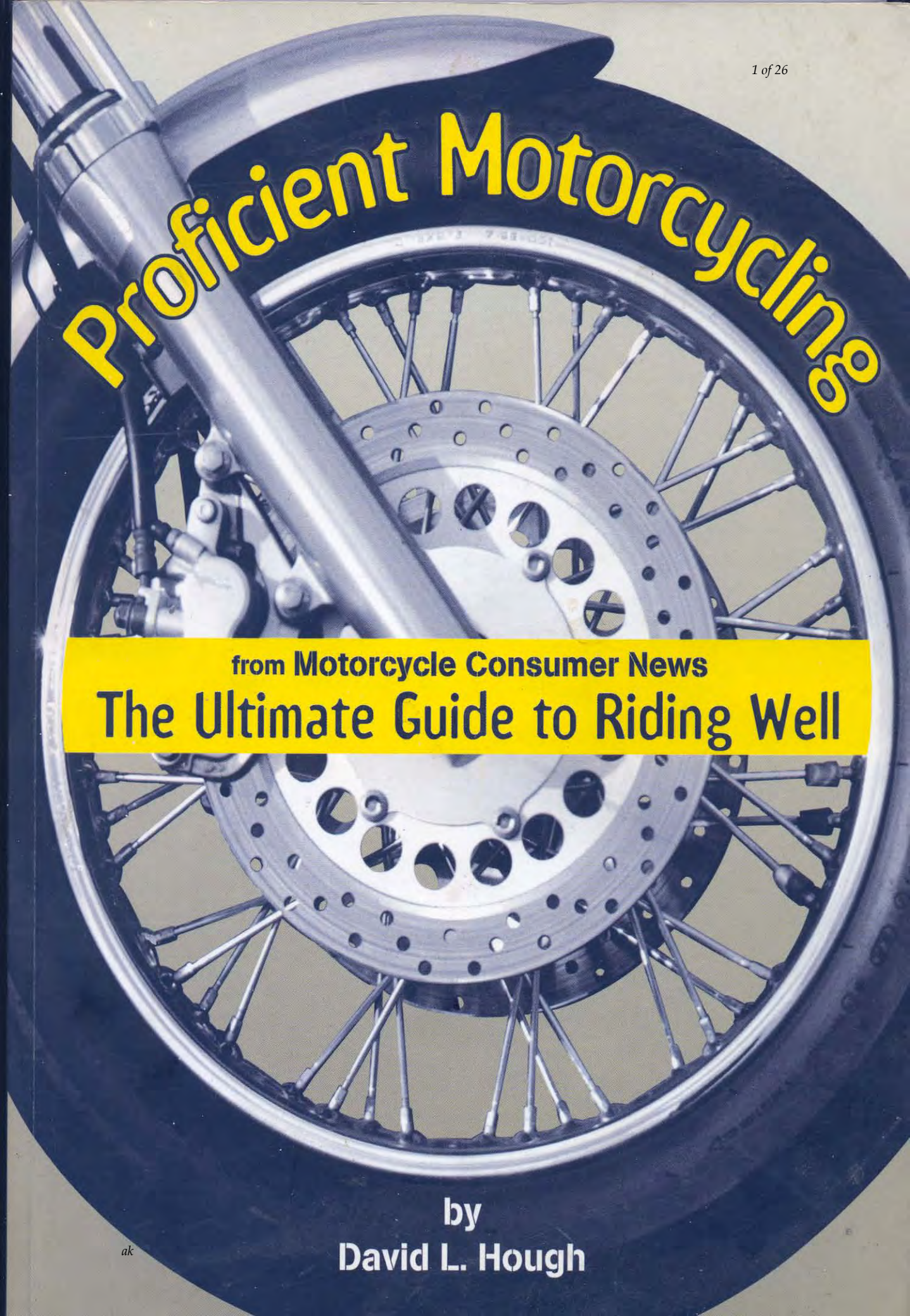

Proficient Motorcycling

from Motorcycle Consumer News

The Ultimate Guide to Riding Well

by

David L. Hough

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THE HUR

When it comes to comprehensive motorcycle statistics in the USA, there has been only one real study completed in all of history—the famous Hurt Report.

Time warp back to 1979. There had been a big motorcycle-buying boom in the seventies, and a lot of those new riders managed to get involved in accidents. That big rise in accidents and fatalities got the attention of the U.S. Department of Transportation, and it decided to get into the act to protect us from ourselves. The National Highway Traffic Safety Administration (NHTSA) let a big contract to study motorcycle accidents, and the University of Southern California Traffic Safety Center got the job. The USC professor responsible for carrying it out was Hugh H. (Harry) Hurt, Jr. The Objectives of the study were to determine the causes of motorcycle accidents, analyze the effectiveness of protective gear such as safety helmets, and then figure out what countermeasures might help prevent accidents or reduce injuries.

Hurt put together a team of investigators who dashed out to every motorcycle accident scene, day or night, over two years. One of the important concepts was that all of the investigators were experienced motorcyclists. The team did an exhaustive study of each accident, determining approximately 1,000 data elements. They took photos, examined the wreckage, measured the skid marks, and interviewed the survivors of more than 900 motorcycle accidents, then interviewed 2,310 passing motorcyclists, and studied 3,600 police reports from the same area. Then they studied the data from every angle for another two years, and published the final report in January 1981.

Now, flash forward twenty years. Traffic is more intense but so is motorcycling. We've got rider training available all across the country, and motorcycles are technically a lot better than the ones we rode in the seventies. Is the Hurt Report still valid for today's motorcycling, and is Harry Hurt Jr. still around? I decided to find out.

I found Harry Hurt still working in safety research, still riding motorcycles, willing to talk with me, and sharp as a tack. Hurt is now President of the Head Protection Research Laboratory (HPRL), a nonprofit corporation formed to conduct research on motorcycle and bicycle accidents. The HPRL also conducts accident investigations and provides training. My first question about the Hurt Report was did Hurt think it was still valid after twenty years?

"We had no idea that study would last so long. We always assumed someone would commission another bigger study. As it worked out, no one ever came up with a contract. Nobody wants to do any new research projects."

Harry confided that he believes the report is still basically valid. It's not just that nothing has come along to replace it, but that he has personally seen evidence that motorcyclists are having the same type of accidents today as they did back in the seventies.

