Derbyshire Advanced Motorcyclists

Think Bike!

Summer 2008

Contents

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Chairman's Notes.

In an attempt to keep all members up to date with current traffic regulations it was decided at a recent committee meeting to provide all current members and associates with a copy of the current Highway Code. These have now been delivered and can be obtained on a club night, so if you have not already received yours please see me on club night to obtain your copy. The cost of postage is excessive so they can only be picked up on the night. I think the number we have obtained will mean that the Highway Code could now well give Harry Potter a run for his money in the best seller lists.
It has been really encouraging this summer to see how many of our current observers took up the opportunity of a training refresher with Roy Stevenson. The feedback from Roy was in the main very positive and all those who took part expressed how much they had enjoyed and benefited from the runs. This has been borne out recently by the increased number of passes we have had with at least six so far in July. We are always looking to increase and improve our observer list so please if you would like to increase your expertise and give a little back to the club please contact myself, Mike Barker or Tony Grimshaw and we would be delighted to help and welcome you to the observers' ranks.
At the end of July I along with other members of the club attended a BikeSafe day in Matlock. My thanks to Peter Harris and Mary Jerrison for organising on our behalf. Unusually this happened to fall on a very hot Sunday so Matlock was very busy and it was very pleasing to see how many riders came to have a chat and look into the possibility of joining our ranks. This event was also attended by the Derbyshire County Council, the Police, St Johns Ambulance and Shires motorcycle training. With regard to the latter,who are also based on the Meadows, I very much hope that we may be able to offer our services in developing young riders who have recently passed their tests I am sure that our experienced observers can be a real benefit to them. My experience of being overtaken on double white lines around the bends of Carsington reservoir by a Fireblade who also carried on to pass three cars on the same lines and then sat at the end of the road in Middleton waiting for his mates, who had more sense and were still behind us, ably demonstrates that our organisation is essential if further carnage on

our roads is to be avoided.
Finally best wishes go to Martin Blencowe who is this year taking part in the EnduroAfrica event. Having taken part last year myself I know that Martin will have at the very least an exciting experience that will stay with him for ever.
To all - enjoy your summer riding and, most of all, “Ride Safe”.

Graeme

Recent Test Passes

Congratulations to

Dave Bonser	Observer. John Lloyd.
Robert Hughes	Observer. Chris Tyler.
Gordon Constable	Observer. Graeme Willett
Richard Prince	Observer. Graeme Willett
John Porter	Observer. Tony Grimshaw
Phillip Fairbrother	Observer. Dennis Shelley
David Taylor	Observer. Peter Clarke

OOPS

In the last newsletter, I wrongly attributed the authorship of the fantastic journey “North Cape Island, the long way round”. My sincerest apologies to the correct author, Richard Redding.

PH

Region 3 Spring Meeting and AGM

How does the IAM organise itself? Does it provide a forum for wider discussion? Your fearless reporter attends the Region 3 AGM to find out.

The meeting was held, by courtesy of West Mercia Constabulary, in the HQ at Hindlip Hall, which is a in nice part of the world near Worcester. The meeting was for both car and bike groups, though the Derby car group, unusually, was not represented.

Introduction

The proceedings were introduced with a somewhat light-hearted pitch by Bruce Ferguson, with a video involving some monkeys supposed to represent a report of previous meetings. A folder and some accounts were provided, but unfortunately nobody could be found with a copy of the minutes of the previous AGM. The election of officers proceeded smoothly, with Les Bell continuing as chairman.

Headquarters

Next up was Simon Best from IAM headquarters. He reported that IAM membership had fallen from its peak in 2005, but the m/c section was continuing to grow. There were currently 18000 associates, 1/2 Skill for Life, 1/2 Fleet. Skill for Life sales peaked in 2006. There was a programme for ADIs, 650 now being registered, and they were encouraging the Pass Plus scheme. He spoke abput the IAM group structure, with 5 trading companies, 3 corporate training efforts, and a turnover of £9.4 million from 86 employees. In plans for the future he mentioned a website study, E-newsletters, upping the m/c content of the magazine, and members' days.

As regards tests, there was a decline for cars, but m/c tests remained stable at 80-90/year. Associates were mainly male, aged over 40.

The IAM had taken over the former AA Motoring Trust in 2007, with the objectives of research, policy formation and advocacy. It had produced a motoring facts booklet (available on the website) and wished to promote practical evidence-based schemes. Research targets included the acceptability of speed cameras.

