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WESSEX ADVANCED MOTORISTS

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WESSEX ADVANCED MOTORISTS

e-NEWSLETTER

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GENERAL DATA PROTECTION REGULATION

Members' details, i.e. names, addresses and telephone numbers, are kept on computer to assist group administration. This information will not be passed outside the IAM. WAM may from time to time publish photographs taken at group events in this newsletter and on the website or display them at publicity events. If you do not wish to have your photo taken or published by WAM, please contact the Editor in writing (contact details on the back page).

Chairman's Corner

Welcome to our Winter Newsletter 2021 and what a topsy turvy year it has been! Let's all hope that 2022 will bring much better times for us all.

Our Group has been inactive for a very long time due to the COVID-19 pandemic but at last, things are on the move, but of course could all be subject to change in response to pandemic trend.

Members' Evenings

We have resumed members evenings; attendance has been low perhaps because of anxiety, concern, nervousness around the ongoing COVID-19 pandemic… and understandably so, because it is very much still with us, evidenced by escalating rates in Somerset once again.

By Andrew Griffiths

We have measures in place at our meeting venue in Hatch Beauchamp Village Hall to provide as much assurance as we possibly can; hand sanitiser, social distancing (chairs spread out). So I look forward to welcoming you back when you feel ready. In the meantime, we will be keeping a close eye on any changes in the guidance provided by UK Government and respond accordingly.

Somerset Road Safety gave an excellent talk at our October members' evening recently. Malcolm and Mike, familiar faces to some of us, did a double act focussed on the effects of alcohol and drugs on the body; the time taken for the liver to deal with a unit of alcohol and the cumulative effect of several drinks leading to being over the drink/drive limit well into the next day. Drug driving is also an issue these days and traffic police carry a drugs tester in addition to the traditional alcohol breathalyser.

We learned that some "over-the counter" pain killers contain opiates and can result in a positive roadside test for drug-driving… read the Patient Information Leaflet in the box for advice.

With the help of "drug glasses" and "drunk glasses", we were able to experience visually what the effects are like. It was hilarious seeing one of our members (no name… Les) wearing the "drunk glasses" and trying to pick up a ping-pong ball off the floor - hands and arms everywhere but nowhere near the ball and it was recorded by his daughter, Karen, on her mobile phone (it is what daughter's do!). It certainly demonstrated the point.

It was a very educational talk which inspired many questions from their audience… all "on behalf of a friend" of course!

Malcolm and Mike are keen to visit us again, with their driving simulator for us to try our skills on. Not only educational but great fun too… and safe.

Observed Drives

We are making good progress to resume on-the-road training with our Associates. While some Associates started their courses but couldn't complete them before Covid hit, a larger number bought the Advanced Driver Course well over a year ago and until recently hadn't received any training at all.

David Walton, Barry Keenan and I developed a series of three PowerPoint classroom sessions for all Associates able to attend in-person in the preparation for on-road training:

Session 1; Introduction to Advanced Driving

Session 2; The Highway Code (remember that?)

Session 3; Commentary Driving

So far, Sessions 1 and 2 have been given but with Covid rates seeing a recent upturn, we decided to postpone Session 3 and this will be given when things have settled down.

In the meantime and with the help of another National Observer and Masters Mentor, Mac McGarry, David, Barry and I have "brushed up" on what we've been missing for 18 months or so… another step closer to resuming observed drives with our Associates!

It's not only our Group that has been affected by the pandemic in this way. All IAM RoadSmart Groups across the UK have been affected. I empathise with Associates who each paid their £149 course fee and are keen to get started some 12-18 months later. Thank you all for bearing with us and it won't be too much longer before Wessex Advanced Motorists is "back on the road"!

Our AGM

Our AGM is almost upon us and it's when I stand down as your Chairman. I've been chairman here for 9 years; prior to this, I was Chairman of the South of London Advanced Motorists for 3 years. With the acronym of "SLAM" (not ideal for an IAM advanced driver group!), I was relieved to see that my old group has merged with the Central London Group and is now London Advanced Motorists, more befitting for an advanced driving group, don't you think?

And so, with 12 years at the helm (too long!), it's well and truly time to pass the gavel.

Andrew

THE COMMITTEE

Committee meetings (for committee members ONLY) are held bimonthly at 7:30pm on the first Wednesday of the month at Hatch Beauchamp Village Hall. If, as a group member, you need to raise any issue at committee level, then please feel free to contact any committee member to put your views to the next committee meeting.

Chairman	Andrew Griffiths	*chair@wessexam.uk*
Vice Chairman	Mark Stephenson	*cmms@wessexam.uk*
Events Coordinator	Barry Keenan	*events@wessexam.uk*
Secretary/Membership Secretary	David Walton	*secretary@wessexam.uk*
Treasurer	Isobel Jennings	*treasurer@wessexam.uk*
Associate Coordinator	Pauline Wills	*coordinator@wessexam.uk*
Support Officer	Michael Wotton	*cmmw@wessexam.uk*
Chief Observer/Masters Mentor	Andrew Griffiths	*chair@wessexam.uk*
Newsletter Editor/Webmaster	David Walton	*ed@wessexam.uk*

FROM THE EDITOR

Nobody Responded so I'll say it again!

This will be my last newsletter as Editor.

The group needs a volunteer to take over as Newsletter Editor. It's just a few hours work four times a year and only involves putting together contributions from various sources; no journalistic talent required, just basic literacy, a little computing knowledge and a desire to help the group. Without a volunteer, this will be the last Wessex newsletter.

GROUP OBSERVERS

Chief Observer, Masters Mentor & LOA	Andrew Griffiths
National Observer & LOA	Barry Keenan
National Observer	Delphine West-King
Local Observer	Brian Dodd
Local Observer	Andrew Hepworth
Local Observer	Isobel Jennings
Local Observer	Guy Tucker
Local Observer	David Walton

Group observers must be fully paid up Wessex Group AND National IAM members at ALL times to carry out your vital observer roles.

Always check that your associate has an up to date membership card before departing on any observed drives. Please try to make and maintain contact with your new associates and listen to any concerns or fears they may have. When associates pass their Advanced Driving Test, PLEASE inform the associate coordinator as soon as possible as we have a duty to keep accurate and up to date records. All new associate members are normally teamed up with a conveniently placed observer. If you have any problems please contact our chief observer, Andrew Griffiths.

The following IAM and WAM members are Driving Standards Agency Approved Driving Instructors:
Nick Tapp 07900 900678 niktapp@hotmail.co.uk
Graham Tuffey 07916 137915 www.passwithgraham.co.uk

Members and/or enquirers must establish their own facts and details when contacting a Driving Instructor. If any other IAM and WAM full member driving instructors wish to be on the above list, contact the newsletter editor. (NB: You MUST remain *full* IAM and WAM members at all times.)

Events Corner

And It's Goodbye From Him!

Hiya everybody, I trust you're well?

It's another sunny day in Taunton as I sit here poised to jot a few lines. But as this is my swansong, I'm inclined to look back over the last 5 or 6 years during my time as 'Events'.

During that time we increased the number of entrants to the Classic Car Show generating not just income for the group, but have also raised money for local charities as well; re-established the annual Classic Car show and had a whole myriad of guest speakers and the occasional 'visit' to see the workings of local businesses.

By Barry Keenan, Events Co-ordinator

But now it really is time to hand over the reins to someone else because by the time you read this, I'll only have another few days left in-post. (I'll formally leave my post at November's AGM).

Sadly these last couple of years has seen the advent of the awful Covid-19 virus and the devastation that that has wrought around the world. The restrictions put in place around the country have proven to be a real nightmare for both individuals and businesses and I sincerely hope that it passed you & yours by, or at the very most, left you all relatively unscathed.

But looking forward, the future does seem brighter (if you believe the news reports) and the country does appear to be opening up again. (Despite the failure of Immensa's mis-diagnosis of 43,000, mainly West Country people's results!)

For WAM this 'opening up' means a return to in-car teaching of Associates and perhaps more importantly, getting back to face to face Members' Evenings and social gatherings.

After several false starts and promises, we finally started off our 2021 social calendar with our annual Car Skills night in June. This was followed in September by a coffee & chat evening in the hall and a very successful talk by the chaps from Somerset Road Safety in October. (It should have been a night playing with their Driving Simulator, but they forgot to bring it! 

Hopefully they can be persuaded to try again next year?

I was sorry to note that at the three events that we have managed to run this year, only about 10 people turned up each time. Obviously I understand people's reticence to venture out (and I don't blame you!), so my sincere thanks to those hardy few who ***did*** brave the conditions & uncertainty to come along.

And that, dear friends, is pretty much where my story ends, I'm afraid. I formally leave post at the AGM and after that, at the moment at least, there's nobody in the wings to take over.

However, it is my sincere hope, and that of the Committee, that one of you out there will be willing to step forward to offer your organizational skills to take on the post of 'Events' in my place. (Obviously I have a full list of contacts that I'm more than happy to pass on).

Do please give it some thought, because it would be such a shame to miss out on the variety of guest speakers and visits to broaden our horizons that we've previously enjoyed, don't you think?

I would like to take this opportunity to personally thank all of my Events Volunteers who showed up in good weather and bad, to help set up and run the various events and shows that WAM have attended over the years. You made my life so much easier. Thank you all very much!

Hopefully when the new 'Events' is in post you'll offer your help to him / her too.

Oh, by the way, I'm happy to continue setting a quarterly quiz if you'd like me to. Just drop a line to David, our illustrious Secretary at secretary@wessexam.uk and let him know.

As always, thanks for taking the time to read my scribblings. Hopefully we'll be able to chat over a coffee sometime during the rest of this year and over 2022.

In the meantime, stay safe, stay well and enjoy your driving.

Barry

Events Co-ordinator
events@wessexam.uk

COORDINATOR'S REPORT

At long last I can write a positive report!

In the autumn newsletter Andrew, our chairman, set out the roadmap to restarting observed drives for our associates. Good progress has been made.