"I still do consulting for police departments and have investigated a num-

It's sort of like the patient who went to the doctor complaining of a sore tongue:

Patient: *"Doctor, my tongue really hurts."*

Doctor: *"Does your tongue hurt all the time?"*

Patient: *"No, but it really hurts when I bite down hard on it."*

Doctor: *"Well, don't do that!"*

The statistics based on accidents give us hints about what *not* to do, but they don't tell us what successful riders *do* to avoid crashing. The traditional approach to absorbing a helmet full of the right stuff is just to keep riding and riding. *Experience*, the veterans might suggest, *is the best teacher.* In other words, just ride far enough and long enough and life will eventually present you with all the lessons to be learned. That's probably true, but the trouble is some of the motorcycling errors can ambush you before you learn enough to avoid them. It's a lot safer and less risky to learn what you can from other people's mistakes and experiences. That's why I pay attention to the grizzled old motorcycling veterans when they occasionally drop hints about lessons learned.

I happened to be along one day when the *MCN* editors were picking up a test motorcycle for a photo shoot. Mostly, they were engrossed in details of the new machine, the fleeting time, the need to find a photogenic location, and the urgency of beating the evening rush hour. The dealer, obviously a veteran rider, was on a different mental plane. He knew I wrote skill articles, and he offered some advice about one small but important detail: adjusting mirrors. *Most people adjust their mirrors so that the view converges behind the motorcycle. I figured out that it is more important to see more of what's coming up in adjacent lanes. So I adjust my mirrors more toward the sides.* As we rode away with the test machine, I observed that I also adjusted my mirrors far enough outward that I could pick up only a corner of the saddlebags at the inside edges. *Big deal!* you may be thinking. *Who cares how the mirrors are adjusted? Let's get to the really important stuff!*

Well, maybe a helmet full of such small details adds up to the important stuff. Sure, our physical riding skills have a lot to do with keeping the bike under control. But what goes on between the ears is even more important because that's where we decide what to tell our muscles. Novices start out with the physical skills of mastering the clutch, throttle, brakes, and balance. Veterans understand that motorcycling is really more of a mental process of scrutinizing the situation, evaluating the hazards, and deciding what to do with the motorcycle.

Formal rider training courses can give you a big dose of information all at once. But you can also gain a lot of information from motorcycle magazines and books. A year's worth of monthly reading adds up to a big dose of information to help stack the motorcycling risk deck in your favor. A lot of motorcyclists miss out simply because they don't take the time to read what's available.

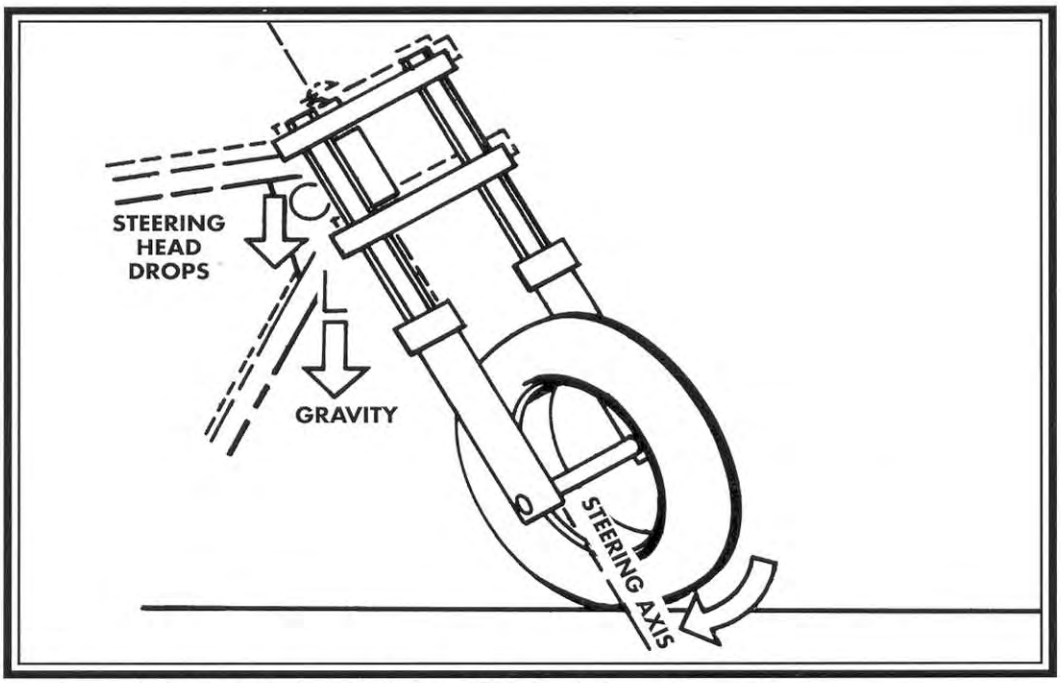
The trouble with knowledge is that it's a lot like French bread—it doesn't stay fresh very long. A number of veteran motorcyclists have told me they clip and save helpful articles in a notebook to study again on cold winter nights. You'd think the veterans would have learned it all by now, but that's not the way it works. They are still around because they continue to refresh their knowledge.

If you've found time to take the MSF Experienced RiderCourse, you've skewed the odds even more in your favor. The one-day ERC includes both accident avoidance strategies for the brain, and skill exercises for the muscles. I've bumped into a lot of veteran riders who take the ERC every couple of years as a refresher. If you haven't gotten around to taking any rider training, I strongly

the pivot center, or steering axis, of the whole front end. For most machines, the steering axis strikes the ground somewhere ahead of where the front tire is sitting on the surface (the contact patch). The distance along the ground from the steering axis to the center of the contact patch is called trail because the contact patch trails behind the steering axis. Typically, street bikes have trail somewhere in the 3- to 6-inch range. In general, longer trail results in a machine that resists leaning into corners, and shorter trail results in quicker, easier steering, or perhaps even a machine that wants to fall into corners. Since rake and trail are interdependent, the figures in bike reviews are usually given as rake/trail.

Steering Head Rise and Fall

One of the interesting results of rake/trail is that the steering head rises and falls as the front end is pivoted from one side to the other. The greater the rake, the more the rise and fall. You can see this for yourself. Straddle your bike, get it balanced vertically, and observe the elevation of the top of the steering head as you turn the handlebars from straight ahead to either side and back. When you turn away from center, the steering head drops. When you turn back to center, the steering head rises.



