

BRITISH

>WELL WORTH READING SOME OF THE TIME<

April, 2018 Issue

BRITISH is the official publication of the not-officious
BRITISH IRON TOURING CLUB OF NORTHWEST ARKANSAS
casually founded in 1981.

Dedicated to the preservation, touring, towing, racing, discussion of British cars and...

April is National Fresh Celery Month

Contact Us

- Find our most excellent site in 'web-land' at www.britishironnwa.org
- To contact our President: bwatkins@watkinslawoffice.com
- To contact the editor: 479-756-5498 or bcallier@cox.net

Members staying in touch:

We have our own club email list-server – contact Jim Carney carney1081@cox.net to sign up and stay up to date.

Our electronic (not Lucas) newsletter

In addition to member emailing, the complete newsletter may be found on our website.

Monthly Meetings

We meet for grub, grog and gab on the 2nd Thursday of every month, except December.

MEETING NIGHT- April, 12th at Jim's Razorback Pizza, etc, in Springdale on Sunset , next to Lowe's home center.

Grub, grog and gab about 6:00 on, business at 7:00.

Other meetings

- The 4th Friday of every month is Social Night at our clubhouse and garage, the Brit Stop II.
- Most Saturdays mornings after the Monthly Meeting we gather at the Brit Stop II for tech sessions or tinkering.
- Scheduled events and club activities are posted on the next to last page and other places as seen fit.
- Other Brit Stop activities as arranged. See your BI-List emails.

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Mar 8, 2018 Monthly Meeting Recollections:

- Meeting started on time or as close as possible.
- Too many in attendance to count, ran out of fingers and toes; near standing room only.
- Guests: None identified.
- Jim Carney reported the club to be still solvent and most members have paid their dues. The laggard are about to be deleted from the BI-List.
- Social night this month, March 23. Refrigerator is up and running.

- Roaring River drive and brunch has 10 reservations to date need 20 more for brunch reservation. Note: At end of meeting need was down to about 10.

OUR CREDO: If heard on the Wal Mart parking lot it must be true.

BEHIND THE WHEEL (from the right hand side)

Many thanks to Sue Tennant for organizing the annual drive to Roaring River State Park for breakfast at the Lodge. We had a terrific turnout of 16 or 17 cars and 41 people. And everybody even paid when they were supposed to so the club broke even (actually came out \$3 ahead) in the process. Thanks to everyone for (a) giving Sue an RSVP (b) honoring your RSVP, and (c) paying in full and on time so that Jim didn't have to come begging.

Those of you who made it to Roaring River saw that Lisa and I had two exchange students from Panama staying with us that week while their U of A dorm was shut down for Spring Break. One of the two girls likes fast cars so Mark Brewer took them each for a ride in his Corvette. A strong English vocabulary was not required to express their pleasure in getting that ride - their smiles said it all. Thanks Mark.

I periodically express interest in selling our 1965 Jaguar 3.8S saloon since I feel like I don't use it enough and I have a desire for something I could really burn up the twisties with. Then I take the old Jag on a drive like the trip to Roaring River and am reminded what a wonderful old car it is. So comfortable to ride in, capable of keeping up with modern traffic, generally reliable for a 53 year old car. Maybe I'll just stand pat for a while.

We had our first social night at the new Brit Stop last Friday. The turnout was a bit disappointing but maybe the weather kept the crowd down. I know that the old shop location did not get a lot of use from members in Fayetteville / Springdale and that now being in Prairie Creek makes it 10 minutes more inconvenient; but, really, Prairie Creek really is only 10 minutes farther away. This is a much nicer facility with a brand new bathroom all our own, good lighting, good workbenches (thanks Doug and Brad) and the same tools and equipment we have had before. You don't even need a key! Just contact one of us for the door code and you can use the place. Your club money has paid for a lot of the work to make this space useable so, please, USE IT!!

Wil has declared the new shop ready for a tech session so let's see if we can host one on Saturday, April 14th. Who will volunteer their car?

Our next driving event is a picnic run to Devil's Den. If we have a tech session on the

14th maybe we could drive to Devil's Den on the 21st ? We can discuss this at the next meeting (the 12th) and work out details like gathering point, etc. Be sure to attend the meeting and get all of the latest scoop on club activities.

Publicity has started going out for our car show, the 17th (17th !!!) Brits in the Ozarks. See a short write up about our guest speaker, Bill Warner, elsewhere in this edition of the newsletter.

Thanks again to Bob Callier for handling newsletter publication and distribution. See you at the meeting on the 12th .