I would like to thank Andrew, David and Barry for putting so much effort into preparing their presentations for the classroom sessions for our associates. Andrew's introduction to WAM and the ADC was the first to take place on 30th September. It was well attended and very informative. A fortnight later David looked for

by Pauline Wills

audience participation during his detailed presentation on the Highway Code. Unfortunately, due to the high number of COVID cases in this area, Barry's talk on commentary driving had to be cancelled at short notice. This has been rescheduled for Thursday 2nd December at North Curry Village Hall. These presentations play a vital role in the preparation for on-road training.

A document setting out guidelines for observed drives has been drawn up by the committee and issued to all observers and associates. This is intended to keep everyone as safe as possible within the confines of a vehicle.

Before lockdown a number of our associates were nearly test ready then, suddenly, everything was put on hold. If you are one of those associates either your observer or I will be contacting you very soon. It is a requirement that IAM RoadSmart membership is valid for both associates and observers before an observed drive. Please respond to correspondence from the IAM and ensure that your membership has not expired.

Since January 2020 WAM has welcomed nine new associates. It is regrettable that we have more associates than observers at this time but please be assured that we will get you all on the road as soon as possible.

Advanced Driving Test Passes

Since the last time we reported in early 2020, three members of the group have passed Advance Driving Tests, squeezed in between the lockdowns.

	OBSERVED BY
Ed Jones (F1RST)	David Walton
Gina Herridge	Fellow requalification
David Walton (F1RST)	Fellow requalification

The Run Dry Traction System (RDTS)

With thanks to Traffic Safety Roads

Researchers at Coventry University have developed a new device designed to prevent loss of control in heavy rain. The Run Dry Traction System (RDTS) is the product of Coventry University's Research Centre for Future Transport and Cities.

The prototype product prevents aquaplaning and loss of traction in a variety of road conditions.

Aquaplaning/hydroplaning happens when a layer of surface water builds up between a vehicle's tyres and the road surface leading to a loss of grip.

The RDTS presents a novel potential solution to the problem. It works by firing a jet of compressed gas close to the front of the wheel, removing surface water in front of the tyre. This ensures that the vehicle has a dry patch of road ahead, ensuring the grip is not compromised by road contaminants such as water, sand and gravel.

Professor Mike Blundell is Professor of Vehicle Dynamics and Impact at Coventry University.

"Our tests demonstrate that RDTS has the potential to make a huge impact on vehicle safety in a whole host of conditions. The prospect of producing something that could even save lives on the road is extremely exciting".

The centre is now looking into the manufacturing potential, with further research to commercially develop the system. The RDTS is designed to fit a wide range of vehicles. This includes cars, buses, trucks and motorcycles. Further development could see it used to improve aircraft ground operations and rail transport safety.

V is for…

By Nigel Albright

For those who have read my articles, the presence of the 'V' in the title may not come as a surprise and they may be a little ahead of the game, at least in principle. However, to start with, let's go back some 5,000 years to about the dawn of civilisation and the area which is now Iran. It was here that archaeologists found the first evidence of possibly the earliest of all boardgames, Backgammon. For those who don't know, progress in the game is dependent on the roll of two dice, which primarily makes it a game of chance. But, if it is just a game of chance how come there are professional players capable of making anything up to $500,000 per year. Clearly, and by whatever means, these people have a way of continually turning chance to their advantage. A key skill set happens to be understanding and applying the laws of probability and as the skills develop so the player can turn what appears to be just chance to their favour on a sufficiently regular basis.

So what, you may well ask, has a dice throwing game got to do with safer driving behaviour? Well, the first thing to do is throw away the title 'advanced driving' because on its own it is meaningless but, we may return to that later. Roadcraft makes the clear point that abiding by its guidelines, '…leaves nothing to chance…'. Yet it is widely accepted that most crashes involve human error; some say around 90% and others will even put it as high as 98%. However, it also seems that the average driver has a somewhat fatalistic (sic!) approach to being on the roads, that beyond a certain point they would have no control over whether or not they might be involved in a crash. In other words they feel safety is largely a matter of chance. Their base strategy for dealing with this is generally to surround themselves with as many so called safety gizmos as they can and this mindset is willingly aided and abetted by manufacturers who will add as many such devices as they can cram into the space and the pre-set production costs.

In civil aviation the formative stages of computer automated and fly by wire systems led to a number of crashes where a pivotal aspect was pilots relying too heavily on the integrity of the systems, even to the point where, when there was strong cockpit evidence that things were awry, they still believed that the systems were right; a classic case of people only accepting information that fits their current perception. Improved training, so that pilots remain critically aware of any subtle clues that something is not quite right, and understanding that even the most sophisticated of systems can throw up errors, combined with built in redundancy – having at least one backup computer doing the same job, has essentially resolved those scenarios. There is a parallel in road driving, that the more gizmos which are added, the more a driver tends to rely on them and feel that proportionately the driving does not warrant so much attention. In other words this sets up completely the reverse mindset for safer road behaviour. It seems there is a natural tendency in humans to disengage in proportion to the amount of technical assistance being given, whether on the road or in the air. However, this needs to be understood in balance because there are situations, such as with single seat fighter pilots, where computer assisted technology helps to make the work-load more manageable.

The ‘fatalistic’ approach that beyond a certain point having a crash is a matter of chance can obviously be loosely aligned with the roll of dice in Backgammon. You can’t pre-determine the dice-roll, but you do know that although the minim rolls can be two and the maximum twelve, in a sense it is what’s in the middle which really counts. The least likely rolls are 1-1 or a 6-6. Most of the others have three roll options which could give the same result with the highest probability being just a 6 (3-3, 2- 4, 1-5). The skilful player will use his or her knowledge of probabilities for an ongoing tactical advantage. And it works on a pro-rata basis: the better the understanding the higher the skill and also the better the ability to use the knowledge for a benefit. This is obviously a

vast over simplification but, the essence is true. Whilst the game has been going more or less since the dawn of civilised man (and woman, of course) there are still books and books written on the subject and it attracts very intellectual minds, so it is simultaneously both simple and complex.

So how in road driving can you use the rules of probabilities to your advantage and to improve safety? Obviously if they can be used then that would reduce the likelihood of a crash. And the greater the skill in using probabilities the less likelihood there is of having a crash, which means it also runs on a pro-rata basis.

Nicholas Rankin in his book, Churchill's Wizards, wrote about the high death toll of tall soldiers in the first part of World War I. It took a little while for the British to realise that if you were tall and could be seen walking in a trench you were more vulnerable to German snipers whereas the short ones were not. The message being that not knowing your vulnerability can kill you and it takes no account of naivety. It also means that it pays to know your vulnerabilities and how to minimise them.

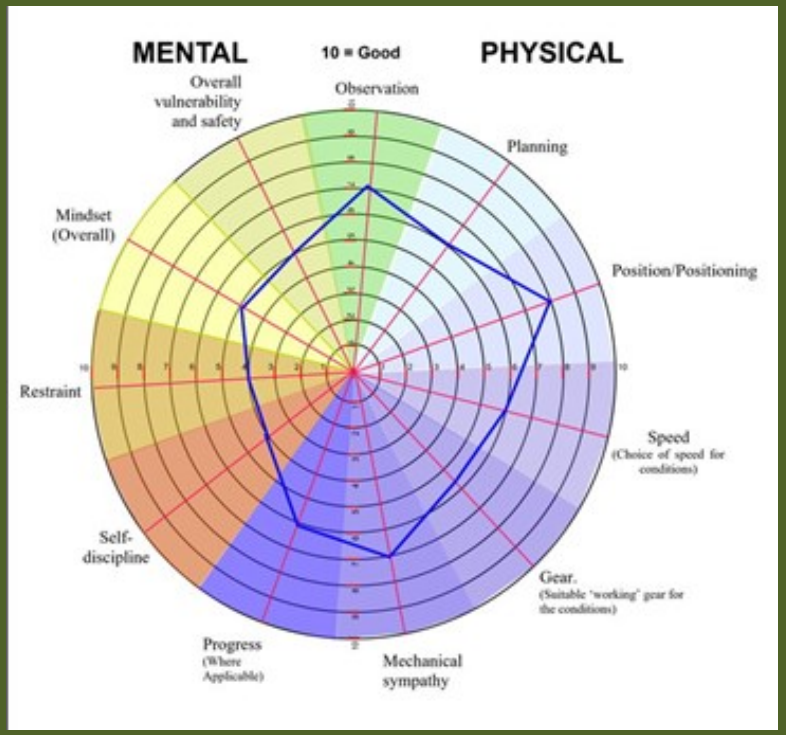
For a long time, and when I was Training Officer for an advanced driving group and the South West Area Representative for RoSPA Advanced Drivers (as it was then) the frustration was that many people qualify the reason they don't need further training is because of their definition of safety, being that since they haven't had a crash they are safe, and yet it wasn't rocket science, and neither did you need an academic qualification, to see in every day driving that there were so many more crashes waiting to happen – and that is equally true today. Which actually means that most drivers seem blissfully unaware of just how crash vulnerable they really are.

Eventually there was a eureka moment when all the pieces of jigsaw just seemed to fall neatly into place. It was the realisation that the key word was 'vulnerability', that the vulnerability of so called advanced drivers is

quite different to that of the average driver. But, the other key factor is that you can grade vulnerability whereas you can't grade safety in the same way because it is a different thing to different people. This means you can put vulnerability on a scale. You can see this in the article, 'The Black, The White and the Grey', where a scale of 1-100 is used to represent the comparative standards in terms of vulnerability of different driving standards. There is also another difference. The term 'road safety' is such a bandied about phrase, often used indiscriminately and by anyone, and any business, who or which feels that it be bolted on to their activity or product. As such it has lost much of its impact and caused indifference. It is also impersonal. The other problem is that you can't tell the average driver that they are unsafe or that their driving is bad because that is like a verbal cudgel which sets up a resistance and automatically puts people on the defensive. It is, therefore, important to create a state where they want to gather information and knowledge. The word vulnerability on the other hand is quite different because whilst it is personal it can also be so without being a personal attack. In suggesting to people that going on a course would 'reduce vulnerability' does not actually say that their current driving is bad, merely that it could be better. But better is no use on its own, it has to be connected with safety, that 'better' means being less vulnerable to crashes, given that over 90% involve human error. And who would not wish to reduce vulnerability to crashes, if only they knew how? 'So do you have a way by which this can be achieved?', – which in sales speak is called a 'buying signal', and, of course, the answer is, 'Yes. Sign here please'. If only it was that simple, but principally that has to be the right approach.

