the instructions with the premise that for this car, you should start out knowing all there was to know.

What a way to spend your time.

Take the carburetor. It has a device, the book said, to preheat the intake air. For mornings in December -- Flagstaff and the like. What you are supposed to do is see which position the warm air flap of this device was in for the proper season. You couldn't remember if it was up for hot or up for cold. When you made the polite conversational mistake of asking her, you just got this back pressure about *einspritzer*.

"This method is okay but you should have bought the model like mine with fuel injection -- *einspritzer*. Needs no carb and automatically adjusts to altitude, humidity and petrol rating."

For sure, you weren't going to get into that.

You change courses here. "Well, what about the effect of Arizona heat on the fan belt?"

"There are two, you know," she says, bending in behind the radiator. "And the books say they are all right if under vertical pressure of about 13 pounds, the belts deflect only .19 to .39 inch from a straight line spring scale."

No answer.

"You knew there were two, didn't you? One for the air conditioner?" She was one to keep after you. "Both of yours look awfully dry and cracked."

"Yes, a little water," you say emptying the Bordeaux mixture out of the garden spray can.

"Water? You get some of that *silicone aerosol* -- that's the only lubricant you should ever use unless you want to thumb a ride in from Yuma sometime. I don't know --" she straightened up -- "I don't think I can do any more for you on this engine until you clean it up."

You drop the hood. That was that. Maybe she would go home now.

She was standing near the right front tire. "How did you get these dish marks?"

"The what?"

"This bad tire wear -- each side. That's nothing but straight under-inflation. Give me your tire gauge."

You wished she'd get a phone call or something. For you, tire gauges are nothing more than hard-to-read things that don't work very well in gas stations. "I don't have one."

"No wonder. Didn't you read the Owner's Manual? See, front tires -- if you carry one to four people -- should be inflated to 22.8 PSI and the rear to 25.6. Now, that's only if the trunk has under 90 pounds in it."

Well, good. Any gas station you were ever in, the attendant usually holds up his fist when you say check the rear right. Then if you can get him to do the shhhhhhh-fiddling with the valve caps, you could see yourself asking for exactly point eight pounds per square inch. Please.

"See, I'll show you," she continues rummaging in the glove compartment for the Manual. Distracted, she runs one finger over the dash panel. "You haven't waxed this, have you. It's a shame."

You are honest. "I thought it was plastic."

"Plastic? This is fine grain natural wood veneer. All matched panelling, even to the front of the ash tray and all around the inside of the windshield. I'll bring you over some hard-coat *Carnuba*."

"Fine." Anything to encourage her leaving. *Carnuba*?

She rustles the old gas tickets, a flashlight battery, golf tees and a broken bottle opener in the glove compartment. "Where's the book? You don't drive around without the book?"

How could you tell her they were all still sealed in a large company envelope, right hand bottom desk drawer, at the office. "I'm studying it. Trying to follow all the explicit directions. You know, wash the car with two separate sponges. Store the battery in a warm room following a very cold ride. Cool the brakes after hard usage before parking. Remember that the oil consumption can be as much as .6 litres in a distance of such-and-such kilometres."

Here you panic into a mental somersault. Let's see -- ah, so many litres in a quart and what number is it you quickly divide into miles to end up with kilometres?

She brings you back to reality. "I've got it. I'll bet I know what your tire trouble is -- no positive camber."

This, you had read about. "You mean caster."

"No camber. You know, that's the angle measured in degrees of outward tilt of the front wheels at the top." She angled both hands. "You see, the correct camber allows the proper load to rest on the bottom of the wheels. Caster is something else -- the backward tilt on



the wheels when you incline the kingpins."

"Oh."

"Sure. But back, not forward."

About two hours of your weekend was shot. Desperate, you say something like, "Well - thanks for everything. Could I run you home? Mable's going to be tied up getting dinner and -"

There you did it.

"Why, yes," she says "and on the way we could go out around Carefree. I'd like to see how this thing performs now, idles and all. A run of about ten minutes at 6500 RPM's should clear its throat of that high speed miss you were telling me about. Let's go."

And that's where you lost the keys. All three of them, right there.

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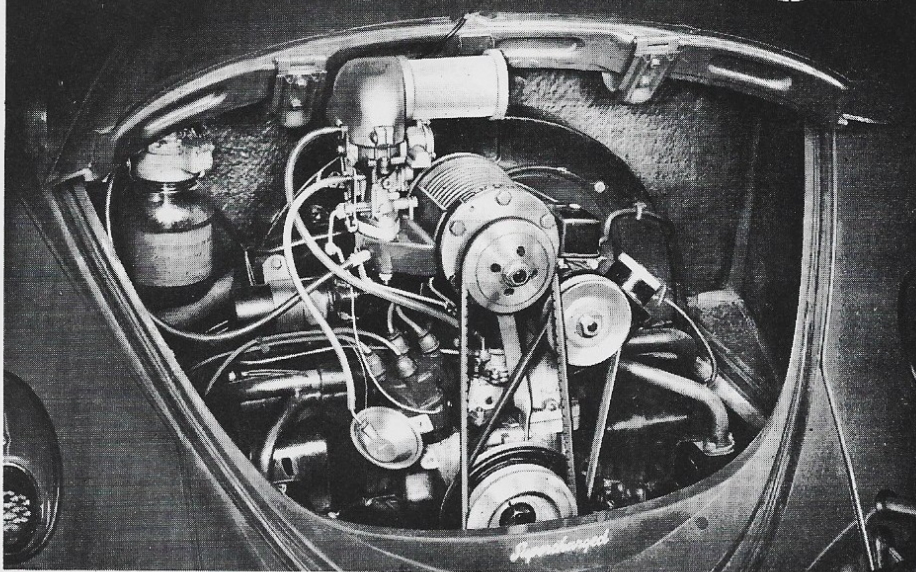
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supports that they bang shut at speed of 50 mph or little more. The usual flashing warning lights are standard as are those dratted shoulder belts. The latter adjust easily though not automatically as on Audi; but Saab's are far better than most which on many cars could double for nooses.

There's a warning light which signals that the fuel level has dropped to 2 gallons and there are the usual batch of idiot lights for ammeter, oil pressure, etc. One automatic gadget is a boon, however: it is impossible to switch off the engine and toddle off with the headlights burning: when the ignition is switched off, the lights also go out. When the key is replaced and switched on, the lights return to life. The ignition switch itself is located immediately aft of the gear lever on console. The headlight dipswitch is on the turn signal lever—a double relay requires but a quick flick to change the beams from the dual headlights to high or low from either opposite.

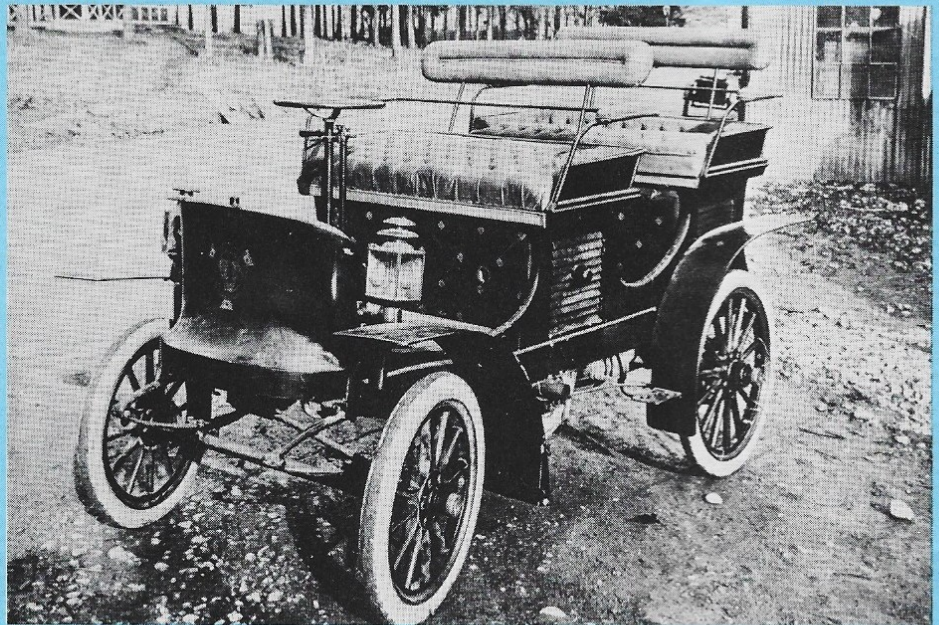
About the only optional equipment one can order is the automatic box, either a dual or single band radio (made by Bendix and fully transistorized), and air conditioning. The latter cooler is also a domestic product and its effectiveness will be reported in an early issue.

Now if those idiot lights—six of 'em in all—were neat, separate little gauges that really tell what's happening, that nice third dial in the neat grouping could contain a tachometer.

One could then compute speed more accurately than the speedometer: each 1,000 revolutions per minute in top gear delivers 17.7 mph.

Another annoyance are the pair of useless square sharp-edged pieces of bright metal—one on each end of the otherwise neat horn bar that faces the straight-across two spoke steering wheel that is so nicely positioned for effortless driving. One of those things fell off during a mountain run and very nearly slipped into the gear lever slot. Wouldn't that have been nice?

The opposite of annoying, however, are the see-through headrests. Not only are they well located, but the pillow is removeable. I believe most Saab owners give the little pillows to their dogs. After all, they're quite worthless (the pillows). It's nice to be able to see where you're going when you back into a parking place, something a Saab does very well indeed with its tight, 33 foot turning circle. It is an understatement to say that the Saab 99E does everything most efficiently.



A Swedish pioneer car is this ancestor of Saab, the 1902 Scania which was powered by a single cylinder Kemper water-cooled engine. (AB Saab-Scania)

**MY RIB** claims that the Saab 99E is cute, quick, and one of the best compact cars from anywhere. But let her tell it:

Ever since we had a DKW several years ago, I've liked front wheel drive. Like the Audi Super 90, this Saab would be on my consideration list if I were to start selecting a car for myself. It's a dream to park, lots of fun to drive, and it attracts more curious stares than any car I've driven for several years.

First of all I like the solid feel and the way it gets around corners. The gearshift operates very easily and the steering is effortless. The fuel mileage is wonderful. I like to drive fast, I like to feel safe, I like the kids to have sufficient legroom in back for comfort, and I like the quick response of all the controls. I like the automatic shutting off of the headlights when the ignition is off. That I like because egghead sometimes forgets to turn off the lights. I have no complaints about the Saab 99E.—Bettye C. Wherry

## SAAB 99E Specifications

**ENGINE:** Front-mounted, inclined, 4-cyl, overhead camshaft, fuel-injected

Bore and stroke: 3.288 x 3.071 in. (83.5 x 78 mm)

Displacement: 104.27 cu. in. (1709 cc)

BHP: (SAE) 95 @ 5500 RPM

Torque: 98 lb. ft. @ 3000 RPM

Compression ratio: 9.0 to 1. Premium grade fuel

**TRANSMISSION:** 4-speed manual on floor

Ratios: 1st - 13.6; 2nd - 8.6; 3rd - 5.8; 4th - 4.1

Front wheel drive with ratio 4.22

Automatic optional

**SUSPENSION:** Independent front with wishbones

Rigid rear axle with four longitudinal links and one transverse rod

Coil springs front and rear

**STEERING:** Rack and pinion, 19.1 to 1 ratio

3-1/3 turns lock-to-lock

Turning circle 33 feet

**WHEELS AND TIRES:** Bolt-on disc steel with 155 x 15 Pirelli or Semperit radial tires

**BRAKES:** Dual circuit hydraulic disc brakes front and rear

Handbrake operates on front wheels

**CAPACITIES:** Fuel 11.8 US gals.

Oil: 3 US qts. including differential (trans-axle)

Cooling system: 9 US qts. including heater

**BODY AND FRAME:** Integral

**DIMENSIONS:** Wheelbase 97.4 in., Length overall 171.4 in., Width 66 in., Height (unladen) 56.7 in., Ground clearance (unladen) 6.7 in.

Curb weight approx. 2350 lbs.

**PRICE:** As tested approx. \$3400 POE West Coast

Slightly lower on East Coast





## I.M.S.A.

turnout wasn't as large as expected. Several entrants just ran out of time and regrettably couldn't finish their cars. Gaston Andrey placed his new Alfa Romeo 1600 on the pole; in the number two slot was Carson Baird with his tenacious Austin Cooper. Ralph Tolman qualified his Datsun 1600 in third just ahead of Herb Swan's BMW 1600. Andrey set a rapid pace and opened up a comfortable lead in the early stages and he never was seriously threatened. Baird's Cooper amazed the spectators with its speed and agility. The fans were not used to such small, innocent looking cars going so fast.

The real crowd pleasers, though, were two stock Ford Cortina GT's that put on a show dicing with anyone that came within striking distance. You've heard of the drivers, Bill France Sr. and Bill Jr. What a team! Bill Sr. dropped out with overheating problems but Bill Jr. went on to place ninth in a car that was out-matched by some of the others. Andrey's winning average speed was 90.99 MPH. Baird finished second with his great drive followed by Swan's BMW. Don Gwynne placed his Ford Cortina-Lotus in fourth place just ahead

of Warren Matzen in a similar mount.

The Formula Ford feature lived up to its expected speed and excitement plus some unexpected thrills. The qualifying was fast and furious as Gary Magwood of Canada, pushed his Merlyn for the pole and Peter Quenet's Caldwell was a fast second. Gary lead the pack with Bill Scott in a Climax-Royale in hot pursuit. Things changed when the mandatory pit stops were made and Kevin Glynn took over on the fifteenth lap with Jim Jenkin's Winkelmann hot on his tail. Kevin was black-flagged on the nineteenth lap. Scott picked up the lead for one lap; then Jenkins took over. Nils Sanborn moved his Merlyn into third spot. In the closing laps it was a three way battle for the win when Scott hit the dirt to avoid an entanglement as the three headed onto the road section. Jenkins and Sanborn raced wheel to wheel with Nils taking the decision in a photo finish that left everyone in suspense until the picture was developed. Scott finished third, Gary Magwood fourth.

If IMSA sounds interesting, come on in—the competition's great. Even if you don't get behind the wheel, there's a

place for you in any number of essential jobs that are the backbone of good racing. There are big plans for '70 including racing at Daytona, Dallas, Talladega and a Formula Ford Series to be run on 1/2 and 5/8 mile ovals in Ohio, Michigan and Indiana plus a lot more.

The new plan under consideration is a special Competition License for eighteen-year-olds after completion of a prescribed training course. John and Bill believe that, if the United States is to lead the world in international automotive competition, we should start developing our talent as early in life as other nations. What are your thoughts on the subject?

Let us have your comments.

IMSA's address is: P. O. Box 805, Fairfield, Connecticut 06430. John Bishop will be glad to answer your questions and supply membership info. Tell him **WORLD CAR GUIDE** sent you.



## FLOYD CLYMER'S LATEST!

**VOLKSWAGEN TRANSPORTER OWNERS HANDBOOK** — This big new manual is by far the most factual and comprehensive book ever offered on the VW Transporter vehicles. A complete workshop manual in content and thoroughness. Contains all technical detail necessary to carry out overhaul, adjustment and maintenance of all components including many items seldom found in manuals. There are five separate engine sections, each detailing improvements through the years. Wiring diagrams, specifications and data charts are included. Over 400 pages, 1000 illustrations and up-to-the-minute information and tips make this new book a must for the private owner or professional mechanic. \$5.00

**PORSCHE 912 HANDBOOK and SERVICE MANUAL** — This big 316-page volume, 8½ X 11 in., is a complete, thoroughly researched workshop manual with 1000 illustrations along with step-by-step instructions and hints for the professional or novice mechanic. Includes complete overhaul, adjustment and maintenance procedures for all major components and optional factory equipment. There is a factory driver's manual, the history of Dr. Porsche and his fabulous machines, wiring diagrams and data charts. Competition equipment and methods are detailed. \$8.00

**TOYOTA CORONA HANDBOOK and REPAIR MANUAL** — This big new volume of over 470 pages is actually three factory manuals covering all engine, chassis and body components. Over 1000 photos, charts, tables and exploded views to illustrate the easy-to-follow, step-by-step instructions enables the novice mechanic to tackle any repair operation with confidence. A sampling of the contents includes latest procedures on such items as engine tune-up, dual brakes, emission control systems, instruments and accessory repair. Complete specs, data and wiring diagrams. \$6.00

**TOYOTA COROLLA HANDBOOK and REPAIR MANUAL** — This big new book is actually three complete workshop manuals with over 550 pages. It details every repair operation on the 1100 and 1200 series sedan, sprinter and wagon. Excellent illustrations and easy-to-read text laid out in step-by-step fashion enables the novice mechanic to tackle the job with confidence. There is up-to-the-minute information on engine tune-up, dual brakes, emission control devices, etc. \$6.00

**DATSUN SPORTS CAR HANDBOOK and SERVICE MANUAL** — Clymer's big new volume covers both 1600 & 2000 models. A complete shop manual in content, with 800 photos, charts, exploded views and diagrams. It gives step-by-step procedures on diagnosis, troubleshooting, repair, and adjustment of all components, including both engines, 4 and 5-speed transmissions and crankcase and exhaust emission control systems. There are complete specifications, clearance charts and wiring diagrams. This fine manual with 390 large pages (8½ X 11) is a must for the car owner or professional mechanic. \$7.00

**DATSUN "510" OWNER'S HANDBOOK and SERVICE MANUAL** — This big new manual of 428 pages (8½ X 11) covers all 510 series sedans and station wagons with their L13, L16 and L20 engines along with 3 and 4-speed transmissions. Superbly illustrated with 1000 photos, charts, tables and exploded views to go with the easy-to-understand text. A shop manual in content, with step-by-step procedures on diagnosis, troubleshooting, repair and adjustment of all components. Compiled for the layman or professional mechanic, with complete specs, data, wiring diagrams and engine tune-up. \$8.00

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(Continued from Page 39)

## WORLD CAR NEWS

**AN OSCAR TO THE GIRLS.** Macmillan Ring-Free Oil Co. proudly hails Janet Guthrie and her all-girl racing team. The gals got their Oscar at a big Whingding recently for their class win in the Under 2-Litre Prototype category in the Sebring 12-Hour Endurance Race. That's sufficient reason for the accompanying photo showing Miss Guthrie. Of course the car looks okay too.

**OBITUARY FOR A RACE COURSE.** Sears Point International Raceway, scene of big time racing and amateur events as well, has suddenly succumbed to insufficient funds. For what it's worth, the management's press relations were not the best either; many were the reporters whose press cards got them nowhere (WCG was not one of those). As Detroit knows—and track managers should take note—press relations are important.

**DODGE DIVISION** has been busy scotching rumors that it'll have a little imported pony in dealer showrooms before you can say Mitsubishi. Frank Wylie, the division's genial public relations director, responds to queries as follows: "Import of Mitsubishi Heavy Industries cars should begin later this year." Which is another way of saying that Dodge dealers might have the little Mitsubishi almost anytime after WCG prints the comment.

**STAMATY** may have the best answer; at least Stamaty doesn't get all worked up. He's sort of like Shakespeare when it comes to much a'do.

(Continued from Page 4)

## READER'S



## FORUM

Dear Sir: I wonder if you can give me some information? Are there any mechanic's schools that specialize in Volkswagen? I would like to enroll in a school that specializes in VWs and preferably in New York City or nearby.

William Washington  
2410 8th Avenue  
New York City 10027

*Good question and the answer is yes. Best thing for you to do is to check personally with the nearest VW dealer; he'll have all the information and he might even be looking for a good mechanic prospect once you've completed the course.*

Sirs: I should appreciate your printing the normal oil temperature range for a 1970 VW Squareback. Possession of this data would have made possible a more intelligent interpretation of the reading of my well-calibrated crankcase oil temperature gauge and prevented overheating caused by the combination of high speed and an ambient temperature of 105-degrees. All four cylinders had to be replaced. Sincerely,

Martin Bernstein,  
Professor of Music  
New York University  
New York City 10003

*Such failure is rare, indeed, in a VW but you're not the first one, Professor, to experience such a disaster. This Editor had a similar experience back in the*

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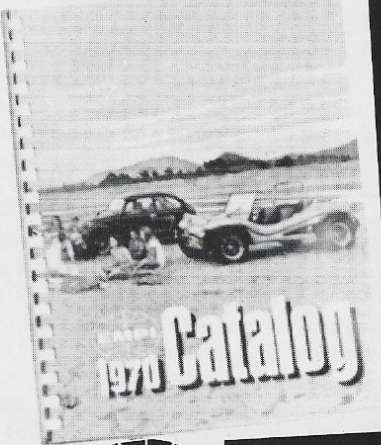
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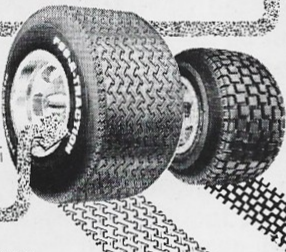
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mid-fifties with a little black Bug. A check with the Service Department of the VW distributor in Northern California brought the word that the normal VW oil temperature should be 158-degrees F.

**Renault 16 Problem**

Sirs: I presently own a '69 Renault R-16 and have had a continuing problem. The local dealers seem incapable of repairing the trouble. The car does not return to slow idle and continually stalls at lights. Could it be the carb, the choke, or is it the solenoid actuating the carb butterfly? Thanks

Larry Saltz

Department of Art  
Indiana State University  
Terre Haute, Indiana 47809

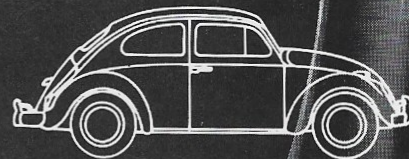
*I suggest that the carburetor needs a complete going over by a competent specialist. If your local Renault dealers are unable to rectify the situation, I should think that there must be an independent garage with a carburetion specialist in the vicinity. Don't overlook the possibility of ignition problems. If a carb specialist is baffled, check with an automotive ignition specialist. Hope this helps, but it's often difficult without seeing the car.*

And that's all we have space for this time. Please keep your letters short and to the point. Doing so will assist us in answering more letters in this space. We try to help; we hope we do. The Editor.

But look here, now! See Stamaty's problem. Aren't you glad you're you?



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YOUR VW.**



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# The only thing standing between you and a Renault 16 is a little information.



It has been written that the ride you experience in the Renault 16 "can be compared only to that of the Mercedes, Rolls, or Citroën."\*

Colin Chapman chose the engine of the Renault 16 for his Lotus Europa.

And the quietness of the Renault 16 (which goes for a mere \$2,395†) comes only in cars costing thousands more.\*

## Someone is sleeping in Detroit.

Road Test is an impartial magazine. At the time of this writing, it did not even take advertising. After exhaustive tests on the Renault 16, Road Test wound up suggesting that "all the automotive designers in Detroit be ordered to spend two weeks behind the wheel of this car in the hopes that their dormant imaginations might be sparked to life." Thank you, Road Test.

## A textbook for Britain.

Stirling Moss has written: "There is no doubt that the Renault 16 is the most intelligently engineered automobile I have ever encountered and I think that each British motor-car manufacturer would do well to

purchase one just to see how it is put together."

The Renault 16 happily consents to offering a course in Renault 16.

## Where we made our points.

Needless to say, our car has impressed a lot of people. We'd like to tell you why.

Before our car was a car, it was a project. It was designed and built from scratch. Like the factory that makes it. So we didn't build a new car around old parts.

For better traction and superior road handling, the Renault 16 has front wheel drive with engine weight over the drive wheels.

Its engine gets a miserly 30 miles per gallon. But it does an honorable 93 mph, top speed.

Its unique 4-wheel independent suspension system has already put the 16's ride in a league with the Rolls Royce's.

The seats in the 16 were designed by a doctor and will challenge the comfort of any easy chair. They too have been compared with the Rolls'.

## Even more points.

Disc brakes resist fade. Our front wheel disc brakes will stop you in a straight line instead of the next lane.

Seven different seating arrangements give the Renault 16 perhaps the most versatile interior you can drive. It can be a plush sedan, a roomy wagon, or anything in between.

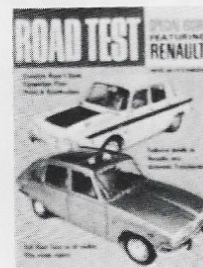
It's got a sealed cooling system that doesn't overheat and virtually eliminates adding antifreeze.

And finally, the sound of a Renault 16 running is very close to silence.

## Extracurricular reading.

If any information still stands between you and a Renault 16, you can have Road Test's full report on it by sending in the coupon below.

But if you've read this far, we suspect you're at least ready for a test drive.



Renault, Inc., Box 1970, Port Washington, N.Y. 11050

Gentlemen: Please send me my free copy of Road Test magazine. (OFFER EXPIRES SEPTEMBER 1, '70.)

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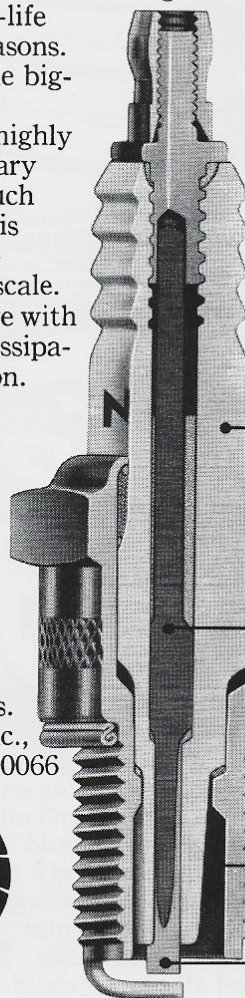
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