The 2008-2009 vision embraced the ADI scheme, younger drivers, older drivers, the corporate Wheels programme, Fleet training, the IT platform, the website and an increased press and PR effort.
He fielded some questions:

- Does the IAM lobby the Government? Yes
- Future of Pass Plus? Likely to disappear in 18 months, possibly to be replaced by a tougher L test
- Lobbying for more traffic police? Yes
- Benefits of IAM membership? Discounts on insurance and new Volvos

Readers may form their own opinions of the IAM HQ activities, but HQ is certainly spending a lot of our money.

Group Communications

Bryan Davis, secretary of the Birmingham Advanced Motorists, presented an account of how the group had revived itself from being nearly ready to fold. Interesting to me was that the problems they had had were already largely solved in Derby. There was a lack of dfinition of roles, a lack of image, and loads of missed opportunities. their solu¬tions involved centralising the admin, getting the committee to assist in routine admin, and collating and distributing correspondence. The newsletter went out monthly (gosh - PH) and there were flyers and emails before the Sunday a.m. meetings. They began swapping ideas with other groups and HQ, they involved the media and local radio. Defined roles were for committee members: young driver initiatives, public contact, recruitment, associate coordination, and observer training. For their image they evolved a corporate consistency, regular monthly meetings with complimentary refreshments. Everybody had a membership card and a feel-good factor was returning. They found an affordable new venue (!) and had quality guest speakers. Accurate re¬cords were important: 9% lapsed members rejoined, 8% had changed their address in the year, 11 % had errors in their recorded details, and 7% when pushed came up with an email address. Retrieving missed opportunities included sending out GiftAid forms with all renewals.

As a result of all this effort, the associate dropout had reduced from 15 in the previous year to 2 in the first half of the current year, and the attendance at meetings had doubled from 20 to 40 out of a membership of 150. The fun was back.

Insurance

Cheaper and better insurance was the theme of the next presentation by 2 representatives of Adelaide, the company behind IAM Surety. They were behind BikeSafe and Roadwise, the latter aimed at 17-24 year-old car drivers. IAM Surety now had 4395 members with active policies, forecast to be 8500 by December 2008. The previous scheme took 8 years to achieve the same result. Policies were tailored to specific needs of IAM members, including cover for IAM runs. A partial reduction in premium was available for associates.

Reg Dutson award

At this point there was applause for the presentation of this award to Lester Phelps by Bruce Ferguson, for his long work in m/c safety.

Young Drivers

John Morris and Jason Stokes, from Shropshire, spoke about their young driver initiative. The IAM Young Drivers forum was not active. There was no point in waiting any further for a Head Office initiative. Worcester was running a 3-evening course plus observed run, with a prize of a free Skill for Life and skid pan course. The target audience typically were just past being full-time students, unkeen on embarking on yet another evening class, therefore they planned to start with a demo run - fun, enjoyable but with a safety element. The observer character to be matched to the associate (how? - PH) and the target was to get them through the test rather than to retain them as members. Region 5 have set up a social club (YDM Region 5) communicating via Facebook, with activities such as karting, pizza parties as well as driving standards.
Simon Best admitted that Head Office has mishandled youth training.

Highways Agency

The final contribution came from Martin Stott, of the Highways Agency. Since this organisation is charged with maintaining the free flow of traffic on major roads, he was embarrassed to admit that the reason for his very late appearance was because of a hold-up on the road.

From 2000 to 2010 the traffic was expected to rise by 23-30%. The key performance indicators for the Highways Agency were
• to reduce accidents
• to reduce congestion

Their responses to these challenges were to provide Enhanced Incident Support Units, under the direct control of the Agency but run by contractors, and also Traffic Officers. New technology included Midas loops (Motorway Incident Detection and Automatic Signalling), CCTV, VMS (Variable Message Systems) and ATM (Automatic Traffic Management).

The Traffic Officer Service was empowered to
- stop and direct traffic
- close lanes or whole motorways
- place and operate traffic signals
- manage traffic surveys

The agency makes use of a variety of 4WD vehicles, including Discoverys, Landcruisers and Shoguns, the latter two giving the best value. They are recognised by their livery and VMS panel. They carried communications equipment and also no fewer than 20 cones, 9 signs, 9 sequential lights - and animal control equipment!

Conclusion

I found the meeting to be a very enjoyable one. The DAM has perhaps a few lessons to learn, but in the main I feel we are well ahead of the game, and should ourselves be presenting our achievements to a wider circle.

PH

Angles of Lean

One of my earliest memories is of belting round the corner of the house on my tricycle, with the inside wheel about to lift into the air. There was a rather spiky cactus on the outside of the bend, and the penalty for missing the bend was obvious. By such means one arrives at the discovery that stability on a tricycle is achieved by leaning into the bend.