The term, 'vulnerability', therefore really is the key word in reducing the likelihood of a crash and can effectively be used two ways; one, within a government road safety strategy to encourage drivers to get better and therefore reduce their risk factor and two, in a driver review to illustrate where there are vulnerabilities, for example using a scale of 1-10.

Radar charts can be useful in this respect.



Successive driver reviews should therefore indicate a continued reduction in vulnerability and therefore lessening the likelihood or probability of being involved in a crash. In this context we need to remember that a crash normally consists of one of two basic factors; either you hit them or, they hit you. That's it. Period!

The first level of training is obviously to ensure there is principally nothing in a person's driving which makes them likely to hit something or, someone else. The next stage is more interesting because it's the point at which most drivers will say, '..but you can't stop others' hitting you'. Ah, well, yes, but… Remember the tall soldiers in the First World War? Not knowing your vulnerability can kill you? And in Backgammon developing skills and understanding the laws of probability can change chance to success? So, in helping drivers reduce vulnerability they are also learning to use the laws of probability to their advantage. There is no 100% rule but moving from say a 50% possibility of a crash to perhaps 20 or 10% has to be worthwhile in anybody's language.

So, whilst 'vulnerability' is the key it also indicates a different approach which is far more likely to have drivers engaging with the idea of getting better because a direct connection is made between degrees of vulnerability and safety. And you are not mentally cudgelling somebody. Remember that Churchill used, 'V' for victory. Good idea, but he had to learn to have his hand the right way round.

What's it like in the DARK? Your 'GUIDE' to driving at night

By Andy Poulton

One of the most common faults of driving at night is a driver overdriving their lights.

Roadcraft tip: "You should always drive so as to be able to stop within the area that you can see to be clear; at night this is the area lit by your headlights."

What does all this mean?

Well, a new word creeps in here –

"PERCEPTION"

– which is different from "seeing".

Let me explain.

In ***Roadcraft*** driver reaction time was defined as the time that passes between the moment a driver observes the need for action and the moment, he takes that action.

At night –

- first the headlamps have to illuminate the object or hazard
- then you have to work out or decide what it is!
- then comes reaction time.

According to the findings of a number of tests and experiments, a driver with average headlamps, who is travelling at 35 mph, can pick out a pedestrian in dark clothing at 210 feet – as long as there are NO approaching headlamps. If the headlamps are three times as powerful (for example, Xenons or LED'S), then the driver could pick out the pedestrian at over 285 feet. [There may be a point in using very strong headlamps.]

As speed increases, perception range decreases by roughly 20 feet for every 10-mph giving the following figures.

Speed	Perception Range	Overall Stopping Distance
20 mph	240 feet	40 feet
30 mph	220 feet	75 feet
40 mph	200 feet	120 feet
50 mph	180 feet	175 feet
60 mph	160 feet	240 feet

It will be seen from this table that anyone exceeding 50 mph under perfect conditions, at night, is not driving within the limits of their lights. That is to say, you would not see a dark object in sufficient time to allow you to pull up before reaching it.

Under glare from an approaching vehicle using dipped headlamps, the perception range decreases as follows. *[Again, the overall stopping distances are listed alongside.]*

Speed	Perception Range	Overall Stopping Distance
20 mph	48 feet	40 feet
30 mph	44 feet	75 feet
40 mph	40 feet	120 feet
50 mph	36 feet	175 feet
60 mph	32 feet	240 feet

This means that at anything over 22 mph, you are over-driving your lights. Frightening eh! This emphasises the importance of the ***Highway Code*** rule: “If dazzled, slow down or stop” and “You should always reduce your speed when driving at night as it is harder to see other road users”.

Poor visibility, hills and dales, bends and curves all reduce perception range and may easily reduce the safe speeds to 40, 30 or even 20 or 10 mph.

Now consider further the ***Highway Code*** rule on stopping distances. This states that in wet or icy conditions the braking distances should be at least doubled.

Speed	Overall Stopping Distance
20 mph	60 feet
30 mph	120 feet
40 mph	200 feet
50 mph	300 feet
60 mph	420 feet

Under these conditions, the maximum safe speed becomes:

No glare	40 mph
Dipped glare	33 mph
Main beam glare	18 mph

Driving on side lights

Tying up with this is the dangerous habit of driving in poorly-lit streets on side lights. Your range of perception is then dependent on the street lighting and you may be driving through black patches which could hide a cyclist, pedestrian or any other obstruction. When you remember that at 30 mph on a wet night you require to be able to see clearly at least 140 feet ahead – or nearly 50 yards – you can quickly judge whether you need to switch on dipped headlights.

Other points to bear in mind are:

1. Night driving is about three times as dangerous as day driving.
2. It is not easier to see objects on a light-colored road than on a dark one.
3. At night you can only see an unexpected object about half as far away as an expected one.

So, I must reiterate the ***Highway Code*** rules: **Always drive so that you can stop well within the distance you can see ahead. You should also slow down, and if necessary, stop, if you are dazzled by oncoming headlamps.**

It does seem that some motorists drive by guess and luck.

There are two types of drivers:

- those who regard the road as clear, unless they can see an obstruction;
- those who regard the road as obstructed or likely to be obstructed unless they know it is clear.

If, as an Advanced motorist, you are the latter type you are, or will become, a skilful driver. This is largely the basis of Police Driving. If you are of the first type, you must have been born lucky!

Stopping at night

An investigation was carried out into 456 crashes involving stationary vehicles at night. It transpired that in the majority of cases the stationary vehicle had its rear lights on.
Why does a driver crash into a vehicle with its lights on?

The main reason is, of course, that the majority of drivers out-drive their headlights; but the secondary reason is that a driver who sights a rear light ahead, on an open road, immediately assumes that there is a vehicle ahead traveling in the same direction. In 99 cases out of a 100 that is correct. In the hundredth case, by the time you realise the vehicle is stationary, it may be too late to avoid a crash.

Rear lights, therefore, would not appear to be the best method of lighting a stationary vehicle. Some sort of special parking lights, which cannot be confused with rear lights, would be an obvious advantage. Probably the best way of indicating that you have stopped is by switching on a roof light or other form of interior lighting, or hazard lights. If we are wise, however, whenever we have to stop on an unlit road at night, we will not rely on our rear lights as protection.

Just remember the case where one vehicle ran into a stationary vehicle at night: whilst the two drivers were arguing about the accident, a third vehicle ran into them and both were killed.

Dazzle

The ill effects of dazzle could be overcome if all drivers could ensure that their headlamps were correctly adjusted. A quick check can be carried out by stopping the vehicle on level ground, about 20 feet away from a plain wall or garage door and switching on the lights. The height of the centres of each beam can be measured and compared with the height of the centres of the lights themselves. If the height of the beam is higher than the lamp itself, it is out of alignment. Headlamps, when dipped, should be about 3° below the horizontal. This is the equivalent of about 1 foot down in 20. If in any doubt, get them correctly and accurately (not just within tolerance) adjusted by the garage.

Headlight Drill, Hints and Tips

1. Make sure your lights are properly adjusted.
2. Learn when to dip. An advantage can sometimes be gained by dipping early on left-hand bends or brows of a hill or hump back bridges – even perhaps dipping late on right-hand bends. Be dictated by circumstances.
3. On unlit roads your headlamps should be on MAIN BEAM. (unless they are dipped because of other vehicles). The average motorist tends to drive on dipped beam all the time which is of no help to him or us.
4. Headlights can be used for most of the purposes of a horn, such as to give warning of approach or an intention to overtake (or even to tell drivers of approaching vehicles that their lights are not on).
5. When following another vehicle, headlights should be dipped or, according to the circumstances if stationary, switched off to avoid dazzling the driver ahead.
6. If dazzled, slow down and be prepared to stop. ***Roadcraft*** advocates a quick flash of main beam to remind drivers coming the other way that they are on main beam and have forgotten to dip. You must never retaliate though by leaving your lights on main beam. [After all, one driver blinded by opposing lights with a closing speed up to 140 mph is not that good an idea – let alone two!]
7. Always be able to stop within the distance you can see to be clear. Even with good lights and clear screen, slow down if your view is restricted.
8. Observe vehicles' lights ahead. Watch the sweep of lights for an idea of the severity of a bend ahead. Brake lights on the vehicle ahead provide an early warning of the need to reduce your speed. Headlights of oncoming vehicles give an early warning of approach.

9. After brightly lit areas keep your speed down until your eyes have grown accustomed to the dark. [Did you know that this takes up to 3 or 4 hours – then, just one bright light ruins your night vision for at least another 20 minutes. So, your eyes never really quite get accustomed.]
10. Avoid lights in the vehicle, particularly if they are bright or reflect in the windows.
11. Always try and avoid looking directly into the lights of oncoming vehicles. Try and cast your gaze to the nearside, ahead or to the limits of your headlamps beam.
12. When following other vehicles, keep at a generous distance back from them, unless you are intending to overtake (but never get closer than your overall stopping distance). Move out early before over-taking. Except for a quick flash of your lights to warn the other driver of your presence or intention, if required, keep on dipped beam until the overtaking manoeuvre is commenced and your main beam is required for the view ahead. To avoid dazzling the driver of the vehicle about to be overtaken, this is usually as your vehicle gains a position to the offside of the road. If this driver is not an Advanced Motorist and has been driving on dipped beam prior to being overtaken, obviously your view ahead may be slightly restricted and a better assessment of the road situation ahead may be made now.

A change of driving plans, if required, can be made at this point.