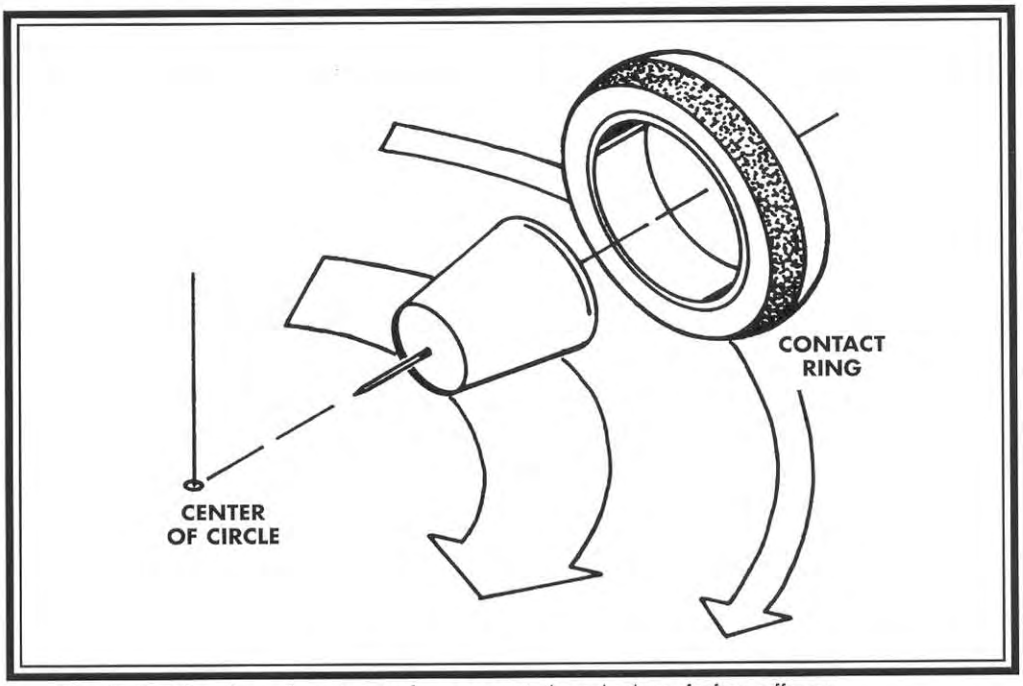
Because of rake, the steering head actually rises and falls when the front end is steered.

Now remember, gravity is pulling down on the bike, which is supporting perhaps half its weight on the steering head. So gravity actually helps turn the front end away from center and resists the front end returning to center. That's not a bad deal, since engineers can balance steering head rise and fall against other steering forces.

Mass Shift

While you are straddling your bike, you might also note that when you turn the handlebars, the steering head also moves sideways (laterally). If you turn the

part of the answer is called coning. To understand coning, let's consider the shape of the front tire where it meets the road surface. Although we can see that the top of an inflated tire forms a rounded shape, we have to imagine that the tire momentarily gets squashed flat where it contacts the ground at the CP. But we also know that the tire CP is really a continuous ring around the tread. It's important to recognize that with the bike leaned over into a turn, this CP ring forms a conical



When the tire is leaned over, the contact ring forms a cone, similar to the shape of a foam coffee cup.

shape, similar to a foam coffee cup on its side.

If you nudge the cup forward, it rolls in a circle because the distance around the cup at the closed end is shorter than the distance around the open end. If you stick a toothpick through the center of the cup bottom, the toothpick points approximately at the center of the circle. A motorcycle tire responds similarly when the bike is leaned over. The inside of the tire contact surface covers less distance than the outside. So when leaned, a motorcycle wheel rolls in a circle, with the axle pointed more or less at the center of the turn. In a very tight turn, the axle may actually point at a center that's below the surface of the ground.

Fast Flicks

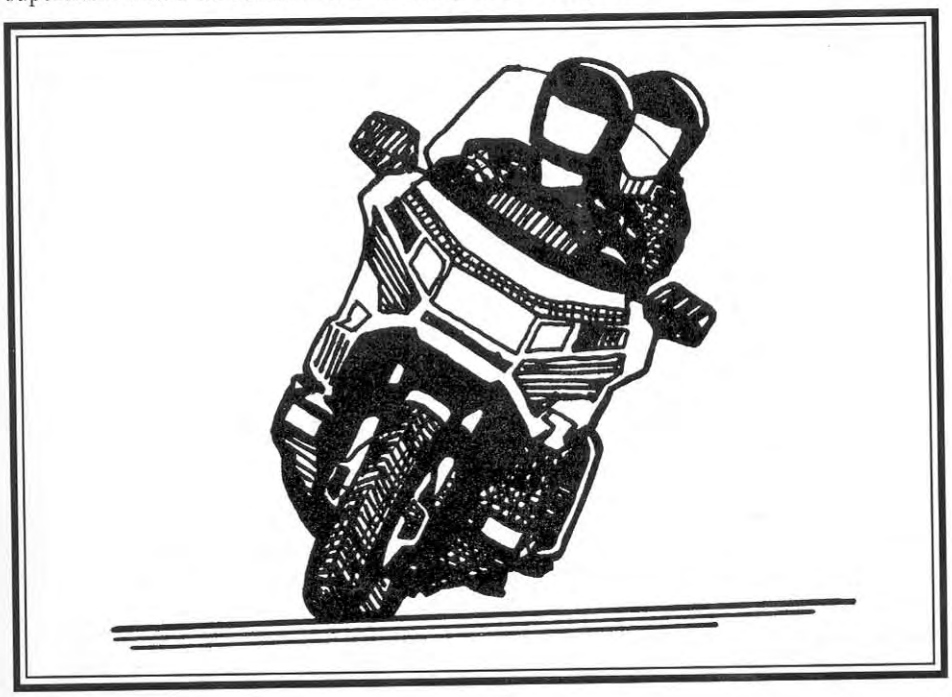
The more muscle you put into countersteering, the harder the front tire pushes to lean the bike, and the quicker it will lean (up to the limit of traction, of course). And the longer you hold pressure on the grip, the further over the bike will lean during the countersteering input. Those are key points to remember when riding a twisty road where you need to lean the bike left, right, left in a series of turns. Remember, it may take one second to get the bike leaned upright from a tight turn, and another second to get it leaned over the other way before it changes direction.