On two wheels, of course, it is easier: one leans the whole bike. This brings up the question: how far must one lean? It becomes clear that in order to go round a corner faster one needs to lean further, and in order to go round a tighter corner one needs to lean further, but are there any other factors? Try the following quiz:

Questions

1. With a heavy bike you need to lean further than with a lighter bike. True or false?
2. With a low centre of gravity you need to lean less than on a bike with a high centre of gravity. True or false?
3. With a pillion rider you need to lean further than you would without. True or false?
4. A naked bike needs to lean less than a tourer with laden panniers. True or false?
5. The wider the rear tyre, the less you have to lean. True or false?
6. You can turn faster if you get your knee down. True or false?

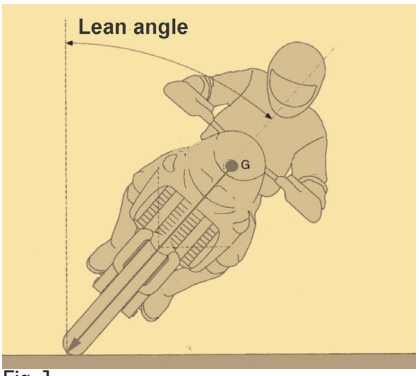

Fig. 1


Fig. 2

Answers

1. False
2. False
3. False
4. False
5. False
6. False

If you got all that right, don't bother with the rest of this story. The rest of you may read on…

We will start with a classic image of a motorcyclist inclined for a corner (fig. 1) and reduce it to a blob representing the centre of gravity of the bike and rider combined (fig. 2). The stick represents the separation of the centre of gravity from the arrowhead, which is the point of contact with the ground.

Fig. 3

Fig. 4

Rotating the bike

Now we move to the revered Isaac Newton and his proposal of 3 Laws of Motion. There were no motorcyclists in his day, but his laws have yet to be repealed. The First Law states that a motorcycle keeps going in a straight line at a steady speed unless acted on by an external force. In order to get a bike to turn a sideways force needs to be applied. What is the force and where is it applied? The answer is that the force is the friction between tyre and ground (fig. 3), but unfortunately this does not apply to the rider, nor, indeed, does it fully satisfy the bike, because this force is not applied to the centre of gravity. As you may know

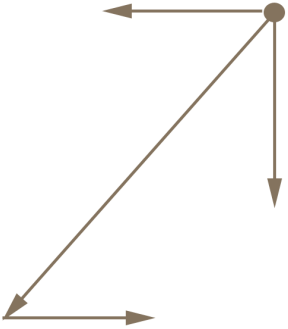

Fig. 5

from playing snooker, if you hit a ball dead centre it rolls in a straight line, but if you hit it off-centre it tends to spin sideways as well as rolling forwards. The same applies to the bike. As the tyre is constrained into the circle the rider and the rest of the bike want to continue in a straight line out of the circle (fig 4). It feels as if he and the bike want to tip out of the circle. In exactly the same way a car taken too fast round a corner will lift the inner wheels and eventually roll outwards.

Centrifugal and centripetal force

Some people will say that the turning bike and rider experience a force pushing them outwards ("centrifugal force"), which needs to be balanced by an equal force pulling them inwards. This is achieved by tipping the bike inwards and asking gravity to do the honours (fig. 5). With gravity pulling the bike one way and the centrifugal force the other, the bike becomes balanced in the turn.

At this point I should mention that mathematicians and physicists are not too keen on the idea of a centrifugal force, and they are right. If you imagine yourself as a conker on a string being whirled round a schoolboy's head, it becomes clear that it is the string pulling you inwards that keeps you going round the circle. The force is really "centripetal" (centre-seeking). Centrifugal (centre-escaping) force is a sensation which arises because the attempt to travel in a straight line as in Newton's First Law is being blocked by the centripetal force.

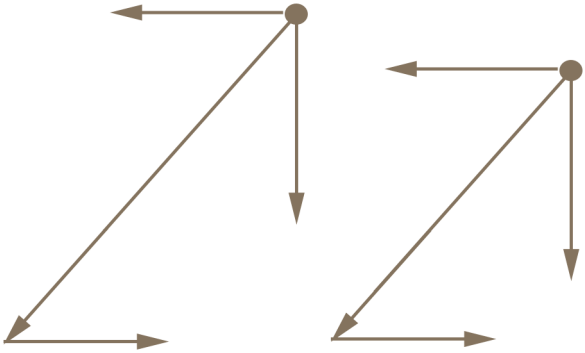

Fig. 6

Alternatives to leaning the bike

It is not essential to lean the bike into the corner. I have tried this string idea out by slinging a rope with a grappling hook in the general direction of a bush as one rounds the corner on a bike. It is a very effective way of preventing having to lean, but there are a few disadvantages: a) there isn't a bush on every corner, b) on right-hand corners it obstructs the oncoming traffic, and c) It is rather difficult to remove the grapple from the bush after the corner.