Driving Plans are based on:

- What can be seen.
- What cannot be seen.
- What might reasonably be expected to develop.
- Which hazards represent the greatest threat.
- What to do if things turn out differently from expected.

DO NOT commit yourself too early.

IF IN DOUBT, HOLD BACK & WHENEVER IN DOUBT, WAIT.

13. It is very difficult to judge speeds of approaching vehicles at night: what may at first appear to be a car some distance away could be an old car with weak lights quite close. What appears to be a slow motorcycle could turn out to be a vehicle with a defective light – a farm tractor or Land rover with close-set lights. Only experience on the road at night (or practice) can help – or be aware of your limitations.

14. When being overtaken, dip your lights at the last minute, just as the vehicle is alongside you. This helps you to obtain a final view of the road ahead and make any final assessments and plans. It also helps the overtaking vehicle 'see' better. Return to main beam only when you can do so without dazzle.

15. Always be the first to switch ON your head-lamps and the last to switch them OFF. After all, they are free!
    BUT, be the first to switch them off if they are not required for any reason, and use them thoughtfully: for instance, do not leave them on during enforced stoppages; do not leave your foot on the brake pedal or leave indicators flashing – annoying or dazzling the driver behind.

16. Keep all windows scrupulously clean – inside and out: having a dirty rear window may help in cutting down dazzle from the rear, but it does nothing for effective rear observations and planning!

    - Keep and carry a spare bulb and fuse kit. Your garage or the local accessory shop can supply you, and instruction on how to change or replace fuses or bulbs is contained in your vehicle's handbook. If not, do not worry as long as you have the spares – someone else will know how to help you.

SAFE DRIVING AT NIGHT

Andy Poulton

For further references see: -

THE HIGHWAY CODE [various rules]
ROADCRAFT [chapter 4, page 72-]
DRIVING The Essential Skills

Compiled by:
Andy Poulton
Examiner
iAM RoadSmart Examiner

TALELIGHT

ALWAYS WORTH CHECKING FIRST
Police drove around in a second-hand car as a patrol car for a year before realising it had been stolen.

AND SECOND
A driver who crashed a stolen car then stole the recovery vehicle he called out to help him.

AND THIRDLY
A new £2.7 million Bus Station has had to be redesigned when it was found that the buses were too big to go in it.

KEEN MOTORISTS
Two thieves were so keen to steal a newly installed ATM cash machine that they crashed a stolen pick up through the shop window and stole the 300 lb weight machine. BEFORE the owner had put any money in it.

WHERE WAS THE SAT NAV
Two anglers got lost on a camping trip and took the wrong turn on their 80 mile journey home. It was over 700 miles later when they crashed into a ditch.

VERY ALARMING
A motorist was continually being woken at night by his pet parrot imitating his car alarm.

ADVANCED OBSERVATIONS & PLANNING HAS REWARDS!
A thief drove off in a new Porsche 911 Turbo after convincing the dealer it was his. The real buyer turned up 20 minutes later.

GOT A TICKET? JUST SIT BACK RELAX & WATCH
A video shop gives out free films to motorists who can produce a speeding or parking ticket to 'comfort' them.

SPUD-U-LIKE
Police are investigating a Road Rage attack in which a driver injured another with a hot jacket potato.

DON'T ASK
A driver who was lost stopped to ask a Policeman the way and was fined for driving in a traffic free zone.

Understanding Roadcraft

By Nigel Albright

I am afraid it bothers me that many in advanced driving groups nowadays don't really know about or study Roadcraft. There seems to be multiple reasons for this. One put forward to me is that in some minds there is, via the title, The Police Driver's Handbook, too much association with progressive driving and that is not where the average so called advanced motorist should be. Another is that a key advanced driving organisation is more concerned with the ego of business branding, so wants its training manual to appear to be a product of its own thought processes.

Whichever way it runs it leads to a basic misunderstanding of what Roadcraft is really about. To understand that we need to go back to basics, and even to the earlier Roadcrafts, by that I mean pre-TSO editions. The reason I make that distinction is that prior to the 1994 edition, Roadcraft was produced by Her Majesty's Stationery Office and, as such, it was non-commercial and essentially a public information booklet based purely on the incredible safety record emanating from the police driving schools. In the lead-up to the 1994 edition the government gave up the HMSO for it to become self-sufficient and financially independent and just called The Stationery Office. Roadcraft had been the second-best seller to the Highway Code and therefore could clearly be a prime product on the retail shelves for the newly formed TSO. In the process it obviously needed to be as commercially marketable as possible and underwent a complete revamp with certain things changed to make it more palatable to the general public, given that it had long been criticised in some circles as being rigid and inflexible. Most of that came down in part to a lack of understand of what it was about, or as one Hendon instructor once said, 'Flexibility comes later…' As with many things you often learn the basics in a fairly inflexible form and

those then form the foundation for a more flexible approach later on. In a sense the inflexibility bit can be laid at the early Roadcrafts' door because it was un-packed in stages in the classrooms at the driving schools, from Standard Course, through to Intermediate and then Advanced Courses. The 'un-packing' evolved as the student progressed through each course. The 1994 version essentially dived in and tried to deal with all of this in one go which in some ways led to mayhem, particularly in the flexibility and the brake/gear overlap parts because they needed the knowledge and experience of the instructors to quantify them. Somebody in an office drew the lines through bends illustrations with the exit line going wide, which is not what you want in road driving.

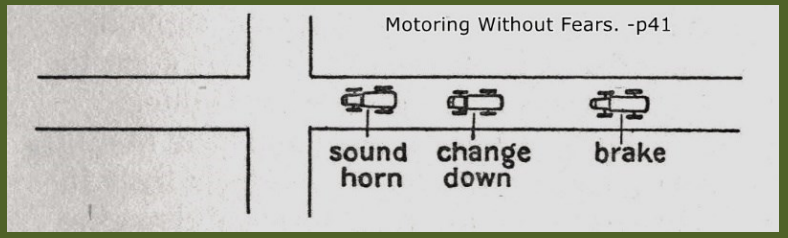
I make these points because, in its commercial form, Roadcraft has evolved to be so all encompassing and complex that it can be difficult to see the wood for the trees, which is why it is necessary to go back to the earlier Roadcrafts to really see the essence of what it is about.

There is another element which is related to the demise of the police driving schools and the movement to the force driving schools. Within that, two significant changes have taken place. One is that no longer do officers go away to driving school for a residential several weeks course where the complete focus is on driving but, through the force driving schools a lot of work now takes place at the division level where an officer may take time away for a day from their normal duties to do the driving bit. Secondly, there is now no classroom work. Instead, an officer is given a copy of the current Roadcraft to study and then does a written exam which means that everything they apparently need to know is all there in one go on paper. Good idea in principle and clearly more cost effective but, in the long run does not seem to provide the same level of quality and mindset as did the original police driving schools with exclusive and focused time on a driving course.

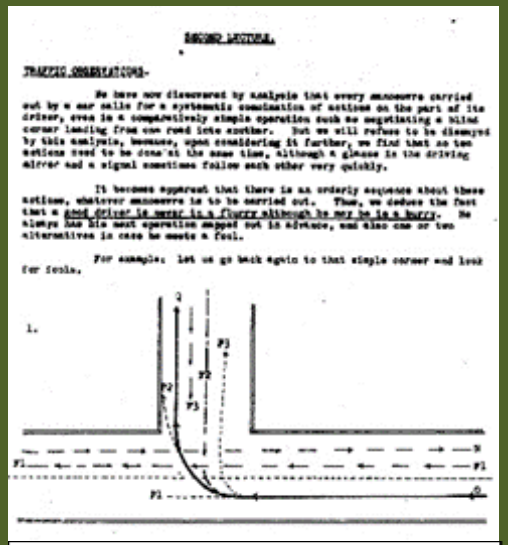
So let's go back to basics and for that we need to go pre-WW2, in fact to the early 1930s when there was no police driver training. The first police driving schools came into existence because the standard of driving was so bad, which means they were having a lot of crashes. In the Met the accident rate was

around 1:8000 miles. This and other factors jolted the mind of Lord Trenchard (he of RAF fame) the then Commissioner of the Metropolitan Police. The result was the formation of the Metropolitan Police Motor Driving School on the edge of the Hendon Aerodrome. Called Motor Driving School because there was still a lot of horse driving.

Even with the school in existence things were not really getting much better until Trenchard approached a well-known former racing driver who, since the early 1920s had been doing radio broadcasts, writing articles in Autocar and producing several books, all focused on better and safer road driving. Apart from being a peer of the realm, Lord Cottenham was also on the Roads and Road Transport Committee to the House of Lords and had been influential in the legal requirement for compulsory insurance, 'anti-dazzle devices', rear reflectors and rear-view mirrors. Who better to be invited to be the euphemistically titled 'Civilian Advisor' at Hendon. As a result, Cottenham introduced the Advanced Wing and in his 18 months there took the standard in the Met from 1:8,000 to 1:38,000, which was a staggering achievement. In this time the government

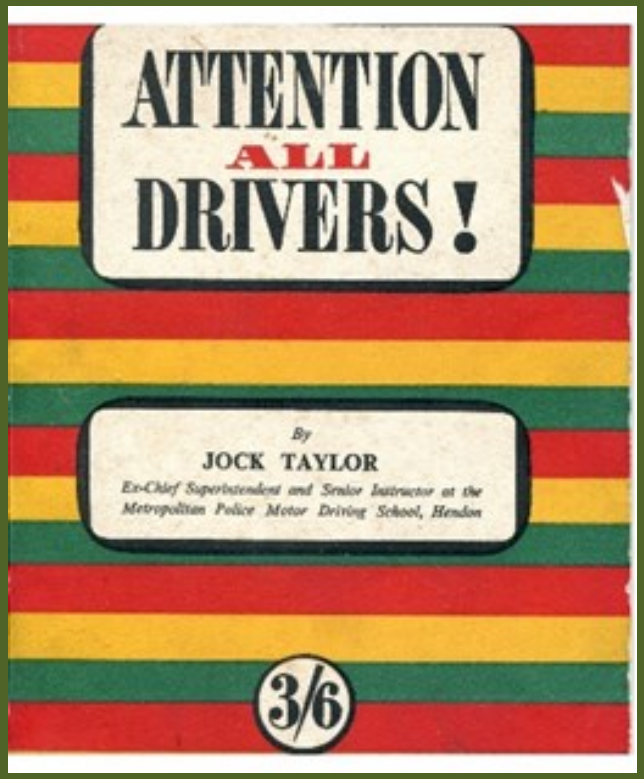


created two more pre-war 'Government Sponsored Police Driving Schools' at Chelmsford in Essex and Preston in Lancashire. Cottenham's basic idea was to introduce a methodical and systematic approach to driving perhaps first reflected in his 1928 book Motoring Without Fears.

