

ROAD & REC

*The Air Force Journal
of Occupational,
Recreational, and
Driving Safety*

Volume 11, Number 4

Fall 1999



**When Alcohol Kills...
An Air Force Family's Journey Into Tragedy**

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page 8



page 18



page 24

Features

- 3 From the Editor's Desk...
- 4 ORM in a Storm!
- 6 The Hunt Is On...
- 8 Firearms - They're Only as Safe as You Are!
- 14 Safety With a Smokepole
- 18 When Alcohol Kills...An Air Force Family's Journey Into Tragedy
- 24 A Motorcyclists' Nightmare - Head-On at 110 MPH!
- 26 Tales From the Crypt...Almost
- 28 My Helmet: I Never Leave Home (on a Bicycle) Without It!
- 30 Don't "Court" a Knee Injury

Departments

- 5 Saved by the Belt
- 17 Short Circuits



BOB VAN ELSBERG
Managing Editor

Are you ever bothered when you hear the term accident used in reference to an automobile crash caused by a drunk or irresponsible driver? If you are, you have lots of company. Perhaps that's because deep inside we know there's a big difference between an unpredictable, unpreventable event and an act of negligence. For example, having your car smashed by a falling boulder is an accident. However, having it smashed by a tailgater, drunk driver, or red-light-runner, isn't. That's why the police typically charge these drivers with being at fault, and their insurance companies consequently raise their premiums.

If you've been bothered by the blurring of the distinction between accidents and acts of negligence, then read on. John C. Myre, owner of the commercial publication Safety Times, recently authored a study on this very issue. I'd like to share with you the following brief excerpt.

Is an "Accident" Really an Accident?

A basic reason employers and society don't pay more attention to off-the-job safety is that the word "accident" is used incorrectly.

The dictionary defines accident as "an unexpected and undesirable event; something that occurs unexpectedly or unintentionally; fortune or chance." There is no quarrel with the "undesirable" reference, but the belief that accidents are unexpected or the result of fortune or chance is misleading.

For example, is an accident "unexpected" when someone using a ladder reaches out too far instead of taking time to reposition the ladder, and then falls? Does an accident occur by "fortune" or "chance" when a person consistently tailgates and then slams into the driver ahead of him in a moment of inattention? Is it "fate" when a boater drinks too much and then collides with another boat on a lake at night?

The obvious answer is no! Most

off-the-job accidents can better be described as failures. They are failures on our part and failures on the part of others. Stating that someone was killed or injured in an "accident" tends to exonerate the person responsible.

Myre pointed out the National Safety Council has changed its mission statement to replace the words "accidental causes" with "preventable causes." The reason for the change, according to Myre's study, was because the council was seeking "better ways to describe such incidents and encourage people to think of risk causes. The word 'accident' is inaccurate in safety usage because it implies bad luck, chance, or fate."

Take a close look at that last paragraph—especially the final sentence. How often have we gotten hurt doing something we knew was unsafe but called it an "accident" because that made us feel less guilty? The truth is, if we are honest, most of us will have to admit we've done it—and yes, my hand is up, too.

But did you notice the closing words in the preceding sentence, "think of risk causes"? Did that sound a little familiar—maybe a bit like Operational Risk Management? Could it be that many of those preventable mishaps we'd prefer to call "accidents" could really be avoided?

Ask yourself that question before driving under the influence of alcohol or fatigue, riding a motorcycle or bicycle without protective gear, going boating without a life jacket, or trying to prove you're Superman by lifting something that's beyond your strength. Think about the hazards involved. Ask yourself if it's worth risking a trip to the hospital or worse? Ask yourself if you can't do something to protect yourself and lessen your risks? Think about your options, then make what you believe is the best decision. Also, step up to the plate—be responsible for your safety and perhaps that of others—by acting on your decision. Finally, ask yourself later on if you did the smart thing, if you made the best decision. If you did, chances are you won't have to cover up an embarrassing—possibly painful—act of negligence with the all-too-often-lame excuse, "I had an accident." ■