Is it possible to muscle the handlebars hard enough to snap the tires loose? Yes. You may have seen this in a road race, where a bike suddenly snaps into a heart-stopping wiggle in the middle of an S-curve, or the front tire loses its grip, and the bike crashes off on a tangent.

CHAPTER 3
DYNAMICS

Getting on the Gas

Interstate Al is motoring cross-country on his big touring machine. Al isn't one of those peg-scraping zoomie bikers who terrorize the canyons. He prefers to ease down the road in the center lane with the motorcycle vertical and the engine idling along in fifth gear. At such a modest pace he can smell the flowers, listen to the tape deck, and allow his mind to wander. Today his thoughts drift toward a question. *Why do some riders get so embroiled in meaningless details of cornering?* he ponders. Al has read about such concepts as delayed apex cornering lines and rolling on the throttle in turns, but frankly he thinks such stuff just isn't related to his riding style. Besides, his big touring bike is better suited to the superslabs where he doesn't have to worry about sharp turns.



It's time for a coffee break, and Al decides to take the next exit. But traffic in the right lane has suddenly closed up bumper-to-bumper, and he must somehow jockey through to get to the exit lane. Al doesn't like to dodge between cars. He breathes a sigh of relief when a space opens up in front of an old pickup truck. He

apex. Of course, if the entry window is where you actually lean the bike, you should also imagine the other steps that precede that. Critical windows include *getting off the brakes (Slow), looking as far through the corner as possible (Look), leaning the bike over to make it turn (Lean), and easing on the throttle as you lean over (Roll).* Try to imagine where these windows are as you approach a corner, and then visualize a continuous ribbon passing through them all.

One important reminder: *Slow* is where you get *off* the brakes, not where you roll off the gas and start squeezing the lever. Remember, the point of being off the brakes before we initiate any serious leaning is so that we're not using traction for braking when we need it for forcing the bike around the corner.

Cranial Computer Speed

On a twisty road where one turn leads into the next, it's important to keep your cranial computer working as fast as your speedometer. Once you've plotted the critical windows in the approaching corner, start scanning ahead toward the next turn and deciding where the next windows should be long before you get there. The sooner you select your line ahead, the smoother your riding can be.

If you don't think far enough ahead, you'll be making quick panic corrections as you suddenly awake to where the line should have gone. And quick corrections gobble traction. If you can't get your cranial computer up to bike speed, the other option is to slow the bike down to your processing capacity.

Homework

All right—it's time for practice. Get those tires pumped up to correct pressures, make sure your brakes are functional, and zip on your most durable crash padding. Find a really twisty road and practice following the delayed apex line. Don't concern yourself with throwing your body weight around just yet. Maintain a modest pace and concentrate on the techniques. Consciously countersteer to follow a smooth, continuous line through the windows. Push on the right grip to lean more right; push on the left grip to lean more left. Focus first on entering turns way out toward the edge of your lane and finding that delayed apex line. Then practice easing on the gas as you lean over. Next, concentrate on braking and getting off the brakes before you need to lean, and turning your head to look where you want the bike to go. In a series of turns, start thinking about the best line for the next corner while still passing through the windows of the current one.

Problems

You find yourself drifting wide in mid-turn: Either you didn't enter wide enough, didn't achieve correct entry speed, or you aren't pushing hard enough on the low grip to lean the machine over.

You find yourself making sudden steering corrections in mid-corner: Even as you round a curve, you should be looking toward the next turn, not down at the pavement rolling under your front wheel. Try to achieve one smooth steering input per corner. You'll have to trust us here: the bike will get to that next window where you are focusing your attention.

The bike wobbles when you try to get on the gas while leaned over: Roll on the gas as you lean over, not halfway around the turn. If you find yourself braking deep into the corner, you didn't initiate braking early enough, or you didn't achieve a slow enough entry speed.

You can't seem to get the bike to follow a consistent line: Consciously keep your eyes up and point your chin in the direction you want to go. Try keeping your eyes level with the horizon. Don't rush the corners. Concentrate on the critical windows.

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dusk, you shouldn't be surprised when a deer or two leap out of the roadside bushes. In farm country, after you've noticed haying crews mowing, it shouldn't be a big shock when hay trucks snort across the road on the way from the field to the silage pit. If you see a sign warning of moose on that twisty Montana road, wouldn't it be clever to get that logging truck off your tail? Wouldn't it be smart to get out from behind that bus where people can't see you and you can't see what's happening ahead?

Passing through a string of busy intersections in the big city, you shouldn't be amazed to encounter a few car drivers making quick left turns across traffic. Out in the suburbs, wouldn't you expect cars to back out of driveways, kids to ride skateboards out into the street, and dogs to chase motorcycles? If you've got your head in the ride, you'll not only be searching for problems but you'll be thinking well ahead of your front fender.

Once you recognize a hazardous situation, you can get yourself prepared for a quick stop. For example, as you round a blind turn with a barn roof in the background, you should already be covering the front brake lever, and getting yourself psyched up for a quick stop.

The big mistake Roger Rider made was assuming that if he just kept his motorcycle under control, everyone else would stay out of his way. He didn't brake when his sight distance closed up approaching the crest of that hill, because he assumed the road was the same ahead as behind, even though he couldn't see over the hill. And when he did finally spot the deer, he assumed it would stay put while he continued on by. He could just as easily have collided with a wandering cow, or a hay truck entering the road. It isn't sufficient just to keep your own vehicle under control and expect others to get out of your way. You've got to be prepared to get out of the way of other users, whether they are wild animals or other drivers.

A couple of years ago I was having a discussion with a young rider who was limping around in a leg cast. He'd been knocked down in a merging lane by a driver who didn't yield the right of way.

Young Rider: "I can't believe he hit me! He was supposed to yield!"

Me: "Did the driver get injured?"

Young Rider: "Heck no. But I got a broken leg!"

Me: "So, why did you let him get you?"

Young Rider: "He should have stopped. I had the right of way!"

Me: "Does your leg hurt?"

Young Rider: "Sure it hurts."

Me: "So, why did you let him get you?"

