



iAM
RoadSmart

FORWARD

Issue 18

**The Newsletter for
Somerset & Wiltshire
Advanced Motorists**

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FORWARD

Newsletter of Somerset & Wiltshire Advanced Motorists

www.swam-iam.org.uk

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Issue 18

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SWAM Events Programme—Autumn 2024

Tuesday, 20 August at 18.00: Observer Training at BMH*

This is a meeting for all Observers. Refreshments will be provided.

Tuesday, 17 September at 19.00: 3-in-a-car event at BMH*

For those who have not experienced 3-in-a-car drives before, they are your opportunity to catch up on a few tips from some of the Region's top Observers. If this is your first time you'll be in for a real treat because they are an ideal way of keeping in touch with advanced driving. Refreshments will be available.

Monday, 18 November at 19.30: Wessex 4x4 Response at BMH*

We will be having a talk about Wessex 4x4 Response from Dave Edwards and Norman Dagger. For more details see page 18.

**The address of the Hall is Beckington Memorial Hall, Bath Road, Beckington, Frome, BA11 6SH (just off the A36).*

Welcome to issue 18 of *Forward*. We are sorry to bring you the sad news that Don Escott, who was Vice Chairman of Bath & District Advanced Motorists (BADAM) before the merger with Melksham group to form SWAM, sadly died in May. He was a valuable member of BADAM and SWAM for many years, and his campervan, which he brought to events for several years, will be remembered by all those who attended those events. We shall miss him. Thank you, Don, for your contributions to forwarding the cause of Advanced Driving.

In August there will be a Training evening for all Observers at Beckington Memorial Hall. Observer Training is regarded as one of our most important tasks, as without well qualified Observers we would not get such good test results. See page 16 for our latest results, and those of our Observers who have recently obtained their National Observer qualification.

On pages 3 and 18 there are details of our meetings for the rest of the year. In September we are holding our final 3-in-a-car event of the year, and in November we will have a visit from two members of Wessex 4x4 Response. This is an organisation where drivers who own a 4x4 vehicle volunteer to support the emergency services, and other public organisations such as hospitals, in various ways. There is a brief summary of what they do on page 18 but come along on November 18th and you will find out far more. It will be a very interesting evening.

Finally, there is a lot about tyres in this issue. This is an important subject, so please read the report of the June meeting on page 7, and the article on page 11.

Clare Hogg, Sue Phillips

The next edition of *Forward* will be published in November 2024. Please submit motoring-related articles and/or digital photographs to the Editors (*who reserve the right to edit them*) by Friday 4 October at the latest. Names of authors and their home addresses should be disclosed to the Editors who will withhold them from publication on request.

Group News

April meeting report by Mike Twitchett

Our speaker at the meeting in April was Dan Cox, Avon and Somerset Police Road Safety Officer.

Dan joined Avon & Somerset Police in 1997 after previous work as an agricultural engineer. He moved to the traffic division in 2003 and has held specialist roles in VIP motorcycle escort, high speed pursuit, armed response and road traffic fatal accident investigation. He is currently the Road Safety Officer for Avon and Somerset Police.

Dan explained that there is no statutory requirement for a police force to have a road safety officer and this decision rests with the Chief Constable. Funding comes from finance generated from speed awareness courses and similar revenue streams.

Dan gave us some statistics from Avon and Somerset, along with his interpretation of the data:

On average there are 50 road traffic fatalities and 300 serious injuries every year; this statistic has plateaued over the past 8 years.

Drink and/or drugs are a contributing factor in one third of fatal road traffic accidents.

Drugs remain in your system far longer than alcohol, possibly up to 30 days.

Dehydration and sleep deprivation are also factors in road traffic accidents; dehydration is a particular factor for motorcyclists.

More people die on the roads than from murder and terrorism combined, but road deaths do not receive the same media coverage as murders or stabbings.

Men are more likely to have an accident than women. Men in their 60s are especially vulnerable.

Dan then went on to talk about the measures that Avon and Somerset Police are taking to manage road safety:

Cutbacks have resulted in a reduction in the numbers of traffic police, and policing the roads is moving from an active police presence to electronic surveillance with increasing reliance on cameras.



Photo courtesy of shutterstock.com

There is a strong emphasis on the analysis of dashcam footage with some 4,500 pieces being processed in 2023 and, where appropriate, drivers being convicted. Some people have been convicted on their own footage! If you do not already have a dashcam then Dan strongly recommended

installing one. Dan stated: Report and we will act on it!

Investment in electronic surveillance results in greater numbers of convictions for motoring offences. A single camera can check large numbers of vehicles 24/7.

There is a campaign targeting drivers who are not wearing seat belts or who are using mobile phones whilst driving. A new fleet of safety camera vans will shortly be introduced specially equipped for this purpose. A number of these vans will be unmarked. Unmarked trucks are used to get up close to drivers of HGVs and to observe behaviours at the wheel.

There is a move to the lowering of speed limits generally.

More electronic speed reminders are being installed which have proved to be very effective with drivers showing 99% compliance.

So what did I come away with?

Give serious consideration to installing a dashcam! Dashcam footage can avoid conflict in the event of an incident no matter how small. Drivers will always argue they were in the right, dashcam footage can prove or disprove this.

One more statistic: nationally, every week 50-60 motorists will drive up a motorway the wrong way! Another reason to install that dashcam!

June meeting report by Jenny Leopard

Our June meeting was a 3-in-a-car meeting preceded by a very interesting and informative talk by Pete Morgan about tyres.

He spoke about his working life in formula 3 and formula 4 racing cars, in relation to the design of tyres and tyre manufacture. There were also some great take-aways for the general car owner.



Formula 1



Formula 3

In this talk, Pete considered several factors:

Size

Brand

Tyre pressure

Tyre life

Tyre manufacture

Is there an aquaplaning formula?

Size

Pete showed various formulae relating to tyre size, for example calculating how wide a tyre should be, but in fact there are so many factors involved, that they are not useful for general purposes.

Brand of tyre

In relation to domestic cars, Pete advised sticking to the same brand for all the tyres, as size could be different on different brands and this would impact on the performance of the car. In addition, he mentioned that he would always go with the best brand (Michelin – in

his opinion). The reasons for this are that they are superior in the design of the tread, give better performance and last longer.

Tyre inflation pressure

Pete advised 'Stick to what is recommended'.

But remember, your tyre pressure gauge could be faulty.

You also need to consider the speed that you tend to drive the car at and the car capacity. Will you be carrying passengers or heavy loads, as this might affect the tyre pressure needed?

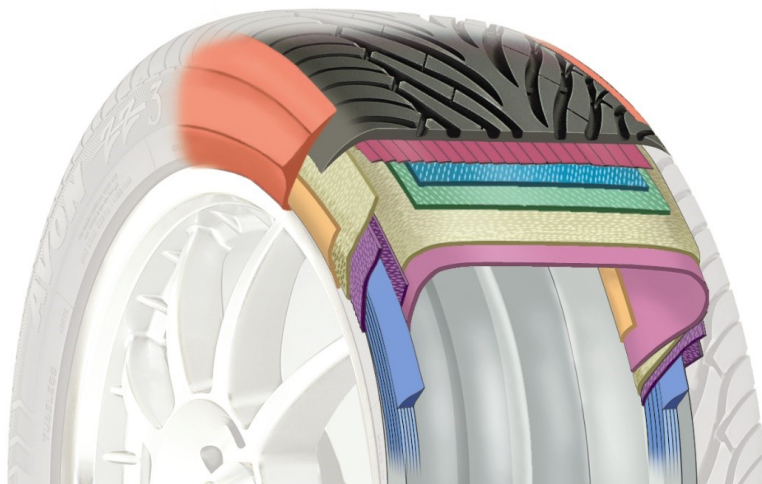
Tyre Life

Pete's tip was to be realistic about how long they last – cracks can appear in the side wall, and tread depth will decrease. However, he advised that there was no need to replace them if the side walls crack so long as the tread depth is good.

Tyre manufacture

Pete talked a little about radial tyre construction and manufacture, taking a look at how radial tyres are made in the factory.

Radial tyres are made in two parts. The first part is the tube inside the tyre which is made of a different material from the tread. The second part is the tread that is wrapped around the tube. Pete explained in some depth about the different components of the tyre, such as the side walls and tyre edge, the lining rubber that keeps the air in the tyre and radial ply on the main body of the tyre. Different materials and different thicknesses of material are used on different sections of the tyre. For example, the side walls of a tyre are relatively thin.



Pete did not recommend mending a punctured tyre – he would opt to replace the tyre, changing both the tyres on the same axle at the same time. However, if cost is a consideration, another option would be to check your car's tyre alignment. If the alignment has not been affected you might consider that replacing both tyres is not a necessity.

Is there an aquaplaning formula?

Pete said that it all depends – not really! Interestingly, the aquaplaning formula commonly used was for the design of aircraft tyres that are designed to only go in a straight line, so this is not applicable to car tyres. [See the following article for more information about aquaplaning.]



Questions from the floor

What tyres should you put on EV's?

It was advised that you should stick with your car manufacturer's tyres.

Should we check tyre pressure cold?

Pete said that for car tyres it was best to check tyre pressure cold, but for racing tyres they are always checked hot.

Summer and winter tyres?

Pete would use summer tyres in summer as the rubber is softer and gives a better grip on the road. In the winter, the tread on winter tyres

will give you a better stopping distance in the wet, and as it is frequently wet, he would opt for winter tyres. However, expense and storage have to be taken into account.

Are EV's responsible for more potholes?

No. HGVs and buses are more likely to create more wear and tear on the road surface than EV's.

When should you replace a tyre?

1.6mm is the legal minimum across the central three-quarters of the tread around the complete circumference of the tyre. But for safety reasons, it is best to replace tyres earlier, at no less than 2mm, and Pete commented that he replaces his tyres at 3mm.

My take-away from this was:

Don't repair a puncture, replace the tyre, or both tyres on the same axle if you can.

Buy the best brand that you can afford.

Have your best tyres on the back (as losing grip from the rear is worse than losing grip from the front).

Replace tyres before the tread reaches the 1.6mm legal limit; consider replacing when the tread reaches 2 or, even better, 3mm.

After Pete's talk, some members went out for a 3-in-a-car drive, while others continued the conversation about tyres in the hall. The evening provided a valuable insight into how to manage the tyres on our cars.

[Jenny has provided a link to a great discussion about tyres from the BBC's podcast Sliced Bread: <https://www.bbc.co.uk/sounds/play/m001znkw?partner=uk.co.bbc&origin=share-mobile>

If you go to the website you will also find Sliced Bread podcasts about Electric Vehicles, and Petrol, which are well worth a listen.]

[Pete Morgan, who gave the talk in June, has written a very interesting article for us on tyres and what is important, and what is not so important, with regard to tyre performance, especially in relation to aquaplaning.]

Tyres by Pete Morgan

As any advanced driver is, I am always interested in the mechanics that keeps my vehicle pointing where I aim it and, as long as everything is working as it should, the tyres are the only part of the vehicle that permit that (ignoring the not actually insignificant aerodynamic surfaces).

I've read recent comments here and online that relate to tyre performance, specifically the propensity for a tyre to aquaplane; an equation is usually offered, generally something along the lines of between 6.7 to 10 times the square root of the inflation pressure and I was driven to refute this in the strongest possible terms.

We like generalisations and approximations; ***'drive in the wet and stopping distances are twice as far, and up to ten times as far in icy weather'***, and whilst probably not actually especially accurate, not least because of the very non-specific terminology used, the general sentiment is somewhere close and it's definitely advice that the advanced driver will heed. In simple terms, with this statement we have linked the increase of stopping distance to the severity of the weather and without providing too much in the way of hard figures, that's going to be a very tolerable approximation.

However, the Aquaplane Speed of a Tyre 'formula' is a different kettle of fish because it attempts to be numerically definitive and inexorably links the reduced risk of aquaplaning with an increase of tyre pressure; that may result in a well-meaning driver looking at the weather and then perhaps he may trial pumping the Michelins up a bit to make the journey safer and this, for so many reasons is absolutely not the correct thing to do.

A tyre will aquaplane when it is unable to move sufficient water out of the way, water that's getting between the tyre and the road. On this there is no dispute. The interesting thing therefore is what affects this likelihood. There are a few things we can remove from the discussion, not because they are irrelevant, but they may cloud our understanding

of what's happening.

Tyre compound. In general, the softer the compound, the more the tyre will grip for a given vertical load, but with the very best will in the world, if the tyre compound has been hydraulically jacked up out of the way, the tread softness is going to have very little effect on how much grip is available. Changing tyres for similar ones but with a softer compound won't make a jot of difference to your aquaplaning speed if everything else is the same.

The depth of water. It is assumed it to be obvious that the deeper the water the greater the risk of aquaplaning. For the purposes of this discussion, we have enough water on the surface that with sufficient speed, well within normal legal limits on a dry surface, aquaplaning might occur.

Tyre stiffness. A tyre is round. Well mostly round, except at the bottom. At the bottom it is flat, and this portion is referred to as the contact patch, and it is essential, as a tangential contact with the road would produce a contact area that is infinitely small. A tyre only really works because at the bottom, where it touches the ground, it must deflect and deform to create a contact patch. Without deflection, the tyre will form an infinitesimally small tangent with the ground and no loads can be transferred so no traction can be utilised. The size of the contact patch is largely governed by the tyre stiffness (but also suspension setup, vertical loading etc.) and the easiest way for a driver to influence stiffness is via inflation pressure. The more you pump up the tyre, the smaller the contact patch (mostly in the longitudinal direction but partly in the sideways direction too; it balloons with pressure....) But the design of the tyre controls this also; it's not hard to see that a forklift tyre wouldn't deflect so much if it was on a shopping trolley. A forklift tyre, capable of carrying five tonnes or more, is going to remain perfectly round if the only weight it carries is that of a shopping trolley and it will never form a proper contact patch. Horses for courses if you like. If the stiffness is too low, a portion of tyre coming into the contact patch might apply a high pressure at the leading edge, ripple up out of the way in the middle and then revert to

a high contact pressure at the trailing end of the contact patch before leaving it altogether as the wheel rotates. In this very specific condition, increasing the inflation pressure will increase the speed at which a tyre aquaplanes, but then that's true of virtually any variable ever: if something is set incorrectly, putting it right will generally improve things. But anyone who believes that ramping up the inflation pressure because this 'opens up the pattern' is seriously and quite dangerously misguided.

So, what does matter and is part of this discussion?

Tread depth

The major one, and the most natural one that people leap to is that of tread depth. The purpose of the pattern within the tread rubber is to allow water to migrate just enough to permit the part of the tread rubber that isn't pattern to touch the road. Anything greater than enough is a compromise to tyre stability or all new tyres would have 35mm of pattern depth and they'd last for years. What actually happens is that the deeper the pattern, the less supported the tread that is touching the ground is and the higher the propensity there is for it to squish about. For straight line movement, longitudinal grooves are best; as an element of tread rubber rotates around the wheel and then comes into the contact patch, it first hits water which it then pumps out of the way. The easiest direction to do this in is slightly sideways, into a circumferential channel which then facilitates the movement of that water backwards and out of the contact patch.

Sometimes the tyre isn't moving in a straight line, indeed it cannot produce the cornering force required to negotiate a bend unless it has a slip-angle (the difference between the angle of heading and the angle of turn), and so the vector sum of the forces on the tread are no longer longitudinal and, under those conditions, it's better to move water in a more diagonal path to get it out of the contact patch, and for this reason there are parts of the pattern that are non-longitudinal. Most of the rest of the pattern design is concerned with marketing, noise and to ensure that edges of the pattern stay sharp and wear

evenly. The cavity volume of the pattern, as well as its ability to empty quickly to outside the contact patch IS the principal factor that determines the point at which aquaplaning occurs. I think the origin of the somewhat fanciful aquaplaning formula is from light aircraft which have tyres that only have longitudinal patterns and only ever move in straight or pseudo straight lines vastly below the operating limits of the system.

Tread pattern

The next thing to consider is the amount of pattern, the ‘Land to Sea Ratio’ or the comparison of tread that will touch the ground compared to the amount that forms the cavity. As everyone knows, the deeper the tread pattern the better, but the amount of pattern matters just as much, and this is the major reason why catch-all formulae really should offend the advanced driver. There are two attached images, both are road legal tyres and yet there’s a vast difference in the amount of tread pattern between the two. They were designed with two utterly disparate purposes in mind, and they both satisfy those needs totally, but there’s no way that one would ever sanely suggest that they’ll ever aquaplane at the same point.



What else matters?

Speed:

Speed really matters, but why? As rotational speed increases, an element of tyre is in the contact patch for a shorter period of time. It has exactly the same cavity volume into which it can move water, it has exactly the same amount of water to move, but it has to do so in ever shorter periods of time. As rotational speed increases, there will surely come a time when it is no longer possible to push that volume of water out into the outside world and, as water is incompressible, the only possible result is that the pressure induced upon the water works to increase the gap into which the water can flow and it does that by raising the tread off the road completely, or in other words, aquaplaning. With the tread off the ground, the only physical contact the tyre has is with water which ends up being like a canoeist paddling in fresh air.

There are other more subtle effects like the profile of the edge of the pattern; a brand-new tyre has sharp edges at the transition between tread surface and pattern and these tend to cut through water more efficiently. An older, more worn tyre might have fractionally more pattern cavity volume but because the edges of the pattern are rounder, they may not be so efficient at chasing water away.

How to summarise then?

It's difficult to reduce more than a decade's experience designing motorsport tyres into just a few paragraphs, but basically, the standard advice always has been and still remains accurate: keep the correct tyres pointing in the correct direction, correctly inflated as per the manufacturer's instructions and replace when worn. Investigate unusual tyre wear, promptly replace worn components, drive within the limits of the vehicle and its tyres, and one final piece of advice: avoid the margins of the road in the wet as water is a fantastic lubricant for rubber and being close to ditches in the rain when thorns etc. are washed out of the bushes dramatically increases your chances of a puncture.

We Welcome New Associates

| | |
|--------------------------|----------------------------------|
| Alex Beardshaw | [<i>Observer:</i> John Morley] |
| Brian Brooks | [<i>Observer:</i> Val Czerny] |
| Jeremy Heywood | [<i>Observer:</i> David Major] |
| Jenifer Martin | [<i>Observer:</i> Ray Robbetts] |
| Mick Midcalf | [<i>Observer:</i> John Morley] |
| Namgyal Tayatsang | [<i>Observer:</i> John Cameron] |

We Congratulate

IAMRS Test Pass

| | |
|--------------------------|----------------------------|
| Trever Blackshaw* | observed by Lindsay Flower |
| Richard Dickinson | observed by John Bradley |
| Oliver Hicks | observed by Graham Bennett |
| Susan Loader | observed by Jeff Vincent |
| Steven Tarr* | observed by Mark Ellis |

*F1RST pass

IMI National Observer Programme

| | |
|-----------------------|--------------------------|
| Neil Bannister | mentored by Ray Robbetts |
| Simon Cowley | mentored by Rob Norburn |

Bath Festival of Motoring — June 2024

SWAM again attended the Bath Festival of Motoring, this time jointly with Wiltshire and Bath Advanced Motorcyclists (WaBAM), and sharing our gazebo with the bikers proved to be a good move. A lot of people are interested in both cars and bikes, and we are promoting the same message. Although we had a good site, like last year, we didn't get quite as much footfall as before, but there was plenty of engagement with the public.



We had the same Highway Code quiz as last year, and some of the answers proved to be a real eye-opener. It is very apparent that many members of the public are not as familiar with the Highway Code as one would like. There is a bit more detail in the Editor's Corner (page 19), and we think it will horrify you as much as it does us.

Here are some of the cars that were spotted at the Festival.





SWAM Events Programme—Autumn 2024

Meetings are held at Beckington Memorial Hall, Bath Road, Beckington, Frome, BA11 6SH (just off the A36).

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For those who have not experienced 3-in-a-car drives before, they are your opportunity to catch up on a few tips from some of the Region's top Observers. If this is your first time you'll be in for a real treat because they are an ideal way of keeping in touch with advanced driving. Refreshments will be available.

Monday, 18 November at 19.30: Wessex 4x4 Response at BMH

We will be having a talk about Wessex 4x4 Response from Dave Edwards and Norman Dagger. Wessex 4x4 Response is an organisation where drivers who own a 4x4 vehicle volunteer to support the emergency services, and other public organisations such as hospitals, in various ways. To name just two of their activities, they assist the police during major incidents enabling the police to focus on their vital roles, and they support the health and social care sector in providing essential transport for health and care professionals and their equipment during severe weather conditions. To find out more about what they do, come along on 18 November.

Editor's Corner

Editor's Corner is an opportunity for me to air issues which occur to me in relation to cars and driving, while I am out and about. If you have anything you would like to air in a similar way, please get in touch.

Highway Code

Since the new Highway Code came out a couple of years ago, we have been doing our best to make the general public aware of the new Code. One way of doing this has been to have a Highway Code Quiz at events we attend, such as the Bath Festival of Motoring. This year there were 50 entries and Robin Clark, who co-ordinates the quiz, analysed some of the wrong answers and was sufficiently shocked to share them with the committee:

42% of all respondents thought that 30 feet was a realistic stopping distance if travelling at 30mph; in other words, the lengths of two average motor vehicles.

22% thought that two car lengths was a safe distance to leave between them and the car in front when travelling along the highway. From what I experience on our motorways I can confirm this to be true!

24% decided that the 'No Motor Vehicles' sign actually means 'Motor Vehicles Only'!



One thing to note is that all these three questions have been in the Highway Code before and are not new to the recent edition, so this shows that many drivers are driving around with limited (to say the least) knowledge of the Highway Code from when they passed their test.

I don't know which of these is the most shocking but, for me, I think it is the last one as, if a driver doesn't know that the red circle means that vehicles are forbidden, do they know what a red circle means in general?

I do know that seeing lorries driving almost within touching distance of the lorry in front on a motorway terrifies me, and I understand that it is so that they can travel in the slipstream of the vehicle in front and so save fuel. No wonder we have so many accidents involving lorries on the motorways!

In order to reach a wider public, we are proposing to put some of the quiz questions onto our Facebook page and it will be interesting to see what response we get. Anything which draws attention to the Highway Code is bound to help.

Clare Hogg

PLEASE NOTE

The views expressed in this Newsletter are those of the authors and are not necessarily shared by the Committee of Somerset & Wiltshire Advanced Motorists, nor by IAM RoadSmart.

Due acknowledgement is made whenever material is taken from other sources. SWAM keeps names and addresses of members on computer to assist in group administration. This information will not be passed outside IAM RoadSmart.

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