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The Air Force Journal of Occupational, Recreational, and Driving Safety

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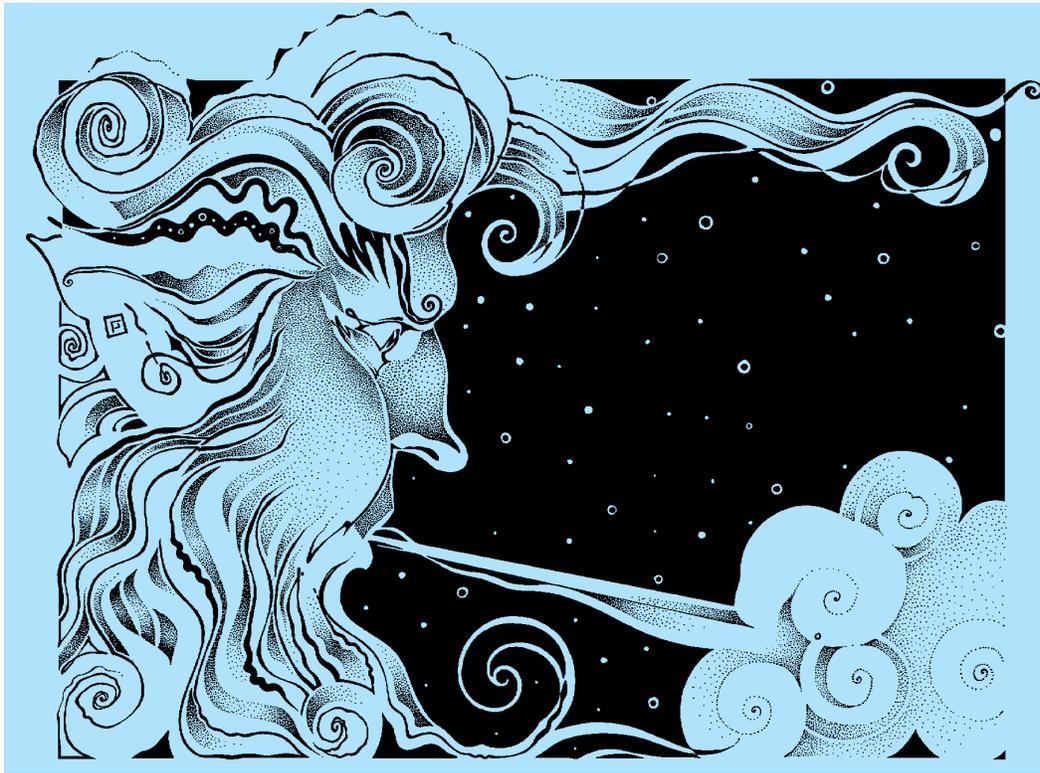
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and not knowing the extent of the storm, the road conditions, or storm's direction of travel, I contemplated what would be the smart move while warming up our minivan. Remembering that Davis-Monthan AFB was in Tucson, after loading up the group and luggage, we slipped and slid over to base ops and the weather shop to see what we could find out. The on-duty forecaster pointed

ORM in a Storm!

LT COL JEFF THOMAS
HQ AFSC/SEFF

While, on a family “vacation” (one of many family jaunts to out-of-town sporting events involving one of my kids), I had the opportunity to apply the principles of Operational Risk Management (ORM). I didn’t think of my actions as being “formal” ORM at the time, but with hindsight, they fit the six-step process “like a glove.”

Picture Tucson, Arizona, in early April. While most of the country is thawing out from blustery winter weather, Tucson is basking in sunshine and comfortable temperatures. Little if any rain, blue skies, and we’re dressed in shorts by mid-morning. Just about the ideal time to be in southern Arizona—not too hot, not too cold.