BILL WARNER TO HEADLINE 17TH ANNUAL BRITS IN THE OZARKS

We are very pleased that Bill Warner has agreed to join us as our special guest at Brits in the Ozarks this Fall. Bill is most well know as the founder of the Amelia Island Concours and, prior to that, as a photographer for *Road & Track* magazine.

As a teenager Bill got a job at an import car dealership in his home town of Jacksonville, Florida. After doing that a while he left the hop to join the family business. But he wanted to continue to be around cars so he got into photography and spent his weekends on nearby Florida racetracks. He soon developed an excellent reputation which earned him a stint as a correspondent for Road & Track magazine. While in that job in received the Photographer of the Year award which was presented to him by the SCCA in 1970.

In the mid-70s, Bill started racing, a hobby he continues today running his Triumph TR6. This car has a colorful history having been formerly raced by Bob Tullius and Paul Newman. In 1996 Bill founded the Amelia Island Concours with an eye toward creating a Florida equivalent to Pebble Beach. Despite a few serious weather related challenges over the year, "Amelia", as the event has simply come to be known by car folks, has gone from strength to strength bringing the best cars each year and raising enormous amounts of money for local charities.

Our former guest speaker Mike Dale, former head of Jaguar USA, suggested that I contact Bill about coming to our event and I was very excited when he agreed to do so for our usual meager honorarium. Bill Warner is a big name in the old car world and we are most fortunate to be able to welcome him to Brits in the Ozarks for 2018.

Bill Watkins

MY SPORT *Wil Wing*
Or, 'A little of the usual grumbling'

One reads that sport is the longest lasting of men's interests. This seems to be largely true... except, perhaps, about my favorite sport, which is sports cars and road racing. Over the decades, it seems the sport has faded even more than I!

Of course, what most men call 'sport' I call games, but the broader definition holds equally true. We need not accept Hemmingway's definition that the only real sports are auto racing, bullfighting and mountain climbing, but *some* element of risk does separate children's games, which can be played by adults, from adult sports that carry a potential for injury if one is unskilled, dumb or very unlucky. A few positive words here to calm those prone to immediately assume the worst of your humble writer: 1) Athletic ability is praiseworthy. 2) I don't think semi-suicidal 'sports' are worthy; jumping out of airplanes or bungee jumping from great heights, etc. The thrill there seems to be "either the parachute opens or it doesn't" in the first case and "will the cord break or is it too long?" in the second. Those two 'sports' offer risk without requiring either much skill or the ability to measure your ability against other competitors. If you want high risk without skill being involved, why not just see how much heroin you can pump into your veins and be done with it?

I'm focusing on the sport of road racing, which completely captured my attention as a youth and beyond. It wasn't until the last week of high school that I discovered that some of the football heroes were afraid of going more than 65 mph, whereas I felt completely confident. You may think them sensible, but there is another issue here; were they willing to risk injury on the playing field only because there was a stadium full of people cheering them on? I found my sport intensely satisfying, even on regional race weekends when the promoters, to keep insurance costs down, did not sell tickets to the public,

From a driver's perspective, what is the essence of the sport of road racing? *It is dedicating yourself to develop the skills needed to drive very fast under varying conditions without crashing.* And what was one way to get started in the 1950's? To buy an English sports car and drive the hell out of it... if possible, to join the SCCA and race. There were lots of new Brit car choices and some were reasonably priced. Although almost everyone wanted to move up to a faster car, there was wisdom in learning the art in a smaller displacement car rather than immediately frightening or killing yourself in an Allard or something like that. Baby steps first, yes? Not to mention the initial cost and burning up tires.

By the late '50's the sport was well established in the US, with new tracks and lots of sports car clubs springing up - both SCCA regional clubs and grassroots organizations. I've previously mentioned our Linden/Elizabeth, NJ, area club - a typical small outfit with diverse cars, dedicated to fast driving, going to races and wild Saturday night drives. By then there were already some Italian and German cars in the mix. Most were also driven hard - that was their purpose in life. There were members who just polished and admired their cars, but they were a small minority. Boy, has that turned around. Third and fourth generation owners who understand the original purpose of their sports cars seem very scarce in the 'teens of this century. What percentage of current sports car owners dream of racing, regularly attend vintage sports car racing or have even once attended a SCCA-sanctioned race? We have largely gone from being wanna-be race car drivers to wanna-be mechanics. Since I spent most of my life as a professional mechanic I find this very strange. Being a mechanic wasn't romantic or fun, it was hard work.