It doesn't make any difference whether a motorcyclist has the right-of-way or not, the rider is the one most likely to get hurt. The way to avoid the pain and expense is to get out of the way. My father used to repeat a little ditty on the subject:

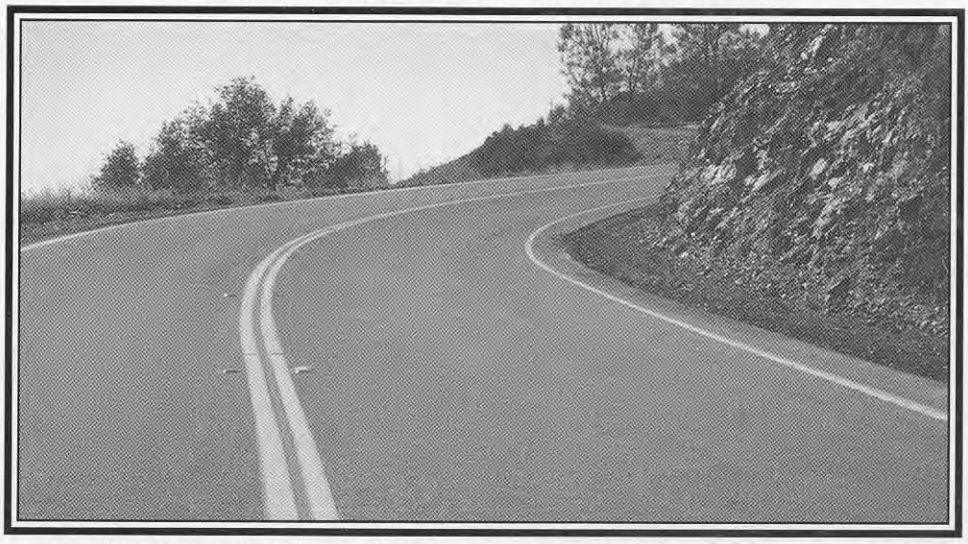
He was right, dead right, as he sped along.

But he's just as dead as if he'd been wrong.

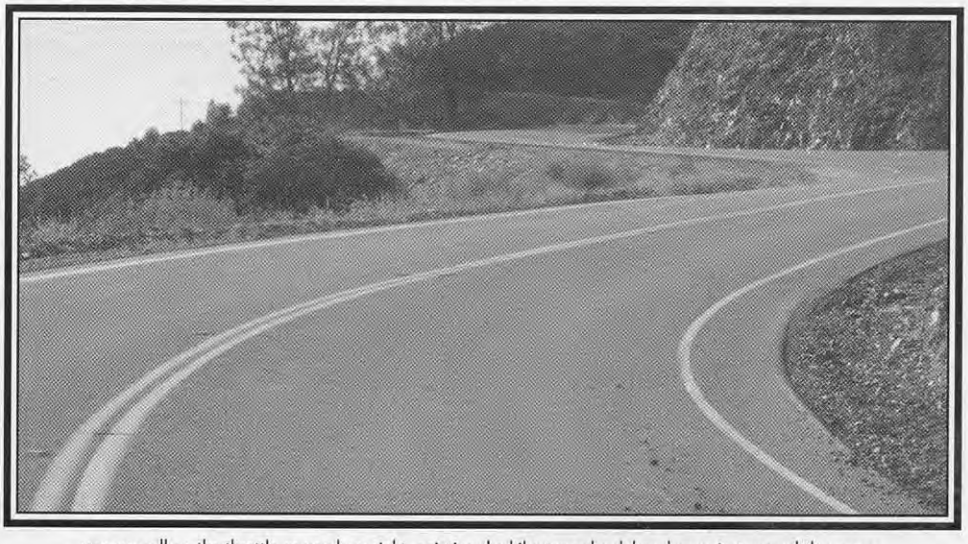
If you wait until the last second before making the decision to brake hard, whatever you do is going to be in panic. It's important to get on the brakes early, when you first see or predict a potential collision. When sight distance closes up or another vehicle gets into a position where it could turn across your path, you should already be on the brakes, scrubbing off a bit of forward energy and heating up the discs.

If the other driver doesn't yield or makes a sudden swerve across your path, you can just squeeze a little harder and make a quick stop to avoid a smash. If the

Starting wide while approaching that right-hander ahead points the bike toward the center of the road.



Approaching the right-hander, brake lightly, decelerating to a speed at which . . .



. . . you can roll on the throttle as you lean right, pointing the bike toward a delayed apex just around the corner behind those rocks.

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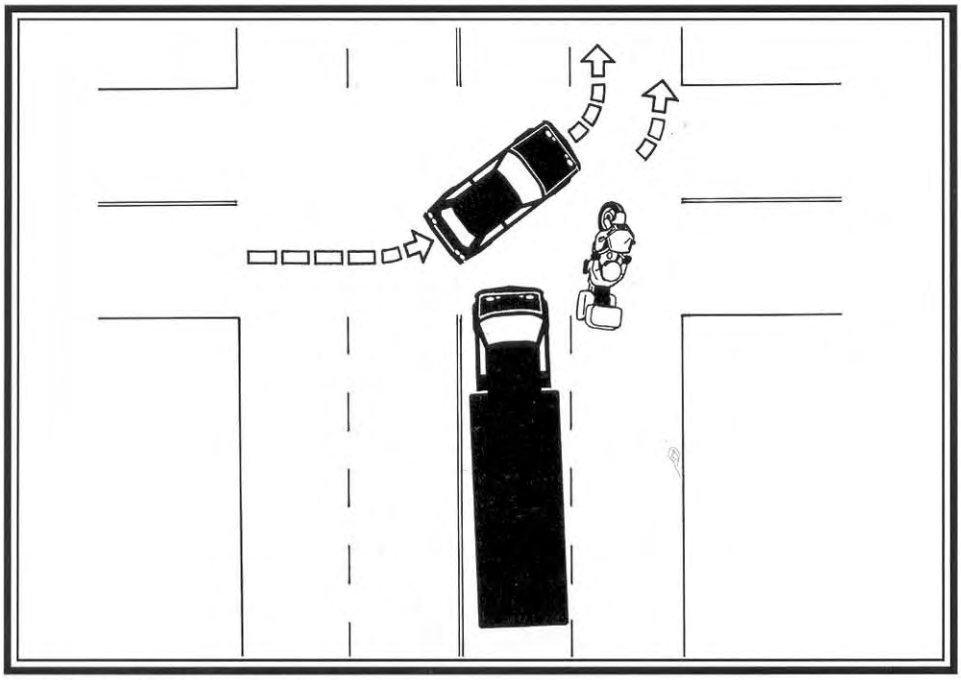
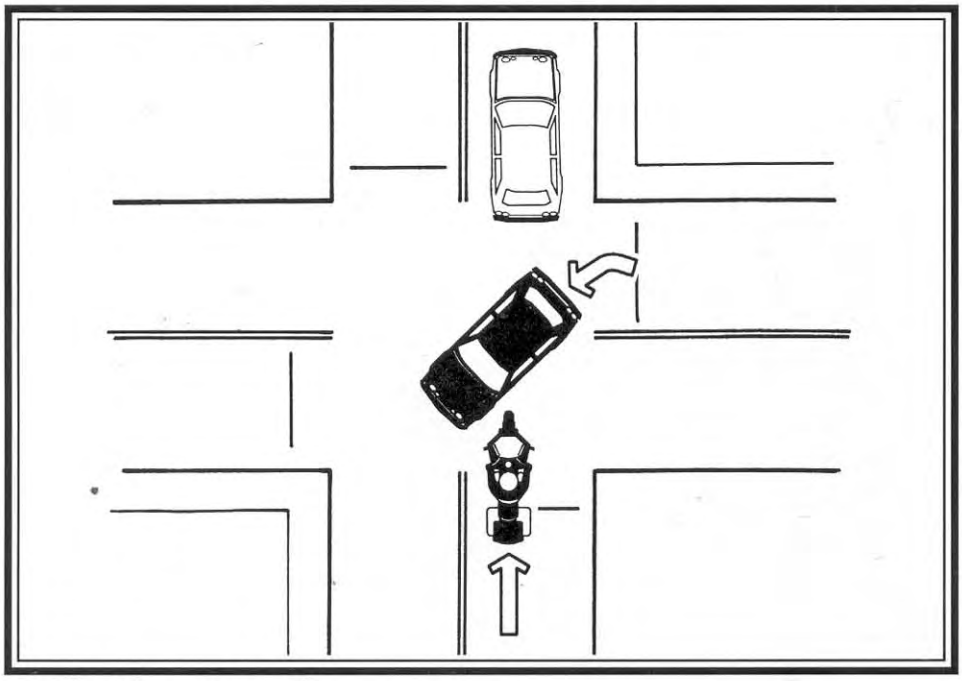


Left-turner from street on your left



Left-turner from street on your right

One booby trap that catches a few riders by surprise is the driver in the right lane of a one-way street who suddenly turns left across the path of the motorcyclist.

As we try to figure out some collision-avoidance strategies, let's note that accidents are only "sudden" when neither motorist has looked far enough ahead to spot the problem. Riders who report a mere 2 seconds between the time they saw the offending driver and the time they hit the door are simply admitting they weren't looking far enough ahead, didn't know what to look for, or didn't believe there was potential for a crash.

Surface Hazards

Side streets often have more surface hazards than busier arterials. Street crews tend to ignore problems such as pavement ripples or sunken drains on little-used side streets. So, while you're scrutinizing the situation for the usual vehicle, child, and animal hazards, don't ignore the road surface.

This wooden bridge deck is treacherous in the rain.

Older cities still have streets with brick paving and bridges with wooden decking. Brick and wood may seem to have good traction when dry but can be amazingly slippery when wet. What happens is that the brick dust or wood fibers

Don't ignore that bump over the tree roots while you're bringing your bike to a stop.

motorcycle. You can't afford to have a failure while you're zipping along in heavy traffic. At today's higher speeds and increased traffic aggressiveness, there isn't much extra slack for coddling underinflated tires, sacked shocks, spongy brakes, or loose steering head bearings. If you're going to go play with the big boys on the superslab, it's important that your motorcycle be up to the task.

Aggressive Drivers

We've suggested that motorcyclists face a variety of booby traps. The pavement may have a groove that snags your front tire and upsets the bike, or the road may tighten up or change camber partway through a blind corner, or someone may have dribbled a puddle of diesel oil onto an off-ramp, or a railroad crossing may have an X-trap waiting to snag your front tire. Sure, the road itself can have hidden hazards, but other motorists also can create some booby traps. Let's consider overly aggressive drivers, who often slicker others into road rage.

As traffic gets more congested, drivers get more impatient and resort to self-centered tactics. Remember, drivers are people, and most people take out their frustrations and aggression in their driving. Around big cities, we must expect more drivers to be zooming along at super-legal speeds, darting from lane to lane without signaling, and sneaking through a signal light just after it has changed. But a growing number of frustrated drivers go over the edge, carving through traffic with total disregard for laws, intentionally running red lights, and even threatening other drivers with collisions if they don't get out of the way.

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CHAPTER 5
BOOBY TRAPS

Surface Hazards

Here's Biker Bob tooling along his favorite curvy back road, braking smoothly before each turn, scrutinizing the shape of the curve ahead to plot the right line, leaning the bike by pushing on the low grip, and rolling on the gas to maintain speed and ground clearance. You can't see his expression inside his Shoei, but he's had a grin on his face for the last 50 miles. This, thinks Bob, is what motorcycling is all about.

But as Bob rolls on around the next apex, the front tire momentarily steps sideways. Bob's heart leaps into his throat, and his survival reactions take over; he snaps off the throttle. The rear tire instantly releases its grip on the pavement. Before he can comprehend what's happening, the machine slams down on its side and squirts off into the ditch in a trail of sparks and shattered plastic. Bob won't even remember coming off the low side. His next memory is of sliding, sliding, sliding, and how unforgiving the pavement feels hammering through his leathers.

As he painfully gets up, Bob reaches for his throbbing left elbow and recoils as he feels something slippery. In spite of the pain, he twists his elbow around to look

These steep edges are a big hazard to motorcyclists.

Looking a little more closely, the experts discovered that a spill was more likely if the rider swerved back toward the pavement edge at less than a 45° angle.

Edge traps come in a variety of disguises. You'll have to spot them for yourself because you're probably never going to get a warning sign that says edge traps. Newer asphalt often sinks under the pounding of traffic, exposing the sharp edge of adjacent concrete pavement—a common situation where an older road has been widened or lanes repositioned. Old paving several layers down may shift or sink, allowing a groove to form at the surface. When a road is repaved, there will be a steep raised edge above the shoulder until it is filled and graded. And even when the

Heads up! That pavement edge ahead wanders across your lane.

ward, dramatically increasing steering effort. But the quick street-style countersteering input doesn't seem to result in the bike rebalancing or changing direction. Since countersteering is a lot more sluggish in the dirt, the trick is to use more body English, keep the machine vertical, and steer more with the rear wheel. After all, sliding the rear end sideways is another way of pointing the front end in a different direction.

We can make the rear tire slide by rolling on the throttle, snapping it closed, or by dabbing the rear brake. Consider that when a tire starts to slide, the end of the bike heads off on a tangent or downhill if on a sloping surface. For example, if the bike is in a left turn, sliding the rear wheel will point the bike more to the left.

Cruising Speed

If you've narrowly escaped a crash while slip-sliding through loose gravel spilled on the pavement, you can be excused for thinking that gravel or sand have no traction at all. But the truth is that gravel, sand, and other loose surfaces provide varying traction depending on your speed because even small stones have a resistance to being pushed aside, and the resistance increases with velocity. A gravel road can provide more predictable traction at 40 mph than at 4 mph.

Experienced riders may cruise unpaved roads at considerably higher speeds than novices, not because they are fearless big dogs, but because the correct speed results in better control. Riding too slowly through deep sand or gravel will allow the front tire to sink and plow so badly that you lose balance. At a faster speed, the tire "floats" on top. And don't forget that faster spinning wheels provide increased gyroscopic stability. But, as Chris Scott points out in his book *Desert Biking,* you don't want to get carried away. At speeds in excess of 50 mph it's difficult to react quickly enough to the ever-changing terrain.

Experienced riders cruise unpaved roads at higher speeds because the correct speed results in better control.

On slick surfaces (oily pavement, snow, ice, mud, clay, wet grass, etc.) increasing speed won't help and may just increase the damage should you lose balance. What's important is to keep the wheels perpendicular to the surface of the ground so the tires can sideslip without instantly sliding out from under you. Even if the

would make his landing. Sure enough, Fido vaulted off a roadside stump, flew through the air at about handlebar height looking for the bike, and made a four-paw touchdown on the pavement in front of me, right where he had calculated I should have been. This particular Fido wasn't really aggressive, just looking for some fun. I figured I could make it up to the owner's door without losing any flesh. Knock Knock.

Hello, is that big yellow Lab your dog? Well, he just about knocked me off my motorcycle, and this has happened before. I'd like to encourage you either to train him not to chase people or tie him up before he causes an accident that results in me being injured.

Well, he's a pretty good dog. He doesn't chase cars. He only chases UPS trucks and motorcycles. We just don't have the heart to tie him up.

Would you mind giving me the name of your insurance agent? I want to make sure you've got enough coverage to pay for hospitalization and motorcycle repairs and lost time from my job if your dog manages to knock me down next time.

That particular community was rural, and letting dogs roam free was part of the lifestyle. There were even reports of dogs forming packs and attacking sheep herds. The pet owners didn't seem to realize that Fido and his pals were playing wolf during the day and returning to their porches at dinnertime to greet the bosses. If you don't ever encounter loose dogs in your neighborhood, you can count yourself lucky. But if you happen to stumble onto a loose-dog community in your travels, you should be prepared to avoid injury to either yourself or the animal.

Over the years I've had a considerable number of encounters with canines and their masters. I've noticed that dogs tend to take on the personalities of their owners. A well-behaved dog usually means a responsible owner. An untrained dog is usually smarter than the owner. An aggressive dog is usually the result of a mean owner. Some dogs chase motorcycles, some prefer fire trucks. Others get a kick out of chasing joggers or snarling at the postman. Whatever the target, most dogs seem to enjoy chasing something. It works, too. If the dog chases a motorcycle, it soon goes away.

If you happen to have a snarling dog closing fast on your shin, it may seem that your biggest problem is becoming lunch. But the actual problem is the probability of dropping the bike. Even a small dog can upset a motorcycle. If you've had any dog encounters, you may have noticed that dogs seem to head for the front wheel. This may be just a misguided attempt at "rounding up" the motorcycle for the kill. Fido may not understand the future consequences of diving under a half-ton bike, but his instincts say it will work. The fact is, he can bring a bike crashing to earth.

Veteran motorcyclists understand the importance of never allowing a dog to get close to the front wheel. Most of the time that simply means being a little smarter than Fido. We don't really know how dogs think, but we can observe their behavior and take advantage of it.

Confrontations

Just like motorcyclists, there are vast differences between dogs. Some dogs are merely playful, others are defending a territory that happens to include the street, and some mistreated or untrained dogs are aggressive enough to be a serious threat to anyone passing by. A vicious dog can be a serious adversary if you

place where I felt safe pulling over, and the next rest area was almost 20 miles away. The bottom line is that I didn't get soaked, although the pockets filled up with water through the unsealed zippers. The point is, today's adventure touring riding gear is water-resistant enough to weather a few wet days without adding an additional layer of real rain gear. And for those smart enough to stuff their maps in a clear plastic bag, even leaky pocket zippers aren't a serious problem.

Whether you prefer leathers or fabric suits, an outside layer of rain gear will keep your jacket and pants drier, which reduces much of the evaporative cooling effect. On the Bonehead, I was getting chilled because the wet fabric on the outside of the suit was drawing heat out of my body.

For cold or wet weather, I wear a windproof, waterproof neck triangle that seals off the opening between my jacket collar and my nose. And to keep icy water from dribbling down the back of my neck, my rain jacket has a tall collar that extends up under the back of my helmet. That's a custom modification. I buy a hooded rain jacket, and then snip off the top of the hood.

Although some leather gloves include rain covers and others have water-resistant linings, the only way to really keep your hands dry is to add a waterproof layer over your leather gloves. One tactic that works is to buy some XXL-size unlined rubber work gloves that you can wear over your leather gloves when it rains.

Rubber boot covers will keep your boots dry, once you figure out how to slip them on over your soggy leather boots. The trick is to pull a plastic baggie over your boots first, then the rubber will slip right on. The alternative I prefer is fabric boot covers that wrap around my boots and secure with hook and loop strips.