My story begins early one Sunday morning following 2 days in Tucson for one of my daughter’s out-of-town tennis tournaments. The matches

ended late Saturday afternoon, and all that remained was to pack the group into the “family truckster” and hit the open road back to New Mexico. Awakening in our hotel and doing the customary “glance out the window” to update the local weather prior to contemplating the drive, I was greeted by gray skies and—would you believe it?—falling snow! And not just a light dusting of snow, but some of the biggest flakes and worst visibility I’ve ever seen.

I rubbed my eyes in disbelief, then looked outside again at the surrealistic scene. However, the picture remained the same. After waking the kids to have a look at the highly unusual (and hopefully short-lived) weather, I went about my normal morning business confident the weather would clear by departure time. After all, this WAS Tucson. If it did snow here, surely it wouldn’t last long nor would we likely get much accumulation. I was wrong on both counts. By truckster engine start time, there was a healthy accumulation of snow on the ground and the roads and no letup in sight.

Faced with a 7-hour-plus drive home

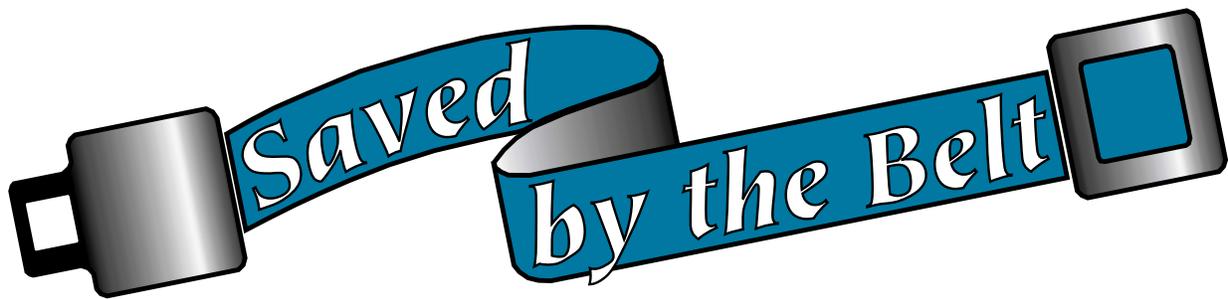
out the storm was moving slowly to the east along I-10, our return route to New Mexico, and was likely going to be dumping snow all day. Contemplating the options, the following two came to mind, one of which obviously made better sense:

1. Make the trip regardless of the weather.
2. Stay in Tucson another night and wait for the storm to pass.

It was still snowing heavily as we departed base ops and returned to the car. Huddled inside the minivan, the family conference centered on these two options. Option 2 seemed to make the most sense to me, but valid arguments about work and school on Monday filtered through the discussions. Added to the argument for option 1 were the questions, “How bad can it be?” and “What are the odds of not making it?” Get-home-itis on the part of those family members who had never “pressed” bad weather before was becoming obvious.

But maybe they were right. What were the odds of not making it? Faced with a 7-hour-plus drive (on a

continued on next page



BMC MARK RIEGER
Officer in Charge
USCG Aids to Navigation Team Milford Haven

The weather forecast for 9 March called for 2 inches of snow that afternoon. The Gloucester and Mathews counties of Virginia are not strangers to snow. However, it comes only once or twice a winter, if that often, and then rarely more than a few inches at a time.

When the snow moved in early at 0900, we were surprised by the amount—2 inches in less than an hour. The forecast changed, and the weathermen began predicting as much as 6 inches more that afternoon. For this area, this was a major snowstorm, so I made the decision to send everyone home while they could still get there.

I left a few minutes later and headed west on Route 14, a four-lane divided highway. The road was already getting bad, so I kept my speed to 35 mph or slower. Five miles outside of the Gloucester Courthouse, I saw a Toyota 4Runner in the eastbound lanes cross over the divider and into the westbound lanes. At that point in the highway, the eastbound lanes are slightly higher than the westbound lanes, creating a downhill slope towards the westbound lanes. My first thought was “Why is that person trying to make a U-turn here?” I began tapping my brakes and steer-

ing to the right, determined to go into the ditch if necessary to avoid the Toyota. What I did not realize yet was that the other driver had lost control of her vehicle and was at the mercy of momentum.