Leaning the bike is best

So back to leaning into the circle, and this is where it gets slightly mathematical. If we go back to the conker story, the faster you get whirled around the head, the tighter the string. It is also true that the longer the string the less the tension in the string for a given number of revolutions per minute around the head, so the tension in the string (or the force required to swing an object round a circle) depends both on the radius of the circle (the length of the string) and the rate of progress around the circle, as well

as on the weight (strictly speaking, mass) of the conker or motorcycle.

Back to fig. 5. Whatever one says about centrifugal force, the centre of gravity of the bike is trying to move out of the circle, and it is prevented from doing so by being tipped over, so that the weight of the bike tends to drop it inwards. The angle to which it is leaned over is sufficient to balance these two tendencies. As the equations for both these forces relate to the weight of the bike, the weight cancels out in the equation for the angle, which now depends only on the speed and the radius of the curve (sharpness of the bend). That answers question 1 above.

The answers to questions 2, 3 and 4 are pictured in fig. 6. Briefly, the forces on the bike act through the centre of gravity, but do not depend on how far that is from the ground. It is true that a bike with a low centre of gravity is easier to swing back and forth, and easier to balance generally, but in a curve it takes up exactly the same angle as a bike with a high centre of gravity.

The width of the rear tyre (question 5) is an interesting one, as its size seems to be a bragging point in certain bike circles, and it is thought macho to fit a bigger than original tyre (though why men should brag about an object which goes round and disappears up itself I am not sure). The key feature is that the effective angle of lean is measured not from the centre-line of the bike, but from the actual contact patch on the tyre, which on a fat tyre is way off to the side (fig. 7). This means that the equations

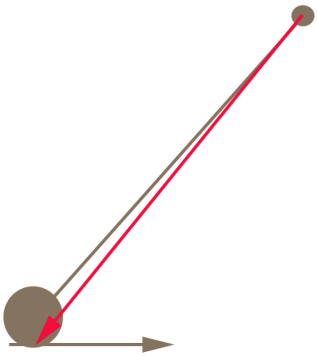

Fig. 7

are satisfied and the bike is balanced only when the rider tips the bike further on a fat tyre.

If you are still awake at this point you may wonder about all this needing to lean more on fat tyres, especially as the front and back tyres are always of very different sizes. Is it possible to lean more at the back than the front? Yes it is: just think of the bike as a wedge of cheese, with the thick end at the back. When you tip the wedge, it tips along the edge between front and back, and therefore tips slightly forward as well as sideways. The greater the difference between the tyres, the greater is the forward tip. It is not a big effect, but it is there.

Real world angles

Now for some numbers. I won't bore you with the actual formulae, but if you want to go round a roundabout with a diameter of 60 yards at a speed of 30 mph, you need to tip the bike over to an angle of approximately 34°, which is moderately steep. If you wanted to do it at 40 mph, the required angle would be 50°, and unless you had some pretty magic tyres, the likelihood is that you would be examining the road surface quite closely.

Getting your knee down

How does getting your knee down help with the geometry (question 6)? The answer is very little, when you look at actual numbers. The VFR750 has a wet weight of 230 kg with a centre of gravity about 50 cm from the ground. The rider with a weight of 70 kg has his CG about 100 cm from the ground. The combined CG of 300kg is about 65 cm from the ground . Body width at bum level is about 30 cm (think thin here), so shifting only 20 cm sideways will already leave you with only thigh on the saddle. Let us be very athletic and shift 30 cm sideways. The combined CG shifts a proud 9 cm, making an angle of 8° with the vertical line. This would mean that the bike itself could stay vertical if you went round the said 60-yard roundabout at 14 mph. Big deal. If you tip the bike over to 45° the bumshifting is not all sideways but partly downwards, and the actual increase in leverage is even less. Even on the race track, getting your knee down has little to do with keeping the bike more upright and everything to do with gauging the angle by noting the proximity of your knee to the ground.

A slow-speed knee down?

You still need to lean the bike at slow speeds round a corner. Because there is this fixed relationship between speed, radius of corner and angle of lean, you could consider how small the circle would have to be in order to get a knee down at walking pace. My bike has a pretty terrible turning circle, but a more nimble one might turn inside a 5 yard circle. To balance the bike at 40° round this circle you need to be doing just less than 10 mph. Anyone brave enough to try?

Forthcoming events

Club nights

Monday, 10 November

Monday, 8 December

Monday,12 January 2009

DAM Dinner - date to be announced

In the next issue...

Meeting reports

What do you do (when you're not on the bike)?

Your stories

Your pictures