Issue 152 April 2017

HIGHLAND MOTORING

The Newsletter of the Highland MGOC

www.mghighland.co.uk

Contents:

Chairman: Michael Fraser
mwfraser@tesco.net
01463 790395

Secretary: Peter Poole
50 Leachkin Avenue, Inverness, IV3 8LH
peter.poole258@btinternet.com
01463 234203

Treasurer: Stuart Brock
Kirkstyle, Latheron, KW5 6DG
badger188@btinternet.com
01593 741725

Activities Coordinator & Newsletter Editor: Richard Jenner
r.h.jenner@btinternet.com
01463 811080

Web Master: Jim Mould
james.mould@btinternet.com

EDITORIAL

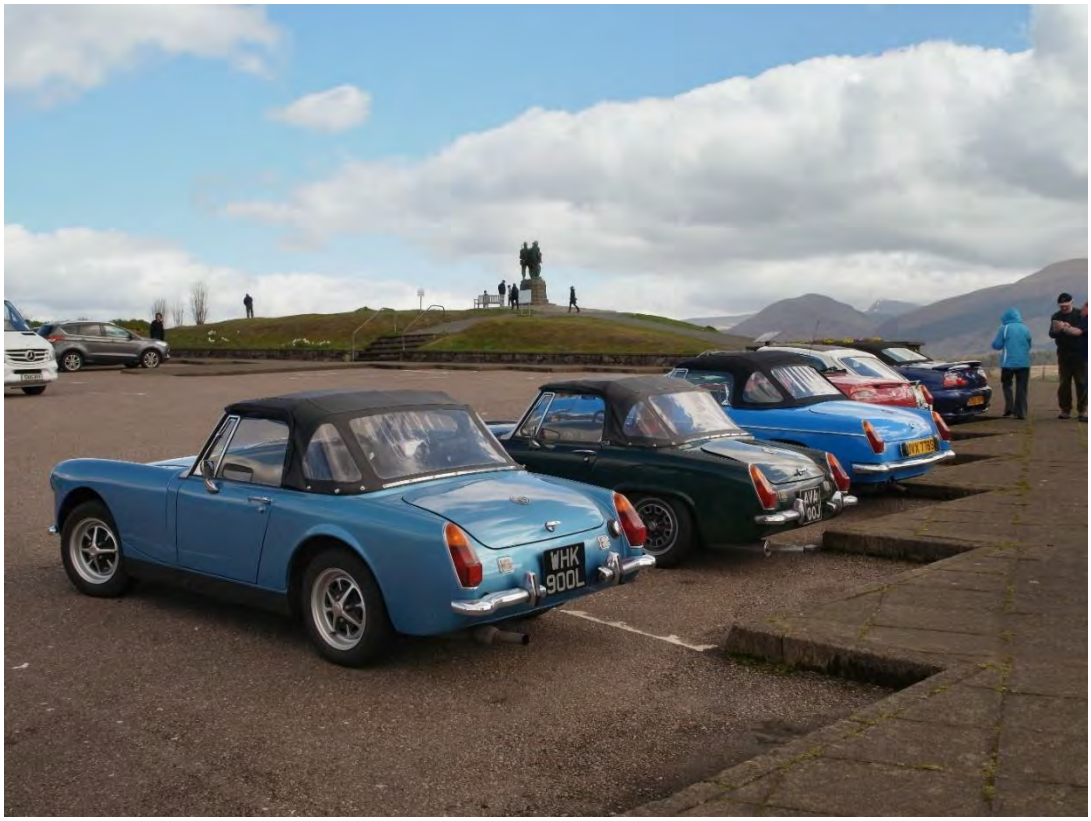
With hindsight, we were incredibly lucky with the weather for both the Spring Saunter and the Drive it Day – one day later and it was snowing with a biting wind and temperatures near to freezing. There is a report on both events in this newsletter together with details for our May drive.

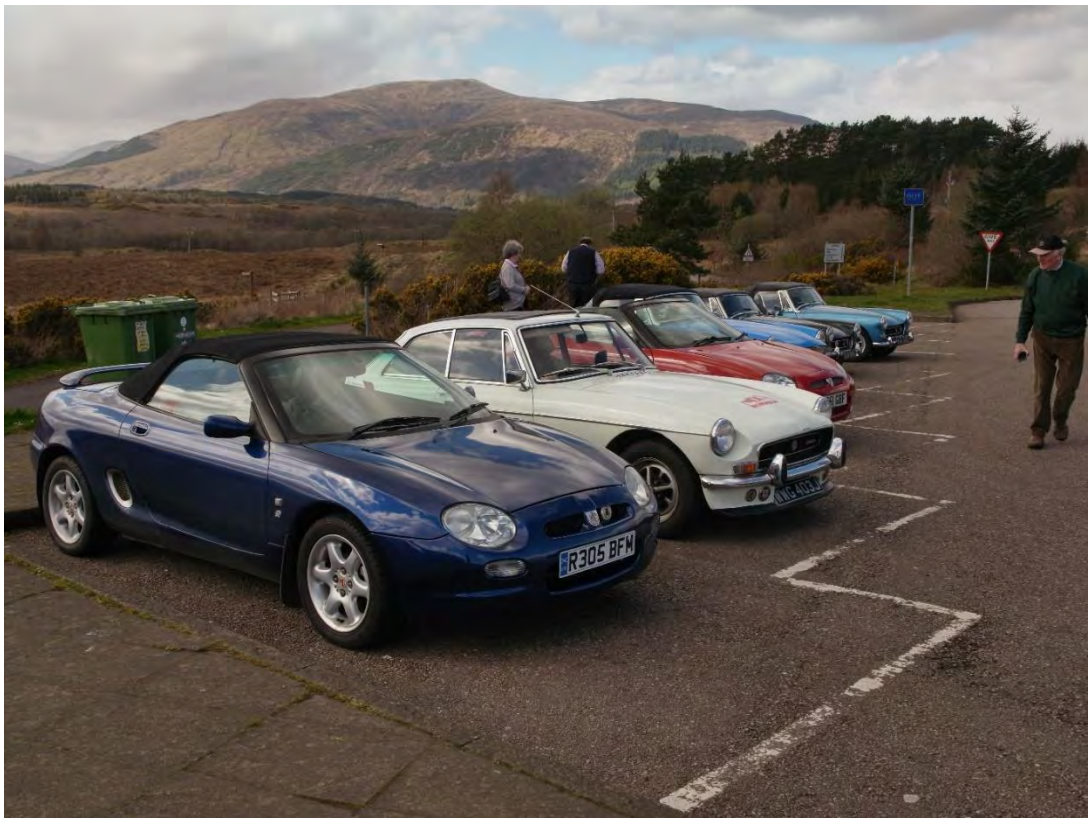
Richard Jenner

SPRING SAUNTER

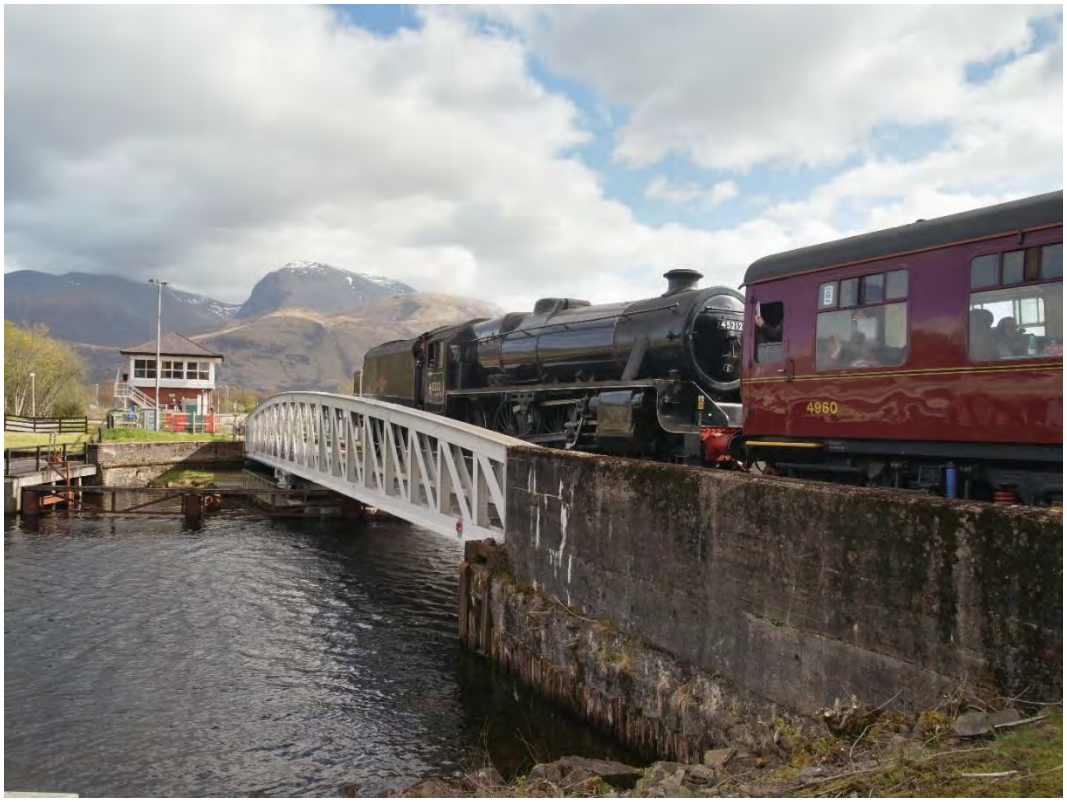
Six MGs and owners met at Spean Bridge for lunch on the Friday. Four cars – Jean & Peter (B), Margret & Stuart (Midget), Margret & Willie (F) and Richard (F) had driven down together from Inverness via the east bank of Loch Ness while Morag & Ronnie (Midget) had driven from Craigellachie and John (BGT Turbo) had driven-up from Onich. The weather gradually improved from showery to dry with sunny intervals as we headed-up after lunch to the

Commando Memorial.

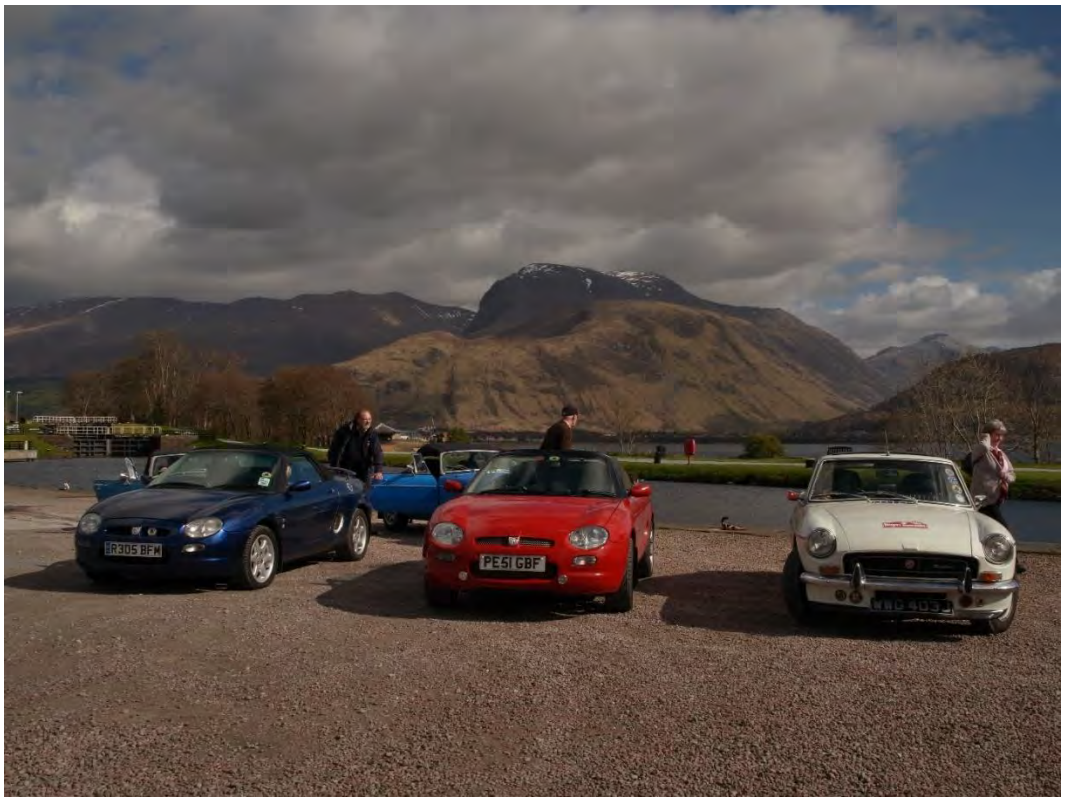




John then led the group to Banavie via Gairlochy where we were just in time to see the Jacobite Express cross the canal bridge.

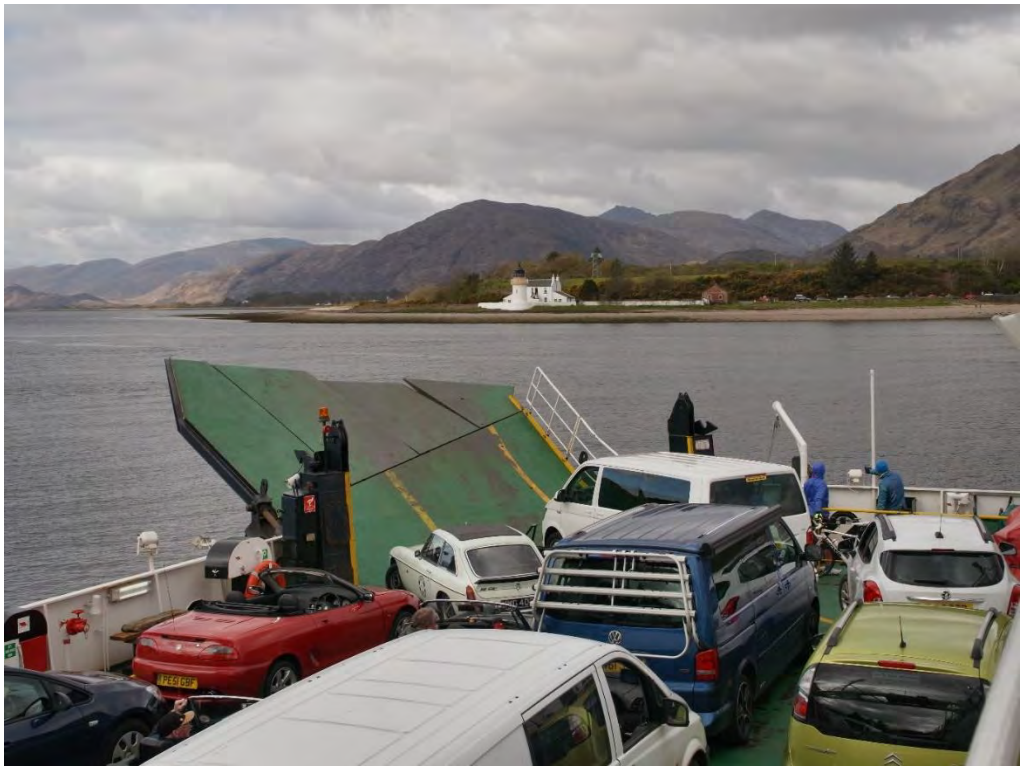


Then it was on to the entrance of the Caledonian Canal at Corpach with most of the Nevis Range clear of cloud as the backdrop.

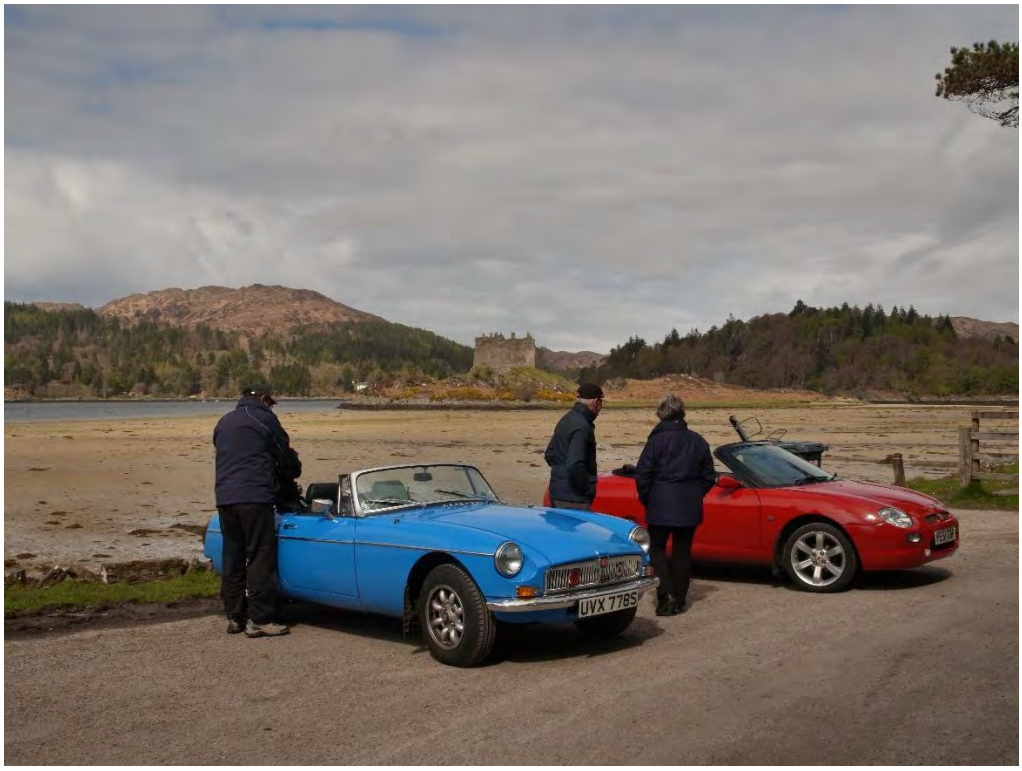


We then proceeded to our hotel (except John who drove home) for a convivial evening.

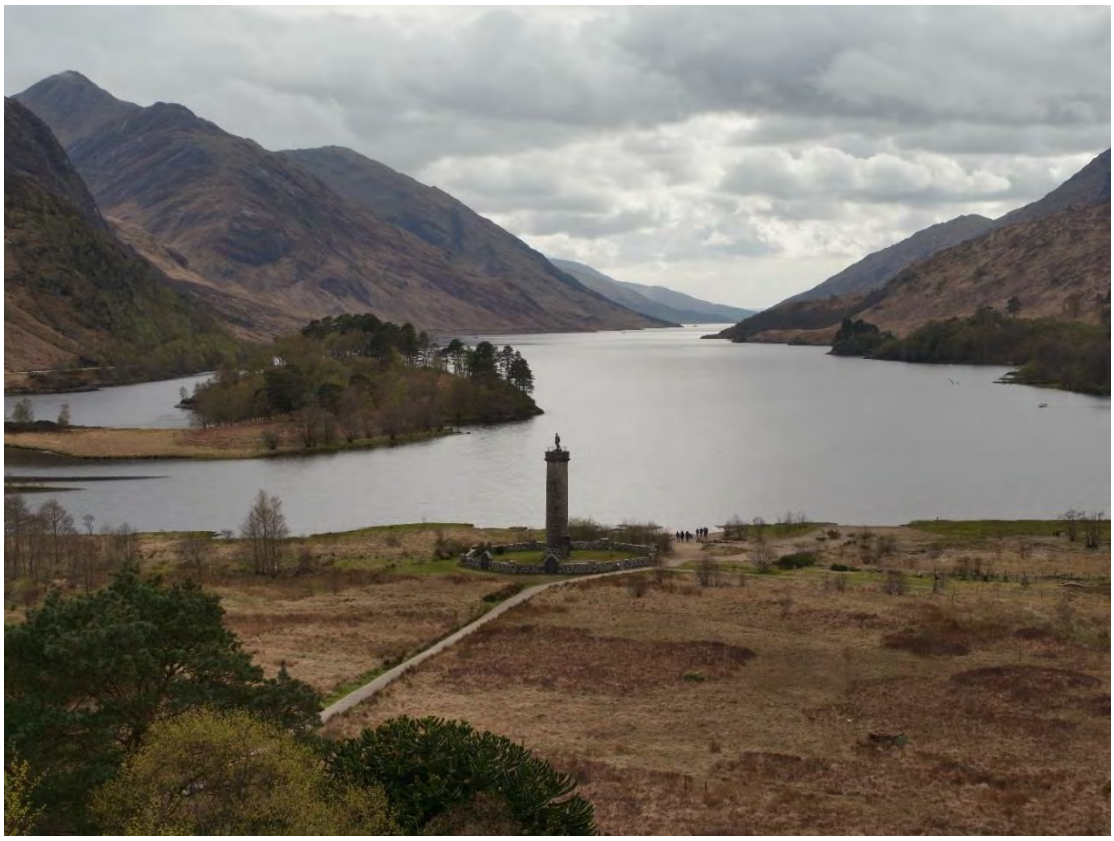
Saturday saw all the ‘hotel’ cars ready to go by 0930 and with all the roofs down on a fairly still and sunny day even if there was a nip in the air. We met Mary & John at the Corpach Ferry and were soon aboard.



John led again along a very scenic meandering route via a number of stops to our lunch at the Glenuig Inn.



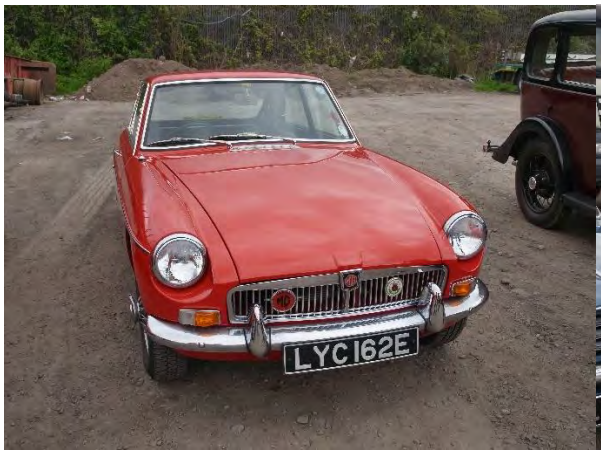
After lunch a couple of cars headed back to Fort William while the rest continued to Mallaig. After Mallaig it was back to the hotel for all with an optional stop at Glenfinnan.

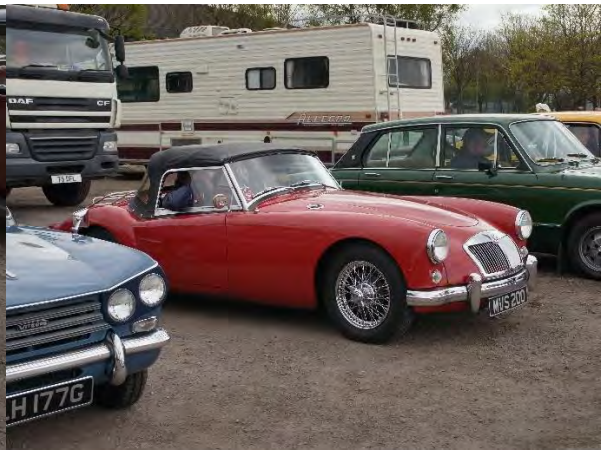


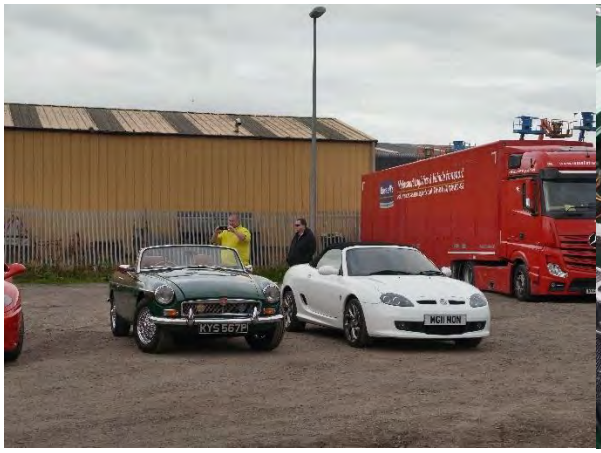
We all had dinner together. Sunday morning saw the group split-up with Richard heading off in good time to connect with the Drive it Day (see below). It would seem that the Spring Saunter is firmly re-established on the calendar.

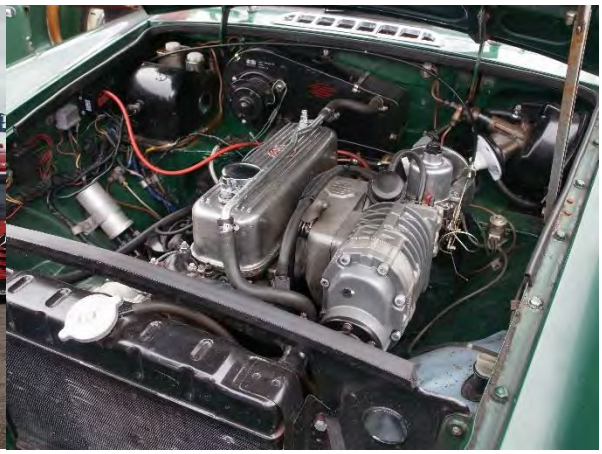
DRIVE IT DAY

It was chilly but dry for the Drive it Day on 23 April organized by the Highland Classic Motor Club. Starting at the V8 Café, the route went via the Old North Inn then Beauly, Redcastle, Charleston, Drumsmittal, Munlochy, Rosemarkie and Eathie finishing in Cromarty. There was the usual good turn-out of a wide variety of cars and the Highland MGOC were well represented by Chairman Michael with his BGT, Malcolm with the A, Andy with the supercharged B, Hugh & Katherine with the LE TF and Richard with a now quite dirty F.









EVENTS NEWS

Our next run will be on Sunday, 21 May. The outline plan is to visit the newly re-opened Russian Arctic Convoy Museum at Aultbea then have lunch at the Convoy Tavern. There will be a rendezvous in the square at Strathpeffer from 0930 for a 1000 departure or rendezvous at the museum between 1100 & 1130. If you want a place, please contact me either by email r.h.jenner@btinternet.com or by phone 01463 811080 so that I can finalize arrangements.

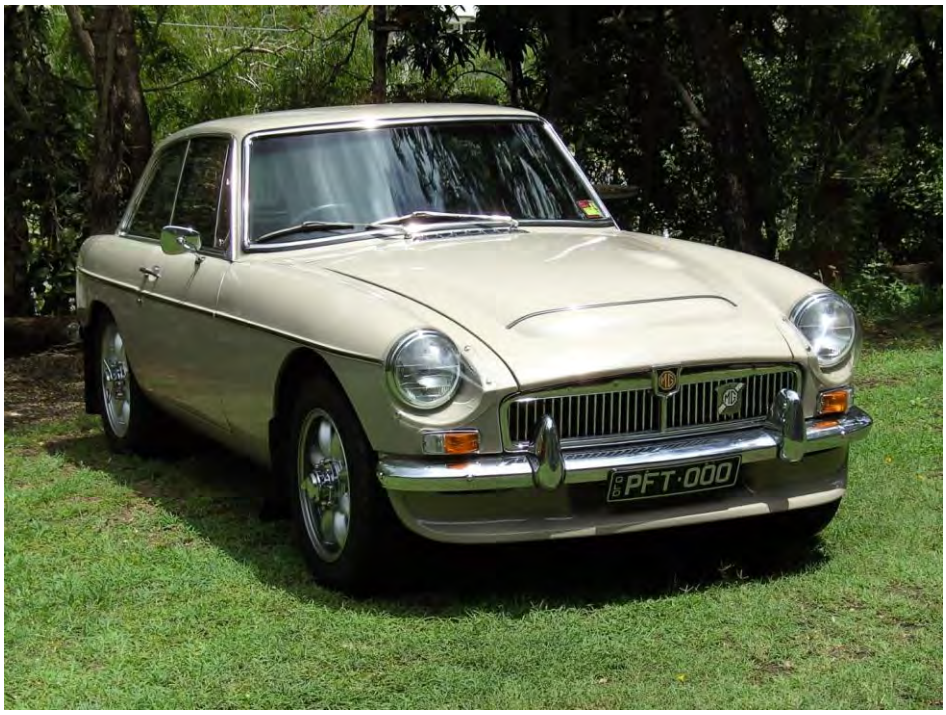
Richard

Keep checking our website for the updated events programme.
http://www.mghighland.co.uk/

Tim Moore has kindly provided the following very interesting article on the MGC GT written by Australian owner Bruce Ibbotson. We've permission to run it and as it stretches to 15 pages, I've split it up in to sections – here is part 2, again with the short introduction by Ian Hobbs, who is producing a book on the Australian owned MGCs.

THE IBBOTSON SAGA – PART 2 – ENGINE

Queensland MG enthusiast, Bruce Ibbotson, purchased an MGC GT in 1968 and 49 years later still owns that very same car. As time has passed he has updated and modified his MGC carrying out most of the work himself. As far as I'm aware no other person still owns an MGC today that they purchased new. This is his extraordinary story – Latest Revision: 20th December 2016.



To maintain your interest here are some technical details of the C series engines compared with the B series as fitted to the *MGC* and *MGB.* Both engines used the same cam profiles and shared the same cam lift and rocker ratio, giving equal valve lift; there are small variations depending on which Workshop or Tuning manual you read. Nothing is all that accurate with BLMC publications. (*Bloody Lousy Motor Corporation?*). The combustion chambers were by Harry Weslake and very similar for all BMC engines of the era.
Cylinder capacity of the *'C'* is 485 CC's and the *'B'* 450 CC's, same stroke different bore. The *'C'* has valve head diameters about 15% bigger than the *'B'* but the cylinder capacity is only 8% bigger. The *'C'* is fed [starved for # 1 & # 6 cylinders] by two 1.75 inch SU's and the *'B'* by two 1.5 inch units.

From the above it would be reasonable to expect the 'C' to perform similarly with the *'B'* and with the bigger valves to breathe better and be more effective than the *'B'.* On a ratio of capacity between the engines the *'C'* should have produced 152 BHP and 178 Lbs/Ft not the claimed 145 & 174 figures listed in the sales and factory data. Mythical figures?

In fact the *'C'* actually produced 123.7 BHP (when installed in the car, with the normal exhaust system fitted) and at lower revs 5250 vs 5400 and peak torque was 300 to 400 RPM higher (depends on which manual you read) all indicate that manifolding was hopeless and poorly designed, if it was actually designed at all, together with the massive truck flywheel and a fan that used 12 BHP at 5000 RPM (data from Kenlowe Electric fans in UK) made the *'C'* feel so different to the *'B'.* As will be described a correctly designed inlet and exhaust system along with a 25% reduction of flywheel mass plus replacing the fan with a thermostatic/clutch unit transformed the *'C'* into the big *'B'* that it could have been from the start. It sounds and feels totally different as well and it really goes now.

The introduction described taking delivery of a new and largely unknown car and finding out how different it was to the MK1 B in characteristics, (a rather unsettling experience). Now I will outline work done on the *"huge lump of el-cheapo cast iron"*, which BMC considered a new engine (circa 1930's based on a 1926/27 Chevrolet 6 say some historians?). Morris Engines Branch had a very poor reputation of making high performance 6 cylinder engines, from the very early days of the company. The modified later 'C' series engine [MGC & Austin 3 Litre] tuned by Abingdon and Downton Engineering was the exception.

On one of our interstate trips (MGCC Queensland Club members) we went to Silverdale Hill Climb, as spectators, while there I asked Paul England (a specialist dynamic balancing engineer from Victoria) to take the *'C'* for a drive and see what was wrong with it. Paul came back and said the engine won't rev simply because the flywheel is excessively heavy. This explained the strange overdrive action.

On our return to Brisbane a decision was made to remove the engine (16,000 miles) pull it down and have a critical look within. We were still waiting for the workshop manual.
The first thing we noticed was how clean pistons 1 & 6 looked compared to the others; it seemed little mixture got to cylinders 1 & 6. Going on later experience they certainly did not do 33.3% of the work. The flywheel was indeed very heavy, OK for a heavy slow revving Light Truck. With the redesign of the old 4 bearing C series engine it seems Morris Engines completely lost the plot. Stuck in the 1920's/1940's mind set. It was "Good Enough for Grand-Pa" line of thinking. The earlier 'C' Series engine head was about ¾" taller and had much better inlet port design so may have produced the claimed 145 BHP in the Healey 3000. I doubt it from what I have learnt, just Sales Department propaganda.

The reason for making the new engine was to power the up-coming Austin 3 litre, a giant version of the east-west Austin 1800 with a north-south engine driving the rear wheels. This required a smooth engine for the new up market saloon car. Abingdon got stuck with this exceedingly dud and totally under developed archaic poorly designed engine.

NOTE: The MGB & MGC share cam timing, cam lift, rocker ratio and therefore valve lift. The *'C'* has 9:1 compression ratio, the *'B'* 8.8:1, which would indicate both engines should feel similar but not so; the *'C'* feels and sounds entirely different from the *'B'*.

It was considered that about 25% of the flywheel mass could be safely removed (cast iron, not steel). The engine balance was poor, (this was normal for BMC engines of the time). This might be the reason for the truck flywheel. The press people commented on how smooth

the new Morris 'C' series engine was compared to the 5 bearing 'B' series Austin engine and the superseded 'C' series engine as fitted to the Healey 3000 well known for being rough and crude.

So 25% of the flywheel mass was removed and the motor fully balanced. We discovered that the piston crowns were .020 inch below the block face and as the head was being worked on by me we thought it worthwhile to lower the block face .018 inch to try and improve combustion. The *"warranty supplied",* correctly machined valve guides were fitted and the motor reassembled. I cleaned up the head to be similar to the head on my 'B'.

NOTE: The originally fitted valve guides had the groove to retain the seals in the wrong place so that the seals came off and acted like oil pumps for the inlet valves. No wonder the press cars all had spark plug fouling. These seals still come off. Later I will detail a good fix that cures this oily plug problem. This is why my car had oily fouled plugs after 17 miles.

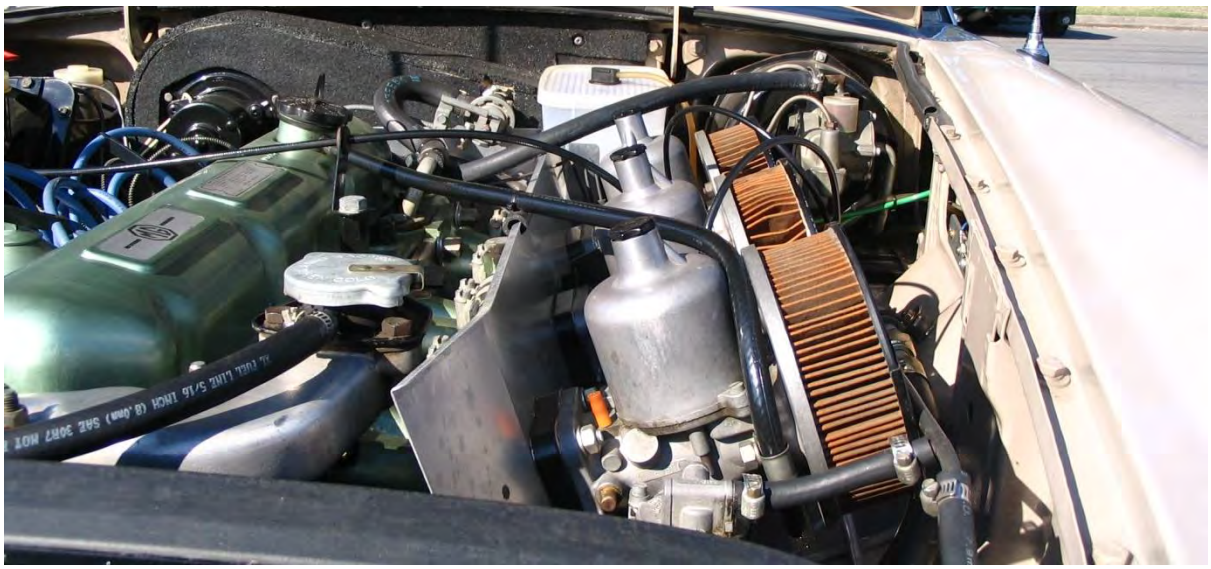
A noticeable improvement in driveability resulted, the engine pulled better and changed revs more like a 'B'; and the overdrive now operated as it should have from the start. Economy improved and the flexibility remained unchanged, all up a big improvement but well below what one expects from a 3 Litre engine. Now you can buy an Aluminium flywheel for a *"C"* from tuning specialists in the UK. *"C's"* in the UK now put out up to 238 BHP.

About this time I read an article about Downton Engineering Works who had a long history of working with BMC and particularly MG, in fact all the heads from Special Tuning were done by Downton. This company were also involved with the development of the MGC competition engines as fitted to the Le Mans and Sebring cars, the MGC GTS.

I don't know but possibly Downton developed their modifications for the proposed Healey 3,000 MK 4, as they had all the performance data long before the car was ready for production and had developed the exhaust system and inlet manifolds. The Healey would have needed something to separate it from the *'C'* apart from a Grill change. It all became history when Donald Healey refused to sign off on the new Healey. The tuning kits were sold directly by Downton shortly after the car was released, towards the end of production a few Stage 2 Kits were fitted to cars from University Motors. Downton had developed two tuning kits for the production *MGC* long before University Motors came into the picture. Kit 43 which retained the existing inlet manifold (reworked on exchange) and an exchange head and completely new extractor dual exhaust system & Kit 45 was the same except that the *"Metters Gas Stove"* type inlet manifold is scrapped and replaced with 3 fabricated tabular steel manifolds plus the very necessary third SU carburettor, the additional front SU having a short neck to clear the bonnet. This I decided was the only way to go, as the Downton *Stage 3* kit produced 174.6 net BHP @ 5500 RPM at the flywheel, (the dual exhaust system contributes at least 20 BHP as part of Kit 45 according to a letter from Downton), I have all their air-letters. The twin exhaust systems must NOT be connected together.

Being my only car, it was impossible to send the head to the UK on exchange, I asked Downton if they would supply Kit 45 without the head. Understandably they were not all that interested but also appreciated my difficulty and agreed to ship the kit to me, but not to guarantee the results. The eagerly awaited kit duly arrived and instant activity occurred

during the next weekend. The difference was quite surprising (even with my enthusiastic but amateur headwork) now the engine started instantly and pulled when cold and had a lot more low end torque, it revved easily and developed high end power running to 6000 without fuss. Downton advised that they regularly ran these engines to 6000 RPM. To add confusion the Workshop manual lists valve crash as 5500 RPM, maybe this is why they quote max, power at 5250.



NOTE: Apparently early factory engines were fitted with weak valve springs. Nothing would surprise anybody about BMC in '67/'68. This information was supplied by Downton.

I was so surprised with this change, all the well noted problems had disappeared, later I asked Downton if they could supply a head. They agreed to get an Austin head and re-machine it. (MG & Austin 3 litre heads are identical). At the next sprint meeting at Lakeside the *'C'* did a 16.5 seconds standing ¼ mile, on worn out very hard Australian made Olympic GT tyres which were awful, with lots of wheel spin, but 16.5 was better than 17.9 previously. I never got the opportunity to time the car with the Downton head fitted, it would have been a lot quicker with the much greater low down torque, even better on decent tyres.

This head was fitted as soon as it arrived and I immediately noticed a big lift in low end torque, particularly over the rev range where this engine runs as a day to day car, my head modification was similar in the higher ranges, above 3500 rpm, but sadly lacking down low by comparison. The most noticeable difference was fuel economy 28 MPG on a fast trip, 25 MPG overall town and country use, a lot better than the original 22.5 and 17.3 figures with the original car. On our Wednesday MG car club runs we often average up to 30 MPG, these days running either SHELL or BP 98 RON fuel and Michelin 185/65R15 ENERGY XM1+ tyres on 5.5 inch Minator alloy wheels.

The propeller, sorry fan, was the next item for attention. All the press had commented on the very noisy fan, and they were correct. A change back from 4th to 2nd in traffic produced a roaring noise that drowned out all other engine noise, again an article in a UK magazine suggested a Kenlowe Electric thermostatic fan could reduce the noise and let the wasted power drive the wheels. Kenlowe advised that the fan used 12 BHP @ 5000 RPM, it seemed

to be correct with the very short fan belt and alternator bearing life I was getting, 18 months with Dunlop belts. A lot of engine power went for no useful purpose. I fitted a Kenlowe designed for the *MGC* in the UK, great no noise and good until a heavy traffic heat soak situation then the fan could not cope with the Aussie summer, the other problem is the tiny little alternator of 34 amps capacity (less 10% in our climate and some alternators [16AC] had a 28 Amp Stator, thanks to Lucas quality control, what quality control ?) but only with the car running at 3000 RPM (which is 81 MPH in O/D, not very practical), the alternator has a large diameter pulley, surprise, surprise, so at legal speeds an electric fan would only work with an appropriate size and speed alternator and pulley. Scrap the electric fan and ponder for a few more years.

The solution for the power wasting fan is simple, fit a thermostatic-clutch unit as used by BMWs for years. This requires very little machining and fits perfectly in the normal fan shroud and unless pointed out most observers don't even notice the change. The advantages are many, dead quiet, plenty of air in traffic and low speed use, stable idle and no power wasted at cruising speeds, this change will be detailed later.

Since this information has been dispersed far and wide Ian Hobbs from the Adelaide MGC Register, (MGCC SA) has checked around for a cheaper clutch fan and discovered that the hub from a "VL" Commodore with a Nissan fan fits very well with minimum modification to the *MGC* water pump hub. Ian got the parts from the wreckers for about $50.

Data from Downton said that the factory figures for the MGC engine gave 123.7 BHP at the flywheel with all engine ancillaries fitted but with a much less restricted open workshop exhaust system. Downtown's own figures were obtained with all ancillaries fitted, and their exhaust system. Motoring writers who tested a *'C'* with Kit 43 fitted pondered how a *'C'* with 149 net BHP @ 5500 RPM could accelerate and pull so well when the factory car supposedly produced 145 net BHP @ 5250 RPM. Their conclusion was that the Factory figures were probably optimistic, (obviously they were extremely optimistic), which explains the 17.9 second ¼ mile.

We now realize why the *'C'* was such a *LEMON,* it managed less than 124 BHP in reality, no wonder the "Press" could not explain why the *Big Healey* felt so much stronger; all sorts of ridiculous reasons were offered including additional friction of 7 bearings versus 4 and excessive losses from the new crank. No doubt the new engine had greater losses than the early unit but not 20 BHP, I believe the Morris Engines people just completely stuffed up the manifolding, probably never understood the theory of it anyway, still living in the 30's. Several books have mentioned that most of the problems with the *'C'* are manifolding and the flywheel mass. The standard *'C'* inlet manifold has 2 capillary drain tubes fitted. Just in front of each SU with a dimple in the manifold to collect the pooled fuel. What a 'Bloody' great design that is, I have never seen drain tubes on an inlet manifold, before or since.

Kit 43 gave a torque figure of 170.5 Lbs Ft @ 3000, less than the factory sales figures but more than the actual torque of the production car. A comparison of data from the 'B' & 'C' is interesting; the MK 1 B has a BMEP (Brake Mean Effective Pressure) of 152 @ 3,100 RPM. The Kit 43 *'C'* has 145 @ 3000, one can only guess what the standard car figure was, probably much less than 140 @ 3400/3500 RPM. A MK 1 B gave 52.84 BHP/litre (from MGB

special tuning manual); the standard *'C'* 42.5 BHP/litre, Kit 43 gave 51 BHP/litre and Kit 45 gave 60 BHP/litre with a BMEP of 161 @ 3000 RPM, Power of 174.6 BHP @ 5500 RPM and torque of 190 Lbs Ft @ 3000 RPM. Kit 45 gives an increase of 41% over the standard car; this really improves the response, economy and efficiency of the engine. Kit 45 in 1970/72 cost well more than 20% of the basic price of the car in 1967 without shipping charges.

The MGC–GTS alloy headed engines with three dual throat Webbers, big valves and cam produced 200/210 BHP @ 6000 RPM so the engine was certainly capable of very impressive performance with long life and reliability in long distance races. MG Motorsport's Doug Smith, can now supply Fast Road *'C'* engines with triple Webers with 238 BHP.

Downton provided either 9.5:1 or 9.3:1 C.R. heads; I ordered mine at the lower ratio and with my block work ended up with 9.46:1. Our pump fuel could not cope with this compression, (it was not even OK at 8.8:1 C.R. on my MGB). BP Nundah, Queensland had a BP100 pump so all was well for many years; when this closed down the car ran on Low Lead 100/130 avgas (equivalent to 104 RON when used in a car) which was much better, except that the car was restricted to a maximum of 150 miles from home (300 miles per tank) plus the problems of 44 Gallon drums. Knowing that fuel quality would only get worse (98, then 97, then 96 RON) I reduced the C.R. to 8.6:1 to run on the then current pump fuel. No pre-ignition at all with correctly set timing, at high temperatures. If I had of known about retiming the distributor for modern fuels, as we have it today, I could have left the compression unchanged. My CR today is 9.85:1 with County +.020" pistons. I run BP Ultimate RON 98 fuel, with Shell Optimax 98 as an alternative.

In 1986, it was time for a full pull-down and look see. Maximum bore wear ¾ inch down the bores was less than .001 inch not bad for 53,500 miles fairly hard use; the bearings were fine and the little end bushes well within factory spec., so this is a good long life engine (now 141,271 miles on 27th August 2016) The pistons were not well due to carbon build up behind the rings, which had caused the ring lands to wear, caused by the bad design of valve guide seals and the earlier problem of incorrectly machined valve guides (it was really hard to retain one's sanity with a BMC 67/68 car).

NOTE: My *'C'* engine has dry fit cylinder liners [some engines have them and some do not] despite what the *"experts"* (drips under pressure) say, this explains the very low bore wear. Knowing how marginal a *'B'* was (8.8:1) on pump fuel, we decided to reduce the C.R. to 8.6:1 this was achieved by machining the new standard piston tops down .060 inch over a diameter equal to the active combustion area, then balancing prior to re-assembly. The bores were very lightly flex-honed with a 280 grit hone, to allow good bedding in for the new rings; oil consumption was about 1.5 litres/2000 miles after assembly. The car today has wonderful low down torque and with my Ford 3.64:1 diff [Hoyle Engineering IRS] and 185/65R15 tyres gives astonishing acceleration in OD for a 1968 car.