The Toyota slid across the divider, through a drainage ditch, then into my lane of traffic. The Toyota was now broadside in the road in front of me. I believed it would continue across both westbound lanes and into the ditch on the right side of the road. Expecting this, I began to steer towards the left to miss the 4Runner. As I crossed the white dotted line between the westbound lanes, the Toyota turned directly towards me, and we hit nearly head-on.

Although it takes a couple of minutes to describe what happened, the events took place in a matter of seconds. As always, I was wearing my seat belt. However, the force of the impact threw me forward into it, and I hyperextended the muscles of my lower neck and upper back. I was sent to the health clinic at the Yorktown Training Center for physical therapy and have since been fine.

The other driver, unfortunately, wasn't so lucky. She wasn't wearing her seat belt and ended up going to the emergency room with possible neck and rib injuries.

As you could have predicted, my 1988 Isuzu Imark came out the loser in this head-on collision with a sport utility vehicle. However, thanks to my seat belts, although my car was “totaled,” I wasn't. ■

ORM in a Storm! ...continued from page 4

good day) over unknown road conditions and realizing I was responsible for my family's safety kept driving me back to option 2, despite the pressures of school and work the next day. Sure, the odds of not making it were slim. After all, how often do you hear reports of miles and miles of traffic being wiped out while traveling through a snowstorm? But on the other hand, how often do you hear about folks starting out on similar trips and not making it? After pointing out that 1 day of missed school and work was a small sacrifice to make to greatly increase the odds of safely completing our trip, my family finally agreed. One other factor in the equation was the cost of another night in the hotel plus dining out. But I kept asking myself, “What price safety?” The decision was made to slip and slide back to the hotel, located just a few miles from the base, and try again tomorrow.

Sure enough, Monday dawned with clear blue skies, warmer temperatures, and no hint of the previous day's “blizzard.” The news reports weren't full of details about massive pileups on I-10 between Arizona and New Mexi-

co, so we climbed into the minivan and made an uneventful trip back home. As we headed east, I kept thinking that maybe the decision I'd made had been too conservative. Maybe we did waste a day for no reason.

Upon returning home, I had my daughter call another tennis player from New Mexico whose family had also been at the tournament and elected to return on “snowy Sunday.” It turns out that their drive had taken 14-plus hours, with some of the drive spent dodging single-car accidents and vehicles stalled in the snow.

I felt vindicated. I hadn't exposed my family to any unnecessary risks and, obviously, we'd made it home safely. Faced with the same unknowns and knowns in the future, I'd make the same decision again. Was it overly conservative? Maybe a little. But how conservative is *too* conservative when it comes to the safety of your family?

Now with all of that said, did I actually sit down at the start of this event and consciously apply the six ORM principles? No. The steps and decision-making seemed pretty common sense to me. But after all, isn't that what ORM is—a commonsense approach to minimize risk? ■

The Hunt Is On...



Courtesy Sep/Oct/Nov 98 Safetyline

We saw this humorous chronicle of a day of hunting in a base newspaper. The things that happened to the fictional hunter may seem ridiculous. However, when we looked at our reports of hunting mishaps, we realized that truth really is sometimes stranger than fiction. To prove our point, we have inserted portions of mishap reports in italics.

0200 - Alarm clock rang.

0300 - Hunting partners arrived, dragged me out of bed.

0310 - Threw everything except the kitchen sink into pickup.

0330 - Left for deep woods.

0500 - Drove back home to pick up gun.

0530 - Drove like crazy to get to the woods before daylight.

The following mishap shows what can happen when you're in a hurry and in a dark car: While driving down an interstate in the early morning hours, a petty officer grabbed a bottle of Super Glue instead of eye drops and squirted the glue into his right eye.

0700 - Set up camp. Forgot the tent.

0730 - Headed for the woods.

0735 - Saw eight elk.

0737 - Gun didn't fire. All I heard was "click."