Riding Tactics

At the first patter of raindrops, the temptation is to crank up the gas and beat it out the other side of the cloud. That's a standard practice to get through desert thundershowers but not wise for riding around cities. Remember, the road is most slippery when it first starts to rain after a dry spell, especially in and around big cities where traffic is ever-present. So the smarter tactic in heavy traffic is to take a break for a few minutes and let those bumper-to-bumper drivers slip, slide, and bash into each other while the accumulated goo gradually washes away. A half-hour break is a wise precaution, giving you a good reason to warm up and put on serious rain gear if it looks like it's going to be more than a light shower.

Scrutinize the Surface

Remember my discussion about those trucks and busses leaking fresh oil? It's most likely that during rain showers any oil will dribble down the center of the lane, but oil also spreads downhill on cambered curves. During rain showers, watch for any beading up or rainbow sheens that indicate oily areas, and keep your tires out of the slippery spots, especially when approaching intersections and in turn lanes.

While rounding a curve or a cambered freeway ramp, try to stay in the uphill wheel track, and reduce your speed to reduce lean angle. Adjust your line to cross railroad or streetcar tracks at an angle as close to 90° as practical, and maintain a steady speed and direction when crossing any such slippery areas. Those black plastic planks laid next to railroad tracks can be as slippery as the shiny rails. Try to keep your tires away from painted lines, plastic arrows, manhole covers, and loose objects such as leaves. Expect brick streets and wooden bridge decks to be especially slippery when wet.

hundred miles, she can't shake the image of a bike and rider slamming head-on into an 18-wheeler and cartwheeling off the bridge into the Missouri River.

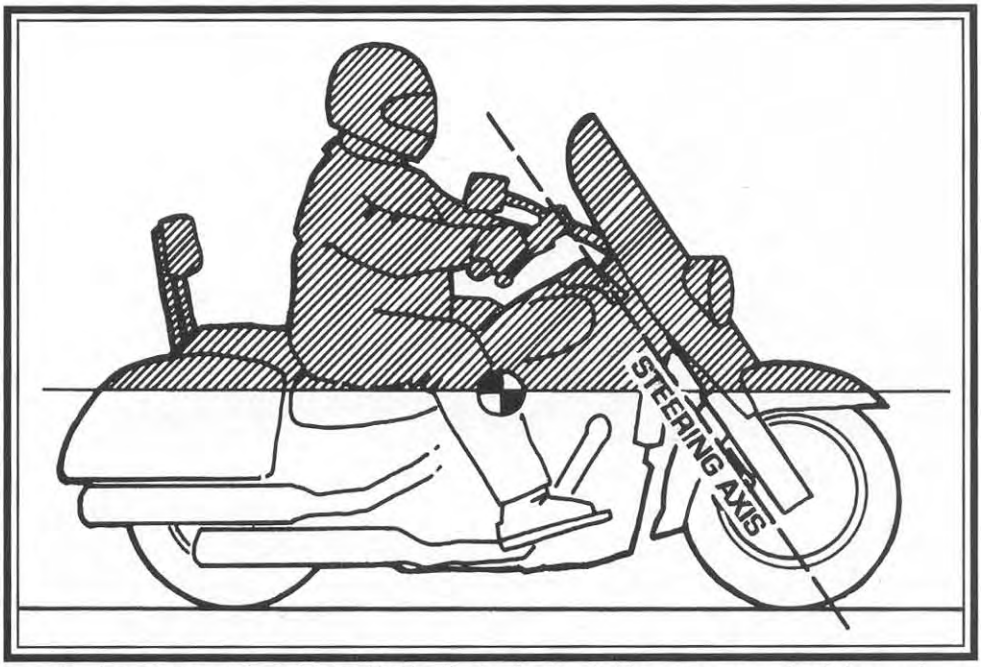
The ride has ceased to be fun, but she forges ahead anyway. By the time Carla has battled her way to Wall, her eyes are stinging and watering, and she is scared, fatigued, flayed, windburned, dehydrated, and angry. To top off her frustration, the engine sputters onto reserve earlier than expected. And when she parks the bike at the gas station, a gust slams into the bike and pushes it off the sidestand before she can catch it. *Dang wind!* Carla screams into the gale. *I hate wind!*

Most of us can empathize with Carla. Motorcycles can be tricky to control in crosswinds, especially in gusting crosswinds. We try to keep the motorcycle balanced, but the gusts suddenly blow it sideways and then just as suddenly let up. It's a constant battle to stay between the lines, we're being assaulted by blowing grit and our fuel mileage suffers. Is there some method to riding in this windy madness, or do we just have to tough it out?

Sometimes riders contribute to the problem without realizing it. The fringe on Cruiser Carla's riding jacket is stylish, but it flails around in the wind, adding another annoyance. Her sunglasses are cool looking, but can't keep grit from blowing into her eyes. Carla likes her cruiser because of the image and the low seating position, but the forward-mounted footpegs make it more difficult to quickly make steering adjustments. Stowing her gear on the sissy bar is handy, but that also creates a "sail" high above the center of gravity. Let's consider how different motorcycles react to wind and how the motorcycle ergonomics relate to ease of control.

Sails

A bike with a lot of sail, a tall windshield or a large fairing, for example, is more susceptible to crosswinds. The shape and location of the sails is just as important as the size. Remember, a motorcycle tends to lean around its center of mass. Wind pushing on the area below the CG has little effect, but wind blowing on the sail above the CG can have considerable effect.



The relative position and shape of the windshield and fender affect how the bike reacts to crosswinds. A fork-mounted sail forward of the steering axis can actually help countersteer the bike upwind.

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slow for a banked curve, gravity will pull the bike toward the inside. Speed is correct when the wheels are perpendicular to the road surface.

You can lessen the risk of falling on slippery surfaces by placing more of your weight on the footpegs rather than on the saddle. With your weight supported on the footpegs, you can lean the bike to keep the tires perpendicular to the road surface. That way, even when the bike slides sideways, it's less likely to slam onto its side. You may be tempted to put your feet down to help stabilize the bike, but if your tires don't have enough traction to hold the bike upright, your boot soles probably won't be any better. And if you do fall, it will be less painful if your ankles aren't in the way.

Remember, bridges stay frozen longer than the ground.

For a slippery downhill section, slow to a crawl, stay in a lower gear, and use both brakes lightly.

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