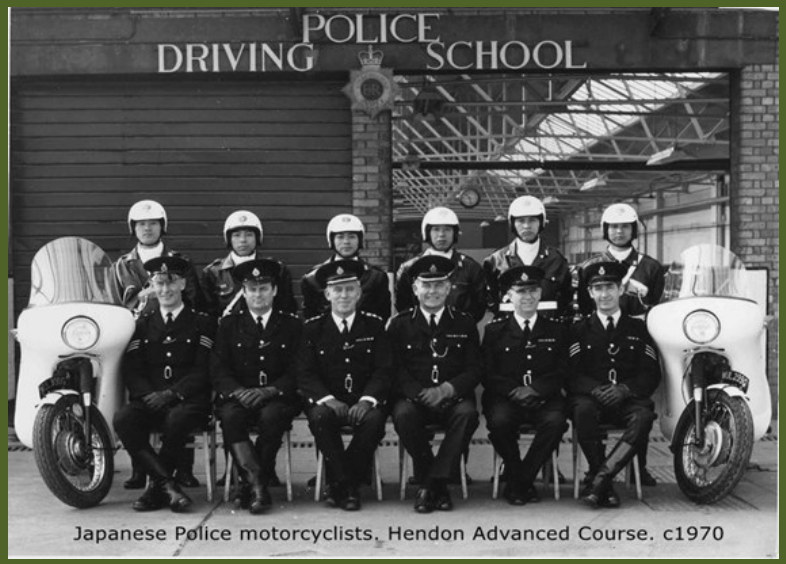


Extract from Hendon classroom notes

Police driver training was suspended during WW2 and restarted in 1946 when, as a result of Cottenham's incredible success, it took off with a vengeance resulting in a massive expansion of driving schools all over the country including Scotland and Northern Ireland. Eight years later Jock Taylor, who had studied under Cottenham and rose to be the Senior Instructor at Hendon, published a book, 'Attention All Drivers' which, in essence, was all the Hendon classroom notes put together. Clearly Taylor wanted to show the general public what had contributed so greatly to the impressive safety record of police drivers generally. 'Excellent idea but, he was stopped in his tracks on the basis that the material was copyrighted to the Hendon Driving School and production of the book promptly ceased. However, the seed had been sown and the Minister of Transport and Civil Aviation, John Boyd-Carpenter, took up on the idea which resulted in the production of the first Road Craft (notice it was two words then) in April 1955, the content of which was essentially identical to that in Taylor's book. And so the idea was to inspire the general public with the knowledge and skills which had contributed to the then very impressive safety record in the police service. Such was the fame of that standard that police forces from all over the world came to Hendon to study what effectively became Cottenham's principles of safe road



behaviour. As one example the Japanese police sent motorcyclists on several occasions to undergo courses at Hendon which was obviously a major commitment, literally from the other side of the world.



Japanese Police motorcyclists. Hendon Advanced Course. c1970

So Roadcraft is not at all about making progress. When you cut through the now massive swathe of information and all the bells and whistles, it's about an approach to driving which induces safety in all conditions. To quote, even from the current RC, when its principles are applied it, '...leaves nothing to chance'. There are only two things one can do with a moving vehicle to either enhance or degrade safety, change position and/or speed, and that's it, and the understanding of that and how those principles are properly understood and applied all originates from Cottenham. To put it another way, former Hendon instructor, Derek Van Petegem said, (to paraphrase slightly),'The art is actually knowing when to go slowly, it's not knowing when to go fast'. Roadcraft is, therefore, equally applicable to driving at 10mph through a crowded town centre as it is on the open road.

So, if you haven't read Roadcraft, perhaps particularly the early ones, don't be deluded into thinking it might still not be pertinent today. In my experience the key to the best drivers has always been having a continually inquiring mind and the desire to know.

- Hendon course photography by courtesy of Brian Livings.
- For those who may be interested the key pre TSO Roadcrafts were 1955, 1960 & 1977.

LED Streetlights Reduce Insect Populations By Half

With thanks to Traffic Safety Roads

So called Eco-friendly' LED streetlights have found to be more harmful for insect populations than the traditional sodium bulbs they are replacing, a NERC (Natural Environment Research Council)-funded study has shown.

The negative impacts of light pollution on insects including moths, which provide essential food sources for a variety of animals and are important pollinators are well known.

However, scientists behind this latest research say it is the first investigation into the effects of the whiter outdoor LED lights on insect populations in 'real world' conditions and needs to be considered alongside other issues about such street lighting.

Field studies by the UK Centre for Ecology & Hydrology, Newcastle University and Butterfly Conservation found the abundance of moth caterpillars in hedgerows under LED street lamps was 52% lower than in nearby unlit areas. This compared with a 41% lower abundance in hedgerows lit by sodium lighting. Meanwhile, in grass margins, the moth caterpillar numbers near LEDs were a third lower than in unlit areas, whereas sodium lights had little effect on abundance in this habitat.

Almost all previous research on light pollution has focused on adult insects, but studying caterpillars, which are a lot less mobile, enables researchers to get more precise estimates of the impacts of street lighting on local populations. The authors add the large diversity of moths means they are broadly representative of nocturnal insects, with any negative impacts from a threat likely to also be experienced by other species.

Douglas Boyes of UKCEH led the study, published in the journal Science Advances. He spent more than 400 hours sampling for caterpillars along roadsides at a total of 55 lit and unlit sites in the Thames Valley over the past three years making the following comments:

The effects observed – on local abundance, development and feeding behaviour – were more pronounced for white LEDs compared to traditional yellow sodium lamps.

The rapidly increasing prevalence of LED lights, which are often much brighter as they are so energy-efficient and cheap to run, is likely to increase the negative impacts of light pollution on insects.

This is expected to have knock-on effects on other species, including predatory insects, hedgehogs, and songbirds, which need to find hundreds of caterpillars a day to feed themselves and their young.

LED streetlights are great for the environment. They consume much less energy than standard high intensity discharge (HID) lights, last three times longer, and they reduce greenhouse gas emissions

and maintenance costs. In general, LED lights also contribute less to light trespass because they emit direct illumination. Because of all their great qualities, many cities have started to use/replace with LED streetlights.

However Public Health England have warned that the LED street lights can disrupt sleep, resulting in a “permanent jet lag.” The blue colour of the lights can also result in damage to the retina. It added that the “uncomfortable” effects of the lights are especially pronounced in the elderly, or those with pre-existing eye conditions.

Lowering the drink drive limit is not the answer

With thanks to Traffic Safety Roads

The introduction of a lower drink drive limit in Scotland has had ‘no effect’ at reducing drink driving or alcohol related collisions, according to a new academic study which is not helpful to those campaigning in the rest of the UK for a lower limit in order to reduce deaths and serious injuries. The study has been published in the Journal of Health Economics.

In December 2014, Scotland reduced its drink drive limit from 80mg to 50mg per 100ml of blood, in a bid to address problem drink driving and ultimately to reduce road deaths. This made Scotland’s drink drive laws the toughest in the UK, with England, Wales and Northern Ireland retaining the existing limit.

However now a new study, carried out by researchers at the Universities of Bath and Essex, says there has been ‘no change across all types of crashes involving alcohol’ as a result of the introduction of the lower limit and concludes that greater enforcement need to be undertaken to back up the limit with tougher penalties – and rethink alternative transport options – in order to address the issue.

Drawing on data from January 2009 (pre-reform) to December 2016 (post-reform) – comprising over 1.2 million collisions – the researchers wanted to test the effects of the reform and consider what measures might still be required to reduce collisions.

While they found that the reforms in Scotland, supported by a ‘heavyweight media campaign’, led to stronger anti-drink drive sentiment among the public, this was not enough to tackle marginal drink driving.

Researchers say that Scots neither drove their cars less, nor switched to being driven because of the reform and that taxis and buses had not become cheaper or more available.

‘More significantly’, they found no impact on enforcement of drink-driving related offences – with no more breath tests carried out following the reform than before it.

Dr Jonathan James, a researcher from the University of Bath’s Department of Economics, said: “Our results show that reducing the drink drive limit in Scotland has not led to a decrease in alcohol-related road accidents since 2014. These are significant findings which defy some of the expectations for what this reform hoped to achieve. Whilst a lower drink drive limit has helped to harden anti-drink drive sentiment among the public, the change in law appears not to have targeted those who cause the majority of alcohol-related road accidents: those who drink heavily and still drive. To tackle this, policymakers need to back up a stricter limit with tougher enforcement and rethink alternative transport options.”

Despite these results there is no doubt that the campaign will continue to get the Government to reduce the limit in the rest of the UK. An average of 240 people are killed each year where someone driving over the legal limit is detected.

Anti-lock braking system

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An anti-lock braking system (ABS) is a safety anti-skid braking system used on aircraft and on land vehicles, such as cars, motorcycles, trucks, and buses. ABS operates by preventing the wheels from locking up during braking, thereby maintaining tractive contact with the road surface and allowing the driver to maintain more control over the vehicle.

ABS is an automated system that uses the principles of threshold braking and cadence braking, techniques which were once practiced by skilful drivers before ABS was widespread. ABS operates at a much faster rate and more effectively than most drivers could manage. Although ABS generally offers improved vehicle control and can sometimes decrease stopping distances on dry and some slippery surfaces, on loose gravel or snow-covered surfaces ABS may significantly increase braking distance, while still improving steering control. Since ABS was introduced in production vehicles, such systems have become increasingly sophisticated and effective. Modern versions may not only prevent wheel lock under braking, but may also alter the front-to-rear brake bias. This latter function, depending on its specific capabilities and implementation, is known variously as electronic brakeforce distribution, traction control system, emergency brake assist, or electronic stability control (ESC).

History

Early systems

The concept for ABS predates the modern systems that were introduced in the 1950s. In 1908, for example, J.E. Francis introduced his 'Slip Prevention Regulator for Rail Vehicles'.

In 1920 the French automobile and aircraft pioneer Gabriel Voisin experimented with systems that modulated the hydraulic braking pressure on his aircraft brakes to reduce the risk of tyre slippage, as threshold braking on aircraft is nearly impossible. These systems used a flywheel and valve attached to a hydraulic line that feeds the brake cylinders. The flywheel is attached to a drum that runs at the same speed as the wheel. In normal braking, the drum and flywheel should spin at the same speed. However, when a wheel slows down, then the drum would do the same, leaving the flywheel spinning at a faster rate. This causes the valve to open, allowing a small amount of brake fluid to bypass the master cylinder into a local reservoir, lowering the pressure on the cylinder and releasing the brakes. The use of the drum and flywheel meant the valve only opened when the wheel was turning. In testing, a 30% improvement in braking performance was noted, because the pilots immediately applied full brakes instead of slowly increasing pressure in order to find the skid point. An additional benefit was the elimination of burned or burst tires.

The first proper recognition of the ABS system came later with the German engineer Karl Waessel, whose system for modulating braking power was officially patented in 1928. Wessel, however, never developed a working product and neither did Robert Bosch who produced a similar patent eight years later.

By the early 1950s, the Dunlop Maxaret anti-skid system was in widespread aviation use in the UK, with aircraft such as the Avro Vulcan and Handley Page Victor, Vickers Viscount, Vickers Valiant, English Electric Lightning, de Havilland Comet 2c, de Havilland Sea Vixen, and later aircraft, such as the Vickers VC10, Hawker Siddeley Trident, Hawker Siddeley 125, Hawker Siddeley HS 748 and derived British Aerospace ATP, and BAC One-Eleven, and the Dutch Fokker F27 Friendship (which unusually had a Dunlop high pressure (200 Bar) pneumatic system in lieu of hydraulics for braking, nose wheel steering and landing gear retraction), being fitted with Maxaret as standard. Maxaret, while reducing braking distances by up to 30% in icy or wet conditions, also increased tyre life, and had the additional advantage of allowing take-offs and landings in conditions that would preclude flying at all in non-Maxaret equipped aircraft.

In 1958, a Royal Enfield Super Meteor motorcycle was used by the Road Research Laboratory to test the Maxaret anti-lock brake. The experiments demonstrated that anti-lock brakes can be of great value to motorcycles, for which skidding is involved in a high proportion of accidents. Stopping distances were reduced in most of the tests compared with locked wheel braking, particularly on slippery surfaces, in which the improvement could be as much as 30 percent. Enfield's technical director at the time, Tony Wilson-Jones, saw little future in the system, however, and it was not put into production by the company.

A fully-mechanical system saw limited automobile use in the 1960s in the Ferguson P99 racing car, the Jensen FF, and the experimental all wheel drive Ford Zodiac, but saw no further use; the system proved expensive and unreliable.

The first fully-electronic anti-lock braking system was developed in the late-1960s for the Concorde aircraft.

The modern ABS system was invented in 1971 by Mario Palazzetti (known as 'Mister ABS') in the Fiat Research Centre and is now standard in almost every car. The system was called Antiskid and the patent was sold to Bosch who named it ABS.

Modern systems

Chrysler, together with the Bendix Corporation, introduced a computerized, three-channel, four-sensor all-wheel ABS called "Sure Brake" for its 1971 Imperial. It was available for several years thereafter, functioned as intended, and proved reliable. In 1969 1/2, Ford introduced an anti-lock braking system called "Sure-Track" to the rear wheels of the Lincoln Continental Mark III and Ford Thunderbird, as an option; it became standard in 1971. The Sure-Track braking system was designed with help from Kelsey-Hayes. In 1971, General Motors introduced the "Trackmaster" rear-wheel only ABS as an option on their rear-wheel drive Cadillac models and the Oldsmobile Toronado. In the same year, Nissan offered an EAL (Electro Anti-lock System) developed by Japanese company Denso as an option on the Nissan President, which became Japan's first electronic ABS.

1971: Imperial became the first production car with a 4 wheel computer-operated anti-lock braking system. Toyota introduced electronically controlled anti-skid brakes on Toyota Crown. In 1972, four-wheel-drive Triumph 2500 Estates were fitted with Mullard electronic systems as standard. Such cars were very rare however and very few survive today.

1971: First truck application: "Antislittamento" system developed by Fiat Veicoli Industriali and installed on Fiat truck model 691N1.

1976: WABCO began the development of the anti-locking braking system on commercial vehicles to prevent locking on slippery roads, followed in 1986 by the electronic braking system (EBS) for heavy-duty vehicles.

1978: Mercedes-Benz W116 As one of the firsts, used an electronic four-wheel multi-channel anti-lock braking system (ABS) from Bosch as an option from 1978 on.

1982: Honda introduced electronically controlled multi-channel ALB (Anti Locking Brakes) as an option for the second generation of Prelude, launched worldwide in 1982. Additional info: The general agent for Honda in Norway required all Preludes for the Norwegian market to have the ALB-system as a standard feature, making Honda Prelude be the first car delivered in Europe with ABS as a standard feature. The Norwegian general agent also included a sunroof and other options to be standard equipment in Norway, adding more luxury to the Honda brand. However, the Norwegian tax system made the well-equipped car very expensive, and the sales suffered from high costs. From 1984 the ALB-system, as well as the other optional features from Honda, was no longer a standard feature in Norway.

In 1985 the Ford Scorpio was introduced to the European market with a Teves electronic system throughout the range as standard. For this the model was awarded the coveted European Car of the Year Award in 1986, with very favourable praise from motoring journalists. After this success, Ford began research into Anti-Lock systems for the rest of their range, which encouraged other manufacturers to follow suit.

Since 1987 ABS has been standard equipment on all Mercedes-Benz automobiles. Lincoln followed suit in 1993.

In 1988, BMW introduced the first motorcycle with an electro-hydraulic ABS: the BMW K100. Yamaha Introduced the FJ1200 model with optional ABS in 1991. Honda followed suit in 1992 with the launch of its first motorcycle ABS on the ST1100 Pan European. In 2007, Suzuki launched its GSF1200SA (Bandit) with an ABS. In 2005, Harley-Davidson began offering an ABS option on police bikes.

Operation

Typically ABS includes a central electronic control unit (ECU), four wheel speed sensors, and at least two hydraulic valves within the brake hydraulics. The ECU constantly monitors the rotational speed of each wheel; if it detects the wheel rotating significantly slower than the speed of the vehicle, a condition indicative of impending wheel lock, it actuates the valves to reduce hydraulic pressure to the brake at the affected wheel, thus reducing the braking force on that wheel; the wheel then turns faster. Conversely, if the ECU detects a wheel turning significantly faster than the others, brake hydraulic pressure to the wheel is increased so the braking force is reapplied, slowing down the wheel. This process is repeated continuously and can be detected by the driver via brake pedal pulsation. Some anti-lock systems can apply or release braking pressure 15 times per second. Because of this, the wheels of cars equipped with ABS are practically impossible to lock even during panic braking in extreme conditions.

The ECU is programmed to disregard differences in wheel rotative speed below a critical threshold because when the car is turning, the two wheels towards the centre of the curve turn slower than the outer two. For this same reason, a differential is used in virtually all roadgoing vehicles.

If a fault develops in any part of the ABS, a warning light will usually be illuminated on the vehicle instrument panel, and the ABS will be disabled until the fault is rectified.

Modern ABS applies individual brake pressure to all four wheels through a control system of hub-mounted sensors and a dedicated micro-controller. ABS is offered or comes standard on most road vehicles produced today and is the

foundation for electronic stability control systems, which are rapidly increasing in popularity due to the vast reduction in the price of vehicle electronics over the years.

Modern electronic stability control systems are an evolution of the ABS concept. Here, a minimum of two additional sensors are added to help the system work: these are a steering wheel angle sensor and a gyroscopic sensor. The theory of operation is simple: when the gyroscopic sensor detects that the direction taken by the car does not coincide with what the steering wheel sensor reports, the ESC software will brake the necessary individual wheel(s) (up to three with the most sophisticated systems), so that the vehicle goes the way the driver intends. The steering wheel sensor also helps in the operation of Cornering Brake Control (CBC), since this will tell the ABS that wheels on the inside of the curve should brake more than wheels on the outside, and by how much.

ABS equipment may also be used to implement a traction control system (TCS) on the acceleration of the vehicle. If, when accelerating, the tyre loses traction, the ABS controller can detect the situation and take suitable action so that traction is regained. More sophisticated versions of this can also control throttle levels and brakes simultaneously.

The speed sensors of ABS are sometimes used in indirect tyre pressure monitoring system (TPMS), which can detect under-inflation of the tyre(s) by the difference in the rotational speed of wheels.

Components

There are four main components of ABS: wheel speed sensors, valves, a pump, and a controller.

Speed sensors(Encoders)

A speed sensor is used to determine the acceleration or deceleration of the wheel. These sensors use a magnet and a Hall effect sensor, or a toothed wheel and an electromagnetic coil to generate a signal. The rotation of the wheel or differential induces a magnetic field around the sensor. The fluctuations of this magnetic field generate a voltage in the sensor. Since the voltage induced in the sensor is a result of the rotating

wheel, this sensor can become inaccurate at slow speeds. The slower rotation of the wheel can cause inaccurate fluctuations in the magnetic field and thus cause inaccurate readings to the controller.