While he was hunting, a BM3 fired a .32-caliber pistol twice. Neither bullet discharged. After he returned home, he started to disassemble the gun. It fired, shooting him in the hand.

0738 - Loaded gun while watching elk go over the hill.

A petty officer and his father were cleaning and loading their guns. The petty officer loaded a .22-caliber rifle and handed it to his father to lay it on the table. The gun fell to the floor and shot the petty officer in the foot. In another instance, an AD3 visited a friend and asked to look at his 12-gauge pump shotgun. Since the gun was loaded, the AD3 started unloading it. A round jammed as he was trying to clear it. The gun discharged and blew off the tip of his little finger.

0930 - Headed back to camp.

1000 - Still looking for camp.

A hunter stumbled while he was walking in a field and carrying a .22-caliber rifle. When the rifle discharged, the bullet ricocheted off a rock and hit the hunter in the mouth.

1001 - Realized I didn't know where camp was.

1200 - Fired gun for help. Ate wild berries.

1205 - Ran out of bullets. Eight elk came back.

1300 - Stomach felt strange.

1310 - Realized berries were poisonous.

A QMSN was walking down a street when he noticed a mushroom in the ground and decided to eat it. Shortly after doing so, he became violently ill with food poisoning.

1335 - Rescued.

1336 - Rushed to hospital to have stomach pumped.

1530 - Arrived back at camp.

1540 - Left camp to kill elk.

1550 - Returned to camp for bullets.

1600 - Loaded gun. Left camp again.

A sailor was deer hunting with a 12-gauge pump shotgun loaded with buckshot. He took a break and rested the loaded barrel on his foot. The gun discharged, shooting off his second and third toes.

1630 - Emptied gun on squirrel that was bugging me.

An FC3 fired about 50 rounds in a Ruger .41-caliber magnum pistol. He holstered the weapon with a round in the chamber. The round apparently absorbed the heat of the weapon and "cooked off," shooting the FC3 in the foot.

1700 - Arrived at camp. Saw elk grazing near pickup.

1701 - Loaded gun.

An OS1 went hunting with several friends. He took his gun from his truck's gun mount and began to load it. However, he didn't realize the gun was already loaded. It discharged and shot him in the foot.

1702 - Fired gun.

1703 - Missed elk. Shot pickup.

A petty officer was one of five people in a deer- and elk-hunting party. As one of the people in the party started to unload his rifle, it discharged. The bullet passed through the seat of a pickup truck, broke into fragments, and hit the petty officer in the leg, arm, torso, and right eye.

1735 - Hunting partner arrived in camp dragging dead elk.

1736 - Repressed desire to shoot hunting partner.

Although people don't shoot their hunting partners on purpose, since FY93, gun handling has killed 5 sailors (2 of them while hunting) and injured 48 (7 while hunting). In the same time frame, 7 marines have died (1 while hunting) and 30 injured (4 while hunting). In one incident, a Navy officer went hunting with his son and a friend. His friend was carrying a loaded 12-gauge shotgun when he stumbled. The gun went off and shot the officer in his face and neck.

1737 - Fell into campfire.

A lieutenant was on a camping trip sitting around a fire with friends. He stood up and walked toward the fire to add wood. The ground was wet, and the lieutenant slipped and fell into the fire. He received second-degree burns on his hand.

1800 - Changed clothes. Threw burned ones in fire.

1805 - Took pickup. Left hunting partner and his elk in camp.

1815 - Pickup boiled over because of hole shot in block.

1816 - Started walking.

1820 - Stumbled and fell. Dropped gun in mud.

1825 - Met bear.

1827 - Fired gun. Barrel plugged with mud blew up.

An MM2 was walking with two other hunters. He noticed the barrel of his rifle was fouled with mud. He tried to clear his rifle using the middle finger of his right hand. The loaded gun discharged and shot off the petty officer's finger.

1829 - Climbed tree.