Now let's consider the current irrational view of mass produced sports cars, many of which were aimed at American young men with an itch to drive fast. I am not talking about super-expensive race cars or exquisite 'one-offs' - a term Toly Arutunoff has helped popularize. Some years ago, when MG guru John Twist was addressing us at our 'Brits in the Ozarks' show, I was stunned to hear a man ask, "I never run my MG TD engine over 3,500 rpm because I'm afraid it will blow up. Is that a good limit?" *Good grief!* No, Mr. Milquetoast, the manufacturers put the safe rev limit on the tachometer. It's called the 'red line'. Will the engine wear out faster if it is always operated near the limit? Yes, but so what? Short-shifting and lugging the engine doesn't do it any good either. More importantly, you miss the whole point of sports car ownership.

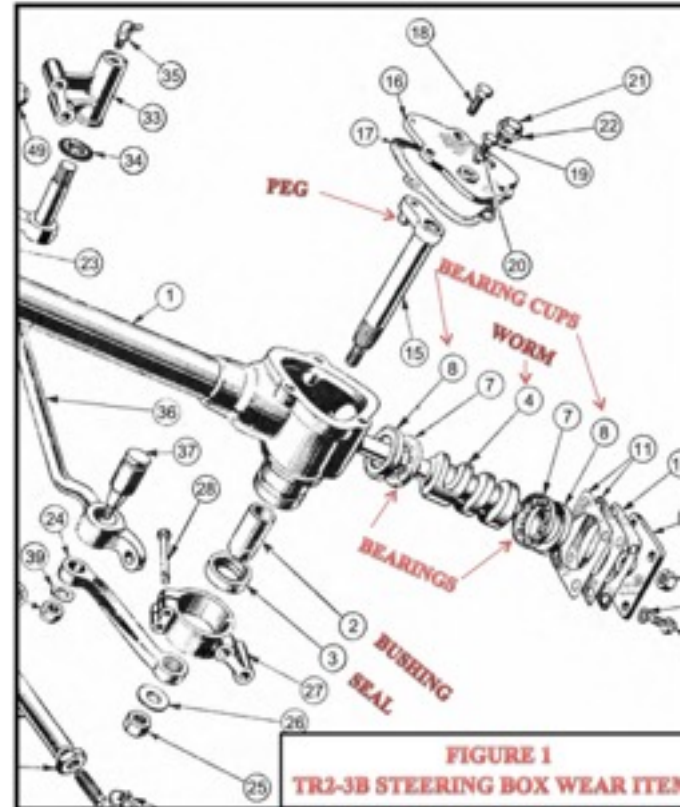
Is it a tragedy that many production sports cars are now in the hands of owners who care little about skillful driving and habitually short-shift them? Yes! I see little difference between a never-used valuable tool and a good sports car in the hands of a preservationist.

Still, better in a preservationist's hands than abandoned in a field, I suppose. Let me think about that...

TRIUMPH TR2-3B WORM AND PEG STEERING BOX REBUILDING AND MODIFICATION SUGGESTION

By Tool

Triumph TR2-3B worm (spiral cam) and (conical) peg steering boxes are rebuildable at home with the use of **basic tool, and** some homemade **or borrowed** tools. If you take your time to do a careful rebuild you will end up with steering that feels very responsive while driving without the steering slop (moving the steering wheel without much change in course, and clunky or wandering steering) caused by worn parts. However, rebuilding may not make the steering much easier while the car is not moving, as that is inherent to the box design. Figure 1 shows the parts that wear/fail in TR2-3B steering boxes and that cause those dreaded leaks and steering slop.



I will focus on two areas of the box rebuild that are most difficult and likely the reasons why many don't try this at home. These are: replacing the worm, and replacing the drop arm bushing and reaming it to proper diameter.

Unfortunately, the steering box is not easily removed on these cars since the front apron **bodywork** will have to be removed to access the box (especially important on the early one-piece steering shaft cars). The workshop manual describes the steps to remove the box from the car. Once removed, carefully disassemble the box per the manual **and** lay the parts out similarly to Figure 1. Be sure to keep bearings and cups together as a pair and labeled front/rear, and don't lose any of the shims. This helps during parts evaluation and reassembly. Pulling the box apart can sometimes be difficult if you don't have the appropriate tools. Figure 2 shows how I pulled the drop arm from the rocker shaft (which includes the peg). I made a bushing puller out of a bolt with an appropriate sized washer to pull the bushing out of the housing with a couple of pieces of flat metal or large washers as backing plates. This is in place of drifting both the bushing and seal out as the manual describes.