Valves

There is a valve in the brake line of each brake controlled by the ABS. On some systems, the valve has three positions:

In position one, the valve is open; pressure from the master cylinder is passed right through to the brake.

In position two, the valve blocks the line, isolating that brake from the master cylinder. This prevents the pressure from rising further should the driver push the brake pedal harder.

In position three, the valve releases some of the pressure from the brake.

The majority of problems with the valve system occur due to clogged valves. When a valve is clogged it is unable to open, close, or change position. An inoperable valve will prevent the system from modulating the valves and controlling pressure supplied to the brakes.

Pump

The pump in the ABS is used to restore the pressure to the hydraulic brakes after the valves have released it. A signal from the controller will release the valve at the detection of wheel slip. After a valve releases the pressure supplied from the user, the pump is used to restore the desired amount of pressure to the braking system. The controller will modulate the pump's status in order to provide the desired amount of pressure and reduce slipping.

Controller

The controller is an ECU type unit in the car which receives information from each individual wheel speed sensor. If a wheel loses traction, the signal is sent to the controller. The controller will then limit the brake force (EBD) and activate the ABS modulator which actuates the braking valves on and off.

The ABS controller knows that such a rapid deceleration of the car is impossible (and in actuality the rapid deceleration means the wheel is about to slip), so it reduces the pressure to that brake until it sees an acceleration, then it increases the pressure until it sees the deceleration again. It can do this very quickly before the wheel can actually significantly change speed. The result is that the wheel slows down at the same rate as the car, with the brakes keeping the wheels very near the point at which they will start to lock up. This gives the system maximum braking power.

This replaces the need to manually pump the brakes while driving on a slippery or a low traction surface, allowing to steer even in most emergency braking conditions.

When the ABS is in operation the driver will feel a pulsing in the brake pedal; this comes from the rapid opening and closing of the valves. This pulsing also tells the driver that the ABS has been triggered.

Use

There are many different variations and control algorithms for use in ABS.

One of the simpler systems works as follows:

1. The controller monitors the speed sensors at all times. It is looking for decelerations in the wheel that are out of the ordinary. Right before a wheel locks up, it will experience a rapid deceleration. If left unchecked, the wheel would stop much more quickly than any car could. It might take a car two to four seconds to stop from 60 mph (96.6 km/h) under ideal conditions, but a wheel that locks up could stop spinning in less than a second.
2. The ABS controller knows that such a rapid deceleration of the car is impossible (and in actuality the rapid deceleration means the wheel is about to slip), so it reduces the pressure to that brake until it sees an acceleration, then it increases the pressure until it sees the deceleration again. It can do this very quickly before the wheel can actually significantly change speed. The result is that the wheel slows down at the same rate as the car, with the brakes keeping the wheels very near the point at which they will start to lock up. This gives the system maximum braking power.

3. This replaces the need to manually pump the brakes while driving on a slippery or a low traction surface, allowing to steer even in most emergency braking conditions.
4. When the ABS is in operation the driver will feel a pulsing in the brake pedal; this comes from the rapid opening and closing of the valves. This pulsing also tells the driver that the ABS has been triggered.

Effectiveness

A 2004 Australian study by Monash University Accident Research Centre found that ABS:

- Reduced the risk of multiple vehicle crashes by 18 percent,
- Increased the risk of run-off-road crashes by 35 percent.

On high-traction surfaces such as bitumen, or concrete, many (though not all) ABS-equipped cars are able to attain braking distances better (i.e. shorter) than those that would be possible without the benefit of ABS. In real-world conditions, even an alert and experienced driver without ABS would find it difficult to match or improve on the performance of a typical driver with a modern ABS-equipped vehicle. ABS reduces the chances of crashing, and/or the severity of impact. The recommended technique for non-expert drivers in an ABS-equipped car, in a typical full-braking emergency, is to press the brake pedal as firmly as possible and, where appropriate, to steer around obstructions. In such situations, ABS will significantly reduce the chances of a skid and subsequent loss of control.

In gravel, sand, and deep snow, ABS tends to increase braking distances. On these surfaces, locked wheels dig in and stop the vehicle more quickly. ABS prevents this from occurring. Some ABS calibrations reduce this problem by slowing the cycling time, thus letting the wheels repeatedly briefly lock and unlock. Some vehicle manufacturers provide an "off-road" button to turn the ABS function off. The

primary benefit of ABS on such surfaces is to increase the ability of the driver to maintain control of the car rather than go into a skid, though the loss of control remains more likely on soft surfaces such as gravel or on slippery surfaces such as snow or ice. On a very slippery surface such as sheet ice or gravel, it is possible to lock multiple wheels at once, and this can defeat ABS (which relies on comparing all four wheels and detecting individual wheels skidding). The availability of ABS relieves most drivers from learning threshold braking.

A June 1999 National Highway Traffic Safety Administration (NHTSA) study found that ABS increased stopping distances on loose gravel by an average of 27.2 percent.

According to the NHTSA,

"ABS works with your regular braking system by automatically pumping them. In vehicles not equipped with ABS, the driver has to manually pump the brakes to prevent wheel lockup. In vehicles equipped with ABS, your foot should remain firmly planted on the brake pedal, while ABS pumps the brakes for you so you can concentrate on steering to safety."

When activated, some earlier ABSes caused the brake pedal to pulse noticeably. As most drivers rarely or do not brake hard enough to cause brake lock-up, and drivers typically do not read the vehicle's owner's manual, this may not be noticeable until an emergency. Some manufacturers have therefore implemented a brake assist system that

determines that the driver is attempting a "panic stop" (by detecting that the brake pedal was depressed very quickly, unlike a normal stop where the pedal pressure would usually be gradually increased. Some systems additionally monitor the rate at the accelerator was released, and/or the time between accelerator release and brake application) and the system automatically increases braking force where not enough pressure is applied. Hard or panic braking on bumpy surfaces, because of the bumps causing the speed of the wheel(s) to become erratic may also trigger the ABS, sometimes causing the system to enter its ice mode, where the system severely limits maximum available braking power. Nevertheless, ABS significantly improves safety and control for drivers in most on-road situations.

Anti-lock brakes are the subject of some experiments centred around risk compensation theory, which asserts that drivers adapt to the safety benefit of ABS by driving more aggressively. In a Munich study, half a fleet of taxicabs was equipped with anti-lock brakes, while the other half had conventional brake systems. The crash rate was substantially the same for both types of cab, and Wilde concludes this was due to drivers of ABS-equipped cabs taking more risks, assuming that ABS would take care of them, while the non-ABS drivers drove more carefully since ABS would not be there to help in case of a dangerous situation.

The Insurance Institute for Highway Safety released a study in 2010 that found motor-cycles with ABS 37% less likely to be involved in a fatal crash than models without ABS.

Forget Android Auto – parking sensors top the list of most wanted features for young drivers

When drivers consider the best gadgets to have on their next car, it is great to see safety concerns are at the top of the list for young motorists. Added to the risk of damage to their car, cost of repairs and lack of spaces, maybe it's no surprise that many motorists go to great lengths to avoid reversing into tight and tricky parking spaces.

But according to research by the UK's largest independent road safety charity, IAM RoadSmart, young drivers are ready to kick parking problems to the kerb once and for all as they look for vehicles fitted with parking sensor technology.

In a survey commissioned by IAM RoadSmart of more than 1,000 drivers aged 17-24, young drivers were asked to rank a number of optional extras from 1 to 10, with 10 being the most important and 1 being the least important, when purchasing a new car. Indeed, parking sensors took top spot on young drivers' wish lists, with an average score of 7.5 while Android Auto was surprisingly the least important.

Neil Greig, Director of Policy and Research at IAM RoadSmart, commented: "Having grown up in an age of mobile phones and social media, 17–24-year-olds are a demographic who have embraced how technology can make everyday decisions and activities easier, and clearly this is no different when it comes to keeping it between the lines or squeezing into tight spaces.

"Crucially, parking sensors, also make Britain's roads a safer place to be, as poorly parked or protruding vehicles can often obstruct the vision or restrict mobility of other road users."

However, Neil went on to warn young drivers that parking sensors should not be a substitute for practising good driving habits: "Parking sensors don't always work and still need the

back up of looking all around, checking mirrors, signalling and expecting the unexpected."

The survey also revealed that parking sensors are not the only form of technology that young drivers are looking for when purchasing a car. According to the research, Bluetooth connectivity (7.23), satellite navigation (7.19) and autonomous emergency braking (6.85) rank as the next most important technology features young drivers look for when purchasing a car.

Meanwhile, Android Auto (5.32) and perhaps surprisingly, the once popular sunroof (5.78) was ranked as the least important features by young drivers.

Neil concluded: "Technology will play a vital role in improving road safety in years to come, so it's great to see that young people are looking for features which either directly or indirectly help with making Britain's roads safer. Always buy the most modern car you can afford to make sure you reap the benefits of recent safety engineering improvements. We all think we are five-star drivers, but a five-star car could save your life when you make that one critical mistake."

For more information about IAM RoadSmart, which helps to improve driving and riding skills through courses and coaching, visit www.iamroadsmart.com

When purchasing a car, the following features were ranked on on levels of importance.

Parking sensors	7.55 (most important)
Bluetooth	7.23
Satellite Navigation	7.19
Autonomous emergency braking	6.85
Fast USB Charging point	6.63
Heated seats	6.20
Lane departure warning	6.13
Apple CarPlay	6.04
Sunroof	5.78
Android Auto	5.32

Reducing the speed on motorways in the wet

With thanks to Traffic Safety Roads

We have known for some time that driving on wet roads increases the risk of a crash, increases the overall stopping distances and gives rise to reduced visibility added to by the spay from other vehicles particularly where drivers take no action to reduce their speed.

Statistically, the UK has some of the safest motorways in Europe but it's also the case that there hasn't been a reduction in casualties of all severities on these roads since 2012, so perhaps there's an argument for looking at different measures to help bring the number of casualties down. 806 people were killed or seriously injured on motorways in Great Britain in 2019, with around a 30% of these casualties (246) occurring when the road surface was damp, wet or flooded – a figure higher than four years earlier (208).

According to research carried out by the RAC nearly three-quarters of drivers would like to see the standard 70mph speed limit on motorways reduced in wet weather an interesting fact I would suggest when you see the vast majority of drivers taking little or no action to do so when the road is wet or it is raining.

Of 2,100 drivers surveyed, a third (33%) said the limit should be reduced to 60mph in the wet, while 7% think it should be cut to 65mph. Seventeen per cent of drivers would like an even lower limit of 55mph or even 50mph, while 14% would like to see the limit cut but aren't sure by how much. You therefore have to ask the question of why given these views drivers don't react themselves and cut their speed?

Of the reasons given by drivers who advocate lower motorway speed limits in the wet, 78% said they felt lower limits would encourage some drivers to slow down, while 72% believed it might save lives, so is worth trying. Two-thirds (65%) said slower speeds might improve visibility with less spray from moving vehicles, and half (53%) felt it would reduce

overall vehicle speeds, even if some people ignored the lower limit.

Among the fifth of drivers (21%) who are against the idea of a lower motorway speed limit in bad weather, a majority said it was because most drivers already adjust their speed to the conditions (54%), or because there would be difficulty in defining when the new limit should apply (60%) – for instance, whether it would apply whenever the road surface was damp, or only while rain was actually falling. Four-in-10 (42%) said many drivers choose to ignore existing speed limits anyway and a similar proportion (41%) thought drivers wouldn't obey a lower motorway limit.

When asked whether a lower speed limit in the wet should be posted on stretches of motorway that already feature variable speed limit signage, including smart motorways, 73% of drivers were in favour, with 15% against the idea and 11% unsure.

It is believed that France is currently the only country in Europe to have speed limits that are reduced during inclement weather, with the 130km/h (80mph) limit reduced to 110km/h (68mph a reduction of around 12mph).

OPERATION SNAP DEVELOPED

A new portal has been launched to enable those who submit footage of driving offences in Wales to access an update on the status of their submission.

Since 2017, people in Wales have been encouraged to submit footage of "dangerous and carelessdriving" to the police via Operation SNAP, which is managed by GoSafe, the Welsh road casualty reduction partnership. Feedback received has highlighted a desire from people making a submission to be updated on the status of their footage.

Under the new system, submitters will receive an email from GoSafe informing them of any update in the status of their submission. Within the email there will be a link which will take the submitter to the newly-launched portal.

National Campaigns and Activity

With thanks to Traffic Safety Roads

The theme ‘Road Safety Heroes’ has been set for this year’s Road Safety Week, which takes place between 15th and 21st November with the final Sunday ie 21st November being the World Day of Remembrance for Road Traffic Victims both preceded by Project Edward running from 13th to 17th September 2021.

Road Safety Week seeks to raise public awareness of road safety issues, and is intended to act as ‘the driver for positive change on UK roads’ and the chosen theme for this year being road safety heroes, aims to celebrate those who make the roads safer for everyone including the emergency services, medical teams and support services etc who care for people after a crash as well as designers and engineers who work to create the safest vehicles and safer spaces for people to travel.

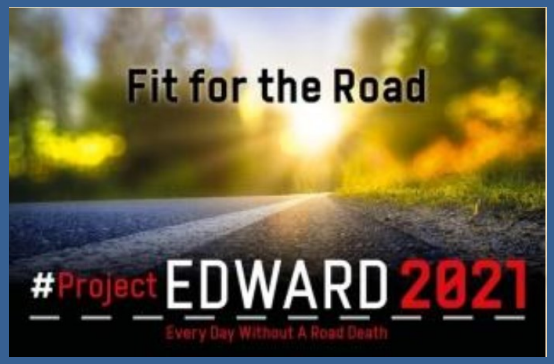
There are many different ways individuals, schools and organisations can get involved and focus attention on road safety during the week and Brake who co-ordinate the week have a host of resources available as part of an action pack which can be accessed from https://www.brake.org.uk/road-safety-week The World Day of Remembrance for Road Traffic Victims (WDoR) is held on the third Sunday of November each year to remember those who died or were injured from road crashes and the plight of their loved ones who must cope with the consequences of their deaths or injuries. Over 1.3 million people lose their lives across the world each year as a result of a road crash which many people describe as a pandemic

and have tried to get it recognised in that way for many years.

The objectives of the WDoR are to provide a platform for road traffic victims and their families to:

- Remember all people killed and seriously injured on the roads;
- Acknowledge the crucial work of the emergency services;
- Draw attention to the generally trivial legal response to culpable road deaths
- advocate for better support for road traffic victims and victim families;
- Promote actions to prevent and eventually stop further road deaths and injuries

The day is intended to put a spotlight on the reduction of traffic speeds since lower speeds have the potential to prevent many deaths and serious injuries, in particular those of pedestrians and all other vulnerable road users.



Project EDWARD (Every Day without a Road Death) is an annual ongoing road safety campaign, which began life in 2016 and had a particular focus during the week 13th to 17th September 2021.

The theme this year, “Fit for the Road” is supported by the DfT, Highways England, the National Police Chiefs Council, the National Fire Chiefs Council and a large number of police forces, fire and rescue organisations, policy making groups and businesses.

The campaign aims to provide a platform that showcases some of the best work being done around the country within the five pillars of the Safe System Approach as well as encouraging organisations to be pro-active about their road safety messaging. More details can be found at www. https://projectedward.org/

New Rule One

Changes to the Highway Code which are subject to parliamentary approval, is due to be published shortly and will create a new 'hierarchy of road users' which will give priority to cyclist and pedestrian priority at crossings and junctions.

The 'hierarchy of road users' is expected to take its place as Rule 1 currently rule one being *Pavements (including any path along the side of a road) should be used if provided. Where possible, avoid being next to the kerb with your back to the traffic. If you have to step into the road, look both ways first. Always show due care and consideration for others.*

The introduction of an higher hierarchy of road users is not without controversy with some claiming that rather than help vulnerable road users it puts them in a position of greater danger and it would be far better to strengthen the advice about the responsibilities of all road users to each other and the need to share the roads with all due consideration. However the revision sets out clearly to ensure that road users who can do the greatest harm have the greatest responsibility to reduce the danger by ordering a higher hierarchy. Accordingly it places those at most risk at the top of the hierarchy and seeks to make motorised vehicles subservient and taking away some of the priority they automatically have assumed for many years.

Within its implementation it will strengthen rules of pedestrian priority on pavements and whencrossing or waiting to cross the road; provide guidance on safe passing distances and speeds and ensure that cyclists have priority at junctions when travelling straight ahead.

HIERARCHY OF ROAD USERS

- **Pedestrians**
- **Cyclists**
- **Horse riders**
- **Motorcyclists**
- **Cars/taxis**
- **Vans/minibuses**
- **Large passenger vehicles/ Heavy goods vehicles**

Platooning Trial

With thanks to Traffic Safety Roads

In 2017, the Department for Transport and Highways England commissioned the UK HGV Platooning Project – Helm UK. This project involves a series of platooning trials on UK roads which will help gather objective evidence on both the safety implications and the real-world benefits of platooning for the UK.

Platooning is a system where trucks can travel on motorways with specified gaps between them using autonomous technology are easy to comprehend. By using advanced technology trucks form organised, identically spaced convoys and can therefore drive closer together over long distances, thereby cutting air drag friction, bringing down fuel consumption and cutting costs.

Now TRL as lead partner on the project are undertaking some research to quantify the economic benefits of platooning for freight companies. As such, they are looking to undertake some stakeholder engagement with UK Freight Operators to understand the likely adoption of platooning among fleet operators and the key opportunities and limitations of different platooning models.

TRL are looking to interview freight operators, from September for about an hour, who operate HGVs with box or curtain side trailers and undertake a significant proportion of driving on motorways or primary A-roads. No prior knowledge or involvement in platooning is required ahead of the interview. TRL will be providing some background information on platooning to help those involved assess the viability of the technology for their specific freight operation.

The research will help contribute to the UK's first ever platooning trial and will help identify the economic implications for HGV companies to operate platoons. This insight is essential to determine the business case for platooning and whether it can successfully and safely deployed on UK roads.

Find out more about the project titled HelmUK and how to become involved by visiting helmuk@trl.co.uk

IAM RoadSmart Skills Day Training Programme

The Skills Day programme takes place on motor racing circuits, but we are certainly not offering a racing or track day experience. The circuit is simply the classroom and safe learning environment where thecustomer can really get to know their car or motorcycle. We focus exclusively on road skills development, always under the watchful eyes of a dedicated instructor drawn from the most experienced IAM RoadSmart volunteer personnel. All our instructors have a recognised qualification in driver or rider training from the Institute of the Motor Industry.

As this is a skills development day the upper speed limit is 90mph and overtaking is strictly controlled.

No overtaking is permitted during cornering. The day is all about driver or rider control, not setting the best lap time. There is absolutely no racing allowed and any inappropriate behaviour will lead to instant removal from the day's activities.

A full instructor and customer safety briefing is delivered at the start of each day. A dedicated IAM RoadSmart Safety Officer and circuit officials/marshals monitor the circuit activity.

Car Skills Day:

The customer uses their own road-legal car and is always accompanied by a dedicated instructor while on track. The session lasts around three hours during which one instructor works with two customers.

Total individual driving time is therefore no longer than 90 minutes for each customer.

The training focuses on:

1. INFORMATION – vision and lines, head up - eyes on main beam

2. POSITION & STEERING - how your position/steering affects your control

3. SPEED - brake smoothly and progressively

4. GEAR – be in a responsive gear for the circumstances

5. ACCELERATION – throttle control, plan to be on a positive throttle in bends

6. FULL CONTROL - bringing it all together for the perfect controlled drive

Closing date for the spring 2022 edition of the Wessex Advanced Motorists e-Newsletter is 20th January.

All contributions would be very welcome.

All items should be sent to ed@wessexam.uk