This sailor was climbing down from a tree stand when a bolt on the attached ladder sheared. The sailor lost his balance and fell 30 feet, breaking his wrist. In another instance, an HMC tied two lengths of rope together, attached one end to his car, and hung the other end over the limb of a tree. He grabbed that end, and his wife drove the car so he could use the rope as a hoist to climb the tree. When he was about 15 feet off the ground, the knot came undone [Where's a boatswain's mate when you need one? Ed.] The doc fell and injured his back.

2000 - Bear left. Wrapped *#@\$^\$!% gun around tree.

2230 - Home at last.

At the end of a hunting day, a lieutenant pulled his truck off the side of the road to unload his handgun. As he pulled the gun from its holster, the hammer got caught on the sleeve of his sweater. The gun went off and shot him in the leg.

Next day - Watched football game on TV. Slowly tore hunting license into small pieces. ■

Editor's Note: Before you shake your head and say, "Tsk-tsk—those poor, dumb Navy guys," check out our own performance last year.

One hunter leaned his LOADED shotgun against his vehicle, began taking his jacket off, and then saw the shotgun begin to fall. He caught the muzzle with his left hand just as the shotgun hit the ground and went off, taking off enough of his left thumb that he can now count fractions on his fingers.

Another hunter inadvertently took aim at his right foot—and hit it—while attempting to unload his rifle. His gun, an older Remington Model 700 30.06 bolt action rifle, required the safety be in the "fire" position to eject a loaded cartridge from the chamber. Remington changed the safety's design in 1986 to prevent this problem, but owners of older Model 700s beware!

Yet another hunter found that the law of gravity was still intact when he failed to follow instructions while setting up his tree stand and fell 15 feet, breaking his hip. After spending 13 hours firing off shots and yelling for help, he was finally found by the base game warden.

Finally, one hunter in Georgia had anything but a "boaring" experience when he and a friend killed a wild pig one evening. Going for a sled to help drag their trophy out of the thick brush, our hunter got confused as to his directions—and wasn't seen again for a day and a half. When he was found, he was dehydrated and suffering from heat stroke. The editor has hunted this base in the very same area. Base hunting regulations require all hunters to have a compass, flashlight, and canteen, among other items, specifically to prevent mishaps like this.

Our 5-Year Stats

Since FY93, we've had 11 hunting mishaps including 2 fatalities, 2 individuals who suffered permanent partial injuries, and 7 Class C mishaps.

And you're not automatically safe just because you're home with your cleaning gear spread out in front of you. We've had 1 permanent partial injury and 14 Class C mishaps occur while people were cleaning their firearms. Wanna bet most if not all of these individuals thought their firearms were unloaded?

We also have a bad habit of shooting off our (unloaded?) firearms while handling them or showing them to others. We've had 6 fatalities, 2 permanent partial injuries, and 31 Class C mishaps attributable to these mishaps. Two of these, one fatality and one Class C, involved individuals who had mixed alcohol and firearms. Talk about an accident looking for a place to happen!



Photos by MSgt Perry J. Heimer

BOB VAN ELSBERG
Managing Editor

Editor's Note: In looking at the 50 hunting accidents in the Air Force between 1 October 1992 and the present, two things are obvious. First, gravity still works—just ask the 18 hunters who fell out of tree stands or trees. Second, firearms still go off unexpectedly—just ask the eight hunters who shot themselves instead of their game. Of the eight accidental discharges, two resulted in fatalities and two others led to permanent injuries. These were mishaps that could have been avoided had the hunters involved practiced safe gun handling and properly used their firearm's safeties. Let's look at the narratives from these mishaps, then look at how they might have been avoided, and, finally, review how modern gun safeties work.

The Mishaps

Mishap 1: The hunter was hunting with his father and was up in a tree when he shot a deer with his Winchester Model 70, 30.06 rifle. After shooting the deer, he left his rifle on the tree stand and proceeded to climb down the tree to look at the deer. As he climbed down, he jarred the tree, causing the rifle to fall to the ground. The rifle discharged, striking the hunter in the chest and right shoulder. According to the hunter, the safety was on at the time the weapon fired. The mishap report stated that the impact of the rifle hitting the ground caused the rifle's firing pin to move forward and caused the rifle to fire.