Once the box is fully disassembled, clean and inspect everything very carefully. The bearings are of particular importance. These are the items that will make your steering feel rough and



grinding. Unless all the balls, the bearing ball cages, and the bearing cups are in perfect condition (no pitting or rust, and the bearing ball cages must be solid), I would recommend replacing them all as a set. The worm must also be free of pitting/rust on its two bearing surfaces, and within the sinuous groove where the peg rides which must obviously be smooth and undamaged. Figure 3 shows some of the reasons why my bearings and worm had to be replaced. The worst was that the bearing balls, the ball cages, and the bearing surfaces were severely pitted from rust and running dry due to a failed oil seal. When I purchased the car I wasn't aware of the potential/

likelihood of the steering box being dry. The peg, which runs in the worm groove, is inexpensive and is easily replaced (see workshop manual).

I found the bearings and bearing cups to be difficult to source as pairs and expensive. The least expensive option I found at the time I ordered my new parts (early 2017) was at Abingdon Spares, a MG TC/TD parts house. The bearings and bearing cups used in these Triumph boxes are essentially the same parts used in MG TC steering boxes. However, I found the bearing cups from Abingdon to be a little taller, requiring extra/thicker shims at the end cover (approximately .015-.020"). I was lucky and found the additional shims I needed in an old rusty steering box I already had. Shims of various thicknesses are available from Moss.

WORM REPLACEMENT

The most likely needed, expensive, and difficult item to replace is the worm. This was a \$250 part at the time I ordered mine from Moss. I found other parts houses might sell the part but don't recommend the replacement be attempted at home. I disregarded this caution after reading the Moss installation instructions that are available online. And, I had a rusty box on which to practice. I also decided to try it myself because unrestored boxes on Ebay were more expensive than the new parts and you never know what you will receive. One thing I did that wasn't in the Moss directions was to mark the orientation of the worm on the steering shaft so that the new worm could be installed in the same orientation. This would allow the steering wheel to be at the same orientation following box rebuilding. This is not critical on the single shaft cars, but I think

it could assist those of us with later cars that have a split steering shaft. The shaft splines and the splined shaft coupler joining the two shafts would match up the same (mine had nice carefully chiseled carrot markings to match up with the slit in the coupler) once the box is rebuilt.

I held the rusty box steering shaft in a vice, near the top and just below a small ridge that stood proud of the shaft. To remove the worm, I used a propane torch (an oxygen/acetylene torch would be much preferred for more intense heat) and heated the worm as best I could all over and

particularly near the bottom of the worm where the steering shaft is splined and flared to hold the worm onto the shaft. I then quickly beat the living daylights out of the worm in a downward

direction with a large hammer and a 1/2"-thick piece of angle iron used to make a larger hammering area compared to the top of the worm. This eventually worked, but the shaft incurred some damage from the vice (however it remains usable in my opinion) in attempting to hold it stationary while hammering on the worm. Club member Doug G. helped me by removing the worm from my car's steering shaft. He accomplished this in much the same way I had, but used an air hammer with pointed chisel on the top of the worm, which he reported worked very well. The



only other method of worm removal I can envision is by using a threaded or hydraulic pulling/pressing setup acting against a tapered collet (contracts around a round shaft tighter with pressure in one direction) setup from which to pull/press the worm from the shaft. These are items machine shops might have.

Once the old worm was off the shaft, and after cleaning the splines on the shaft, the new worm slides on very easily. I installed the new worm onto the shaft in the correct orientation I had marked to match the orientation of the old worm (see **upper right** picture in Figure 4). **Now the worm can be secured to the steering shaft by re-flaring the end of the shaft into the end of the worm.** To re-flare the shaft I first positioned the shaft, worm end up, on top of an anvil and clamped it to my anvil stand. Figure 4 shows my setup with the anvil giving a solid surface to rest the shaft upon while hammering. Figure 4 (**bottom right**) also shows the tool I used to accomplish the flaring along with the final flaring result (**bottom left**). The flaring tool I used is the pressure screw and centering point that came as part of a puller kit. The centering point has a 45-degree angle tip that exactly mimicked the angle of the original shaft flare prior to pulling off the old worm. In the end, it worked very well. I again heated the end of the shaft just enough to allow it to be flared with one good deliberate hit of a ball peen hammer on the pressure screw and centering point (don't use overkill here). This worked very nicely. Remember not to heat the worm any more than necessary for fear of affecting its tempered bearing surface.