I was surprised how much happier the car was in normal traffic use and day to day driving, and while acceleration was down slightly the car was now used everywhere not restricted to out of town use. The lesson here is that most cars spend 75% or more of their use mixed in with general traffic and it is here where opinion is formed about what a car is like to live with 'day to day' and do we keep it or sell it. As the *'C'* arrived we all knew that it should be

much better and probably could be made into a good GT & Sports Car, but many times I wondered if the pain would be rewarded with effort, time and money. Today I am pleased that I did not sell it and now it's a good retirement hobby, fully insulated and air conditioned with tinted screen and windows, a great GT car. The Mazda MX5 NB series seats are superb.

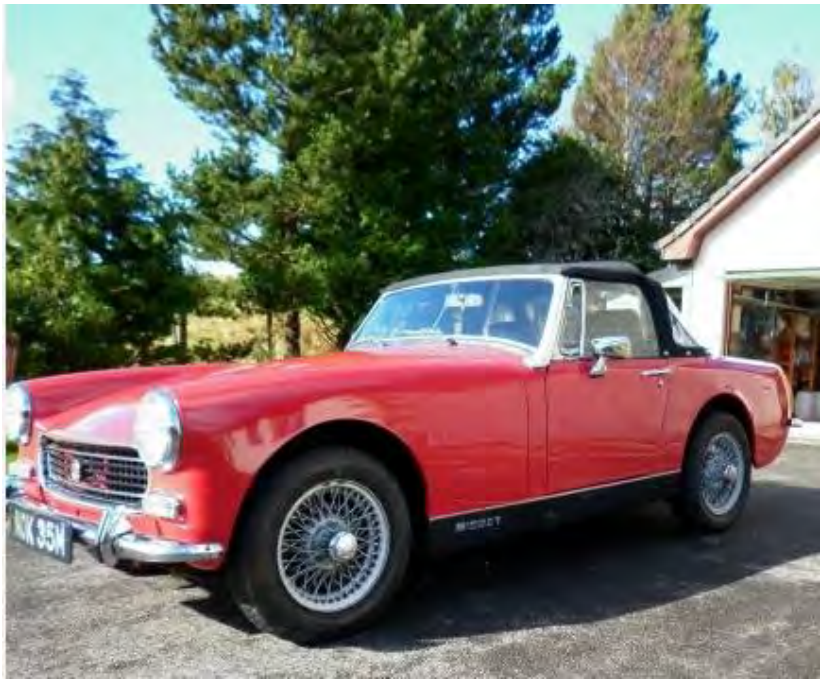
I ran the car on "V Power" as the head has hardened exhaust valve seats. Valve clearances have only changed .001 to .002 of an inch over last 40,000 odd miles when the major pull-down took place. When I removed the head, in 2007, the exhaust seats were done to run ULP and the distributor was retimed to correct the timing and be correct for modern fuels, what a difference to the low and mid-range torque with the distributor correctly timed. All 60's cars need their distributors retimed for current fuels, greater mid- range torque and better economy.

I have a question for our technical readers. *Question:* Why didn't he change the cam? *Answer:* The cam is the same as the standard 'B', which as outlined earlier is very suitable for everyday use, of greater importance is the gearing of the *'C'* which at 100 kph [61 mph] runs at 2350 RPM in O/D. The car would fly with a wild cam but it would always run below the cam, idle like a tractor and be an absolute pain in traffic and day to day use, exactly the opposite to what we have achieved. Downton did NOT recommend changing the cam profile for their Tuning kits.

To be concluded next month with a look at suspension & steering……..

FOR SALE

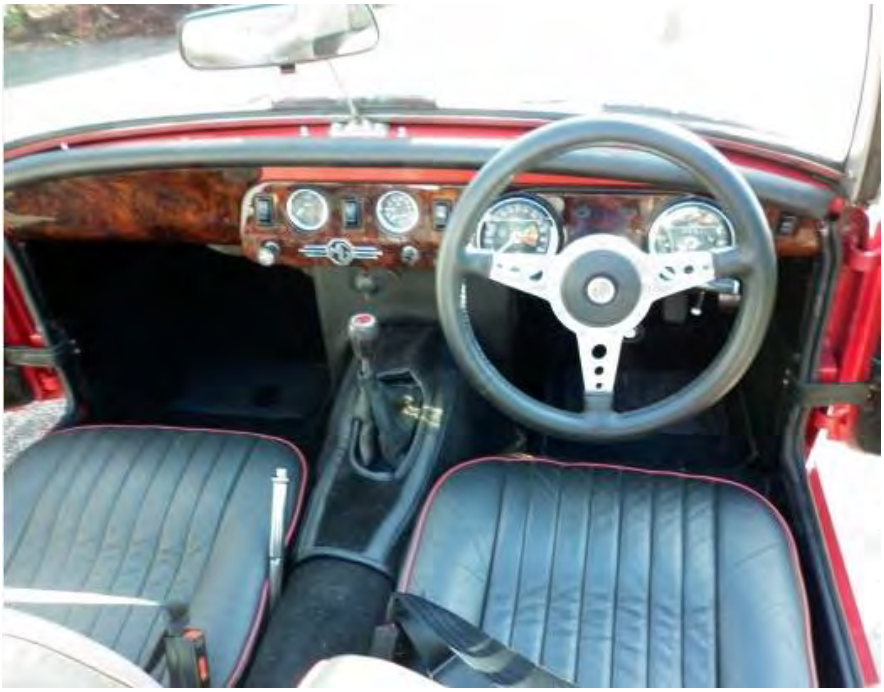
MG Midget Mk.III; round wheel arch; 1973; flame red; wire wheels.



Owned by present owner for 12 years. Heritage Certificate. Extensively upgraded: 5 speed

gearbox, brakes plus brake servo, adjustable shock absorbers, new wishbones, springs and uprights, poly bushes all round. Engine re-built. New steering rack. New radiator. 123 electronic distributor. Stainless steel exhaust. New solid state fuel pump and fuel line.

Re-trimmed with leather seats. Wood dash. Moto-lita steering wheel. New windscreen. New mohair hood. Body fully restored by Chic Doig of Fife. Tax exempt. Dry weather use only. Garage stored.



£9,000 Contact: 01520 722 626 for more information

Just room for a BMW joke….

A lady walks into a BMW dealership. She browses around, spots the top-of-the-line Beemer and walks over to inspect it.

As she bends over to feel the fine leather upholstery, she inadvertently breaks wind.

Very embarrassed, she looks around nervously to see if anyone has noticed her little accident and prays that a sales person doesn't pop up right now.

As she turns around, her worst nightmare materialises in the form of a salesman standing right behind her.

Cool as a cucumber and displaying complete professionalism, the salesman greets the lady with, "Good day, Madame. How may we help you today?"

Very uncomfortably, but hoping that the salesman may just not have been there at the time of her little 'accident', she asks, "Sir, what is the price of this lovely vehicle?"

He answers, "Madam, if you farted just touching it, you're going to shit yourself when I tell you the price."