Mishap 2. The hunter was hunting with a .357 Magnum revolver. While sitting on top of a small dirt mound with the gun sitting on the ground to his left, he thought he heard a noise behind him and

picked up the gun with his left hand. As he picked up the gun, it discharged into his left side.

Mishap 3. The hunter was home on leave and had been drinking the day he went hunting and on the previous day. The hunter decided to go hunting after dark using a powerful flashlight to temporarily transfix the deer, giving him time to shoot. The hunter was hunting with a friend and using an older lever-action rifle. The hunter saw a deer and cocked the rifle, but did not shoot because the deer ran off. The hunter and his friend started to follow the deer back in the direction they had come when they came upon a trail that led to a house. They then turned in that direction. While crossing a small clearing, the hunter's friend heard the rifle go off and the hunter groan. The friend turned and saw the hunter on the ground and ran to get help. The responding law enforce-



Older Winchester Model 94 rifles lacked the crossbolt safety found on current production models. As a result, carrying the rifle as shown could lead to an accidental discharge.



Current production Winchester Model 94 rifles have a crossbolt safety which effectively blocks the hammer from striking the firing pin.

ment officer found the hunter lying on his back with a gunshot wound to the head. The hunter was pronounced dead at 0345 hours. His Blood Alcohol Content (BAC) was 0.257.

Mishap 4. While sitting on a rock, the hunter shifted his weight, and his .45 caliber handgun discharged. The bullet went through his right leg.

Mishap 5. It had been raining all afternoon when the two hunters returned from a 3½-hour hunting trip. Hunter No. 1 set his loaded shotgun on the ground and leaned it against his vehicle. Both hunters began removing wet clothing. While hunter No. 1 was taking off his jacket, he noticed his shotgun was starting to fall. He immediately reached for the barrel end of the shotgun with his left hand, placing his thumb over the muzzle. The shotgun struck the ground and dis-

charged, severing the top of his thumb to the first joint. Hunter No. 2 drove his injured friend to a medical center for treatment. The injured hunter was later transported to a regional hospital for surgery. The injured hunter sustained a Class B, or permanent partial disability, due to the severity of the injury.

Mishap 6. Hunter No. 1 was on a hunting trip with hunter No. 2 and was looking for his wallet in the backseat of his vehicle. While hunter No. 1 was looking for his wallet, hunter No. 2 was in the front seat unloading his shotgun when it accidentally discharged. The shotgun slug grazed hunter No. 1's right leg, then went through his left thigh and lodged in the car's back door.

Mishap 7. The hunter was on a hunting trip. While removing his .50 caliber black powder rifle from his vehicle, the rifle discharged and hit him in the groin. He subsequently

bled to death.

Mishap 8. Hunters No. 1 and 2 arrived at their hunting spot at 0630. They went out on a morning hunt, then met back at their truck at approximately 0915. Hunter No. 1 got into the passenger side of the pickup truck and laid his Remington 700 BDL 30.06 caliber rifle across his lap with the muzzle pointed towards the floorboard and his right foot. He then attempted to unload the rifle's chamber and magazine. He placed the safety switch in the "fire" position (required in pre-1985 Remington 700 rifles in order to move the bolt upward and backward to eject a round from the chamber). He claimed that when he lifted the bolt all the way up, the rifle discharged. The round struck the top of his right foot near the ball of the great toe, exited the bottom of his foot, then went through the floor of the truck and lodged in the ground. Hunter No. 1 had several years of hunting experience and had taken the state hunter's safety course in 1994. However, he had borrowed the rifle and was unfamiliar with its safety features. As a result of the injury, he lost the mobility of his great right toe and a large amount of soft tissue in the center bottom of his foot. He required several reconstructive surgeries followed by 6 months of physical therapy. The injury was ruled a Class B, or permanent partial disability.

Some Observations

Each of the above-mentioned mishaps was preventable through safe gun handling practices. While two of the mishaps purportedly involