

# THE DIPSTICK



President.....Vince Groover  
 Vice-President...Peggy Bradford  
 Secretary.....Pat Beauter  
 Treasurer.....Elsie Tarr  
 Editor.....Brenda Banvard

FROM OLE 6402

Thanks to Mel and Judy Baker for hosting the March meeting and to Bill and Sue Gordon for organizing and running the gimmick Rally.

Our local membership is about 50 families with approximately 90 MGs. With these figures in mind, on the 17th of March, the Gimmick Rally attracted 3 MGBs, 1 Magnette, 1 Healy 3000 and 1 Chevette. (No MG "T" Classics). Apparently, the membership does not enjoy Rallies. (We will discuss this at the April meeting.) Bill and Sue Gordon expended a great deal of time and effort organizing and running the Rally, thinking that's what we wanted, Alas, No!

The Photo Rally coming up on the 28th of April has also required a like amount of effort. Are we going to thank Richard Hall and Roy Wiley by not participating? I hope not.

Bring your views to the April 3rd meeting at Peggy Bradford's. See ya there.

Vince

*Please call me so  
 I can make a reservation  
 for brunch - Jennifer  
 495-0307*

PHOTO RALLY

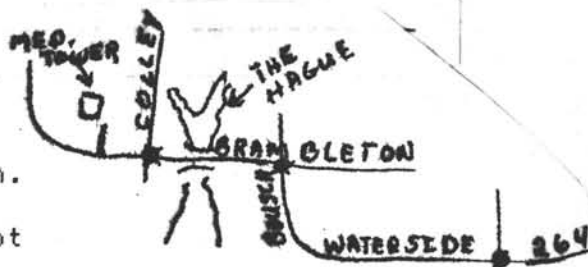
Sunday April 28 11:00 a.m.

Medical Tower Parking Lot

By Norfolk General Hospital on Brambleton Avenue in Norfolk.

Rally ends at a restaurant in Portsmouth for Brunch.

(Ed. And we're not going to tell you which one prior to the Rally. You'll have to run it to get there.....)



---

U P C O M I N G   E V E N T S :

- April 3            Wednesday - Meeting at the Bradford's  
7:30 p.m. - Kick tyres.  
8:00 p.m. - Business meeting followed by  
                 refreshments
- April 14           Sunday      - Tech Session at the Ash's  
10:00 a.m.- Bring your problems and  
                 solutions
- April 28           Sunday      - Photo Rally hosted by  
                 Roy Wiley and Richard Hall  
11:00 a.m.- Medical Tower on Brambleton  
                 Ave. in Norfolk.
- 

---

A   R E P O R T   O N   T H E   S H A M R O C K   R U N

Six brave teams competed head to head, or should I say headache to headache, following the Gordon's gimmicks on the Shamrock Run Rallye. Through 3 neighborhood sections of Virginia Beach, they took lefts at Leprechauns, looking for pots of god (50 pt. markers), stayed on Roads By Name, and watched for green & white stop signs! Despite the tricks, twists, and turns, we all arrived at Milton's Pizza at Fairfield for pizza and beer at the finish.

The Results: (out of a possible 1000 points - originally thought to be 1010 but rechecked our figures.)

Ash's	710	
Perino's	670	(our applause to 1st time gimmick rallyers)
Beuter's	630	
Groover's	540	
Bradford/Tarr	380	
Davis/Roommate	370	

What I want to know is who took enough gas out of Bill's truck so that he ran out with 3 course markers left to retrieve and had to walk home.... Now that was just too much of a coincidence!

We're glad that you make it and hope that you had fun.

Bill & Susan

---

---

N O T E :   D e a d l i n e   f o r   M A Y   n e w s l e t t e r   i s   A p r i l   2 4

---

---

## MARCH MINUTES

The March meeting of the Tidewater MG Club was held at the home of Mel and Judy Baker. There was a good turnout at this meeting which is always nice to see. There was a new member at this month's meeting, Alex **PLATT**. Elsie could not attend the meeting but sent a report of a treasury balance of \$900.15.

Jennifer reported on the March 17 Gimmick Rally to be hosted by Sue and Bill Gordon. There will be an instructional session on March 16 for Navigators. Everyone was encouraged to attend since so much work is involved in setting up the rally and everyone has such unique experiences during the rally. The April activity will be a Photo Rally followed by a brunch at an undisclosed restaurant.

The April newsletter deadline is March 20. If you have articles or information that you think may be of interest to members and you would like to have published in the newsletter, send them to Brenda Banvard.

Under new business, the subject of the Christmas party was mentioned. There was discussion about canceling the party which generated a response that it was too early to discuss Christmas so the subject was tabled until the June meeting. Be thinking about whether or not you feel the party should be eliminated. It will be replaced with a regular business meeting and the Wicker Basket will be earlier in January. (Ed. What if the attendees make a small cash contribution and the Club fund the balance to have it catered)

Robert had a spares report and a box of spares. He also had some tools that possibly may be purchased in bulk and resold to members at a discounted price. If you are interested in brake bleeders or color tune, more details will be available at the next meeting or contact Robert Davis.

Don't forget the Maryland gathering at Tilghman's Island May 17-19. The meeting was adjourned and a cake with 16 candles was brought out for Jennifer's birthday. After singing Happy Birthday to Jennifer, everyone enjoyed the refreshments and viewed the regalia brought by Chris and Arla.

Pat Beauter

---

---

W A N T E D

M G A

Up to \$4000

Earl Perry - 499-8501

---

UNLEADED GAS - REPORT BY MIKE ASH

Recent accounts in the newspapers indicate that the Government is ready to go ahead with legislation to eliminate the lead in gasoline. Over the next few years, the lead content of leaded gas will be steadily reduced until it is eliminated entirely. There have been a number of accounts of how the use of unleaded gas in pre-1971 cars will be hazardous to the health of their engines. I supported this view with the knowledge that the lead was originally introduced into gasoline to lubricate the seats of the exhaust valves. I also thought that the use of unleaded gas in cars not designed for it would cause burned valves and possibly burned pistons, thereby causing premature engine failure. It would appear, however, that this latter thought is completely erroneous, as supported by the following article. This article, from the July 1984 issue of "Skinned Knuckles", is one of the most authoritative that I have read on the subject, and appears to be supported by valid scientific and engineering research.

The article, although written primarily for owners of pre-1971 US-made vehicles, is applicable to our smaller-engined MGs. Unleaded gas will cause accelerated valve seat wear in the MG head in standard form but, under what is now the average use of our MGs, this will not appear as a problem for 50,000-100,00 miles. After the wear becomes a problem, the valve seats can be re-furnished with hardened inserts, which should prevent the problem from re-occurring. In fact, without the use of unleaded gas, the last two head rebuilds I have had done needed new valve seats (which was performed by Phase One at reasonable cost). Both of these heads had, however, probably done in excess of 200,000 miles on leaded gas. For US cars, the article recommends that the exhaust valve seat angle be reduced from 45 degrees to 30 degrees. T-series owners are in luck here, because the correct XPAG valve seat angle is 30 degrees, although on the two aforementioned heads, previous machine-shop work had changed the angle to 45 degrees. For MGA/MGB heads, the correct angle was originally 45 degrees. Another recommendation of the article, is to reduce the valve spring load by 20 lbs. After several tens of thousands of miles, valve springs are probably weakened to this point anyway, thereby naturally reducing the valve seat wear. Unless broken or badly worn springs are present, I do not replace the valve springs during an engine rebuild. My reason for not doing this in the past was because under normal street use (up to about 4500 RPM), the engine would not know the difference and I could save on the cost of new springs (about \$30) and save on camshaft wear. Now I can add saving on valve seat wear to my reasons!

So, read the article, and I think you will agree that unleaded gas is not to be feared, although I think I would continue to use leaded gas for as long as it is available.

—APRIL 28—

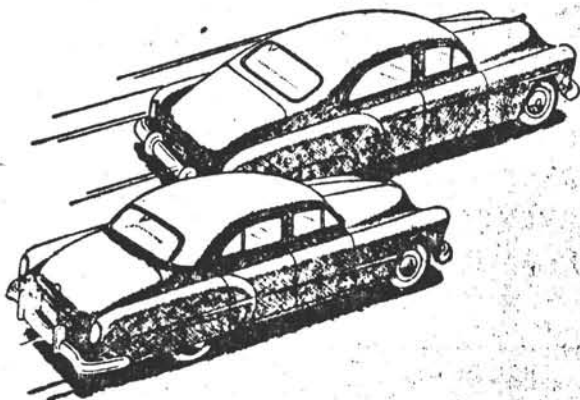
DON'T FORGET PHOTO RALLY. BRING A  
MAGNIFYING GLASS, NAVIGATOR !!

④ Please let me know if you plan to be there

\$ 7.50 (+ tip) or you can order from menu.

Brunch after

# LEAD - FREE GASOLINE



## AND THE PRE-1971 AUTOMOBILE

by James W. Lula

The elimination of tetraethyllead (TEL) from automotive gasoline appears to be imminent. As a result of this, there is a growing concern among car collectors as to how their pre-1971 cars will operate (or cease to operate) on lead-free gasoline. This concern may be exaggerated but it can be brought back to proper perspective by reviewing several technical papers written on the effects of lead-free gasoline, published by the Society of Automotive Engineers (SAE).

These technical papers identify only two problems with pre-1971 automobiles caused by lead-free gasoline. The first problem is the lower octane rating. High octane gasoline has already been eliminated by restrictions on the lead content, and this situation is likely to remain unchanged. The second problem caused by lead-free gasoline is excessive wear of the exhaust valve seat (exhaust valve recession). The remainder of this discussion will deal with this latter problem.

Exhaust valve recession was observed as early as 1931. However, the addition of TEL to gasoline (as an anti-knock additive) prevented valve recession from becoming a serious problem. Actually, reports of this problem were only sporadic from the 1930's until the 1960's. It was not investigated extensively until the late 1960's when the introduction of lead-free gasoline was mandated and automobile manufacturers were forced to design engines to run (reliably) on lead-free gasoline.

It is true that using lead-free gasoline will result in a higher rate of exhaust valve recession in automobile engines manufactured before 1971. In fact, the wear rate using lead-free gasoline is 10 to 20 times that of leaded gasoline. Research has shown that exhaust valve recession starts with the transfer of material (iron) from the exhaust valve seat to the exhaust valve face. These iron particles

oxidize readily and are subsequently embedded in the valve face. Being hard and abrasive, these embedded particles effectively grind away the exhaust valve seat as the valve opens and closes. This produces additional material which is transferred to the valve face and the process continues. As the seat is ground away the exhaust valve gradually recesses into the cylinder head, thus upsetting the valve train clearances.

The normal operating range of a hydraulic valve lifter will accommodate 0.125-0.150 inch of exhaust valve recession before the valve lash is reduced to the point where the valve will not fully close. At this point, impaired performance is usually characterized by hard starting and a rough idle. This point is reached much sooner on engines with mechanical lifters, but these engines can be periodically adjusted to compensate for the change in valve lash.

Exhaust valve recession is not a problem with those engines run on leaded gasoline. This is because lead compounds are deposited on the valve face and also on its seat in the cylinder head. Lead oxides are found on the valve face while a combination of lead bromide and lead chloride is found on the seat. These lead compounds act as a solid lubricant, preventing metal to metal contact between the valve and its seat. As little as 0.5 ml of TEL per gallon of gasoline will prevent exhaust valve recession.

The automobile manufacturers were indeed concerned over this potential problem with lead-free gasoline. To put their concern in perspective, it should be noted what the trends were in the late 1960's. At this time, high performance muscle cars were common. Recreational vehicles were becoming more popular. Legal highway speeds were 70-80 mph or more. All of these factors

placed high loads on the engines being built at that time and the manufacturers had to design for reliability under those loads.

Testing for exhaust valve recession was, therefore, done under relatively severe conditions. For example, road testing was done at 70 mph for extended periods of time under conditions that produced artificially high coolant temperatures. Bench testing was done at 3000 to 4400 rpm, 230 degrees F. coolant temperature, and 5 inch Hg manifold vacuum. Using lead-free gasoline under these test conditions, exhaust valve recession on pre-1971 engines was measurable and usually led to a sharp drop-off in performance within 50,000 miles or 100 hours of bench testing. Some failures were observed much sooner, depending upon the severity of the test and the particular engine design.

However, some of the conclusions reached during these tests are of interest to the automobile collector, since the conclusions suggest that under some conditions lead-free gasoline may be acceptable for pre-1971 engines. For example:

"... the average driver, who seldom exceeds 70 mph, should not experience significant engine deterioration while using lead-free gasoline. The salesman, however, who drives 15,000 turnpike miles per year at 80 mph, may well expect valve train problems." (SAE Paper 710674)

"It is clear that exhaust valve seat wear with zero-lead gasoline is responsive to engine speed. . . . At 2300 rpm and 16.0 inch vacuum, exhaust valve seat wear was very low and was detected only by the widening of the valve seats and formation of the red iron oxide deposits that are characteristic of operation on zero-lead gasoline. The coolant on this test was water at 195 degrees F. rather than ethylene glycol at 230 degrees F., which would tend to reduce valve seat wear even more." (SAE Paper 710673)

"Operation at 60 mph instead of 70 mph reduced valve seat wear . . . by about two-thirds." (SAE Paper 710367)

Today, 70 mph speed limits are a thing of the past. The pre-1971 automobiles that were designed and built for those higher speed limits are now being collected, rebuilt, and restored. These cars are relatively pampered compared to their first years of existence. Because they are now being driven fewer miles at lower speeds under lighter loads, and noting the conclusions of automotive engineers who studied the problem of exhaust valve recession, it appears reasonable that a pre-1971 automobile could be operated on lead-free gasoline without damage. Some guidelines to follow when using lead-free gasoline in a pre-1971 automobile might be:

1) Refrain from exceeding 55-60 mph.

2) Maintain cooling system in good working order and at as low a temperature as possible (160-180 degrees F.).

3) Don't use the vehicle to pull trailers or haul heavy loads.

For those owners that want to do more, there are some modifications that can be done to the engine that will solve the problem of exhaust valve recession.

1) Induction harden locally the area of the exhaust valve seats in the cylinder head. (SAE Paper 710674)

2) Install hardened exhaust valve seat inserts in the cylinder head. (SAE Paper 710368)

3) Changing from a 45 degree valve face angle to a 30 degree angle will reduce recession by approximately 75%. (SAE Paper 710368 and 710674)

4) A 20 lb reduction in exhaust valve closed spring load was found to decrease the maximum recession rate by 40-60%. (SAE Paper 710674)

Besides not contaminating the environment, there are at least three other proven advantages to using lead-free gasoline. One is that the combustion chamber remains much cleaner with fewer deposits (SAE Paper 710368). Another advantage is the insolubles and total acid number for the used oils operated on lead-free fuels are much lower than those for leaded fuels (SAE Paper 710584). And third, there is less internal rusting of engines when lead-free gasoline is used (L.C. Pless).

For those who want more information, the following articles may be obtained from a library:

1) A.E. Felt & R.V. Kerle (Ethyl Corp.), *Engines and Effects of Lead-Free Gasoline*, SAE Paper 710367, Oct. 22, 1970.

2) William Giles (Valve Div., TRW, Inc.), *Valve Problems with Lead-Free Gasoline*, SAE Paper 710368, Oct. 22, 1970.

3) D. Godfrey & R.L. Courtney (Chevron Research), *Investigation of the Mechanism of Exhaust Valve Seat Wear in Engines Run on Unleaded Gasoline*, SAE Paper 710356, Jan. 11-15, 1971.

4) W. Crouse, R.H. Johnson & W.H. Reiland (Sun Oil Co.), *Effect of Unleaded Fuel on Lubricant Performance*, SAE Paper 710584, June 7-11, 1971.

5) W.L. Kent & F.T. Finnigan (Union Oil), *The Effect of Some Fuel and Operating Parameters on Exhaust Valve Seat Wear*, SAE Paper 710673, Aug. 16-19, 1971.

6) W.S. Giles & S.H. Updike (Valve Div., TRW, Inc.), *Influence of Low Lead Fuels on Exhaust Valve Performance*, SAE Paper 710674, Aug. 16-19, 1971.

7) L.C. Pless (GM), *Effects of Some Engine, Fuel, and Oil Parameters on Engine Rusting in Short-Trip Service*, Performance Testing of Lubricants for Automotive Engines & Transmissions, Applied Scientific Publications, Ltd., Barking, Essex, England, 1974.

MEMBERSHIP NEWS: Please welcome a new member to the club by adding his name and phone number to your roster, and note Arla's change of address.

Ruth & Alex Platt  
2925 Cape Henry Dr.  
Virginia Beach, VA. 23451 481-6001

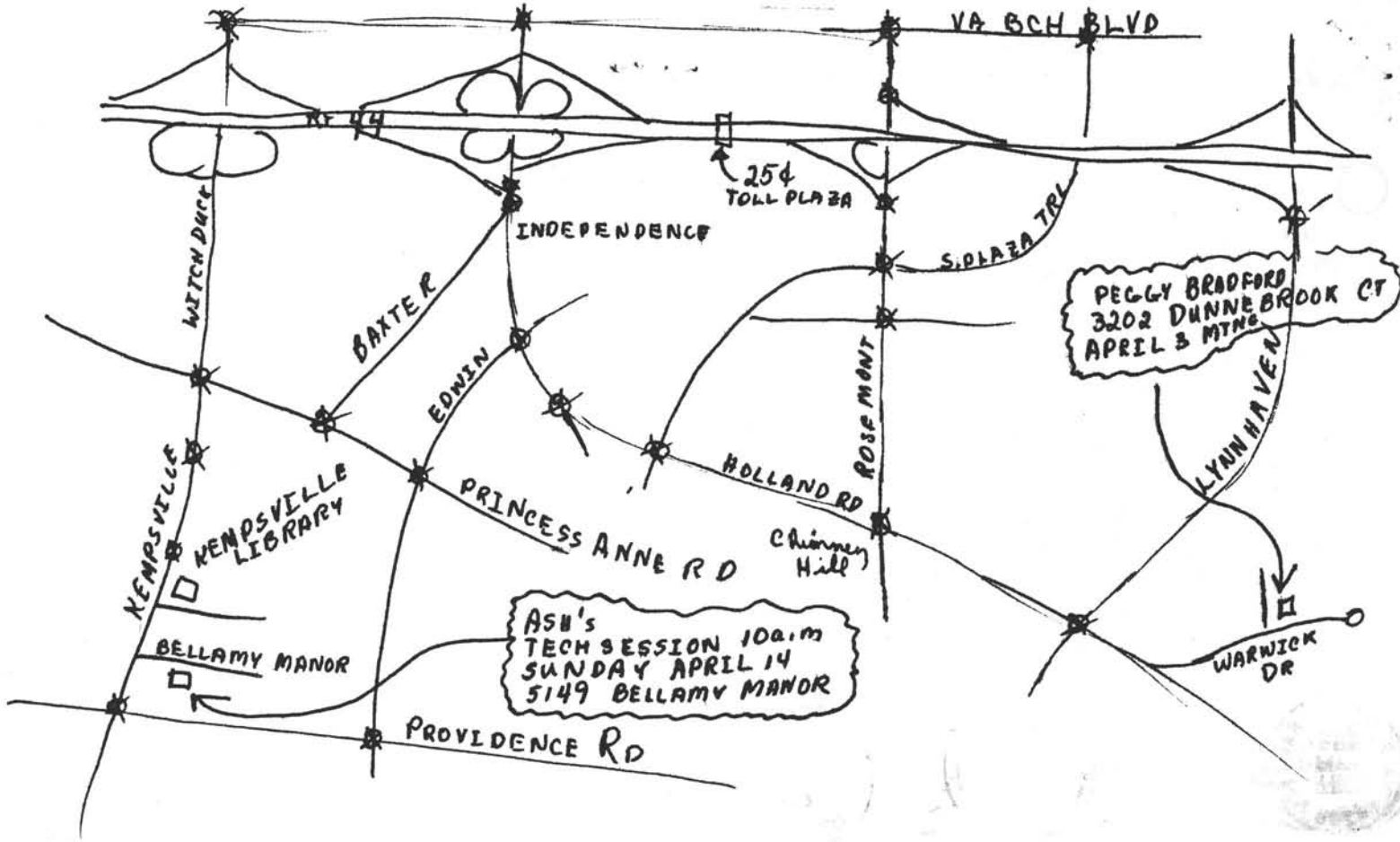
Ruth and Alex have 3 Midgets and a 1977 MGB

Arla Strasser  
2616 Heston Rd.  
Virginia Beach, VA. 23451 481-7743

#### REPORT ON FEBRUARY EVENT:

At the end of February (too late to report on in the last Dipstick), on a bright sunny Sunday morning, we met for brunch at the Fort Story Officers' Club. We invited the Austin Healey Club to join us, as they had invited us to join them on a tour of the Chesbay Brewery that afternoon. We were amazed to find that we were a party of more than 50 for brunch! A great turn-out. We did a lot of socializing, and were pleased to welcome Elsie Tarr's Mom - Elsie Drexler - down from Philadelphia for the weekend. Brunch was up to the usual Fort Story standard and we left there for either walks along the beach, or drives into the country (Pungo ?!) before meeting up again at the Brewery. There were about 20 cars, at least, at the brewery - a LOT of Austin Healeys - and we enjoyed sampling lots of free beer, and approving the new brew, Chesbay Golden Ale, not yet on the market at that time. Jim Kollar, one of the owners of the brewery and who is an Austin Healey owner, gave us a very informative tour of the brewery, one of only a handful of regional breweries in this country.

It was a beautiful, top-down-driving day, and many thanks are due to Bob and Pat Beuter for setting up the brunch (and the weather?) for us and to the Healy Club for inviting us to join them. We hope we will have more inter-club participation in the future.



TIDEWATER MG" T" CLASSICS  
5149 BELLAMY MANOR DRIVE  
VA BCH VA 23464



ROSS & ANN HAINES  
633 PINE TREE DR.  
VIRGINIA BEACH, VA. 23452