BUSHING REAMING

The second difficult and necessary operation is reaming of the rocker arm bushing. When I received my replacement bushing I expected it to fit the shaft. Wrong, it needs to be reamed once installed to exactly fit your clean and perfectly smooth rocker arm shaft. Prior to ordering parts, you should evaluate your rocker arm shaft to make sure it is free of rust and pits (replacement may be necessary especially if your box was run dry for any period of time). Clean it with fine wet/dry sandpaper, **starting** at 400 grit and progressively working up to as fine as you want to go. I use a hard rubber sanding block to make sure you are only working on the high points of the shaft. Also, don't work on one side only. The shaft needs to remain cylindrical. The **effort** you make your reusable rocker shaft now will pay in the long run by retaining your new tight steering over a longer period of time. To exactly re-size the inner diameter of your new bushing, it needs to be installed and reamed to size. **To install the bushing, I used a bushing installation tool set, which contains various sized pieces that partially fit inside the bushing and have a shoulder to rest on the top edge of the bushing. This piece is then attached to a driver handle and the bushing can then be driven into to the housing to the appropriate depth. I tried to shoot for installing the bushing to what I estimated would be the center of the installed rocker arm shaft and not all the way up to the shoulder within the steering box shown in Figure 5 (shown as the area to be drilled out as described in the modifications section below). Then, you can use an adjustable reamer (Figure 5, available for about \$40 from MSC Industrial Direct).** You do this by taking very light cuts from the inside of your bushing while using oil to lubricate the reamer. Do this slowly and methodically by hand (ratchet or wrench), not with a drill, and advance the adjustment (**i.e.**, enlarge the diameter of the reamer) a ¼ turn or less each time you make a larger cut, **much as you would in tapping a new hole.** Attempt to fit the rocker arm from

time to time to see if you have reamed enough. You will know you are done when your oiled rocker shaft fits snugly in the bushing and moves relatively freely, but without play (wobble). If you go too far, you must order a new bushing and start over.

POSSIBLE STEERING BOX MODIFICATION

There is one modification to mention that I have read about doing to these steering boxes that makes sense to me, but that I have not performed. There is an area above the seal and bushing, which forms a shoulder/stop within the cast iron bore so that the rocker arm could not be pressed through the housing. This area of cast iron has a larger inner diameter than the inner bushing diameter and therefore does not provide the rocker arm any lateral support. As Figure 5 shows, there is a resulting considerable distance between the top of the seal and the oil reservoir within the housing where the worm resides. The bushing occupies only a little more than half of this total distance and provides the only support for the rocker arm shaft. It was speculated that one could drill/machine out most all of this shoulder/stop at the same diameter as the area where the bushing is normally installed, then a second bushing could also be installed (one bushing may need trimmed to fit lengthwise). The end result would be that a longer length of the rocker arm shaft would be supported by bushing material. It was speculated that this modification would extend the length of time between bushing renewal, due to more bushing area in contact with the rocker shaft, and maybe even provide more accurate/responsive steering. It makes sense to me and I may try it the next time I rebuild a box and let you know how it works.

Box re-assembly is per the workshop manual. One thing to emphasize here is to make sure you end up with ZERO steering shaft end float and even a slight bearing load. This is accomplished by stacking of the various shim thicknesses under the box cover plate. I measured each shim with a micrometer to see what was there originally and ended up using a couple more to accommodate the Abingdon Spares taller bearing cups. Yes, this is yet another one of those assemble, measure, disassemble, and reassemble tasks to get it done right. I would not recommend using any sealers between shims, as this could ultimately affect end float with time.

I am happy to report that my 59 TR3A steers very accurately and does not wander at 70 mph. It is a joy to drive with spirit into corners as I now have confidence in the ability to steer it where I want the car to go. It is still a bit of a chore to turn the wheels when the car is not moving, but that is normal for this era of car and this steering box design.

You might be wondering about how much time this steering box rebuild process could take. I don't have an accurate number of hours to give, mostly because my car was disassembled for a full restoration when I rebuilt my steering box. It would also greatly depend on your familiarity with apron and steering column removal on these cars. If I had to guess at the amount of time it would take me (being reasonably familiar with these cars and after already rebuilding one steering box), start to finish from an assembled car working by myself, I would budget at least 3 full days. Bear in mind this is outside of sourcing the parts and tools, and not encountering other issues inside or around your steering box that may be found and need addressing.

While the apron is off your car you can more easily access many front suspension and steering parts, the radiator, and some hard to get to electrical wiring. I would recommend you take the time to address any observed maintenance issues you find while they are accessible.

Editor's Notes: This month has sure been a learning experience. The PC tower is in the shop. Had to do all the above on the iPad. Felt like an old recurring night mare, "Cramming for a final exam and completely lost."

Goals for next month: Page breaks, pictures, and less frustration.

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Upcoming Events

April 12. Club meeting

April 14. Devil's Den drive and picnic

April 28. McLeod's

May. 12. Jasper tour with lunch at Low Gap Café

June. TBD. GOBMC Carthage MO British Car & Motorcycle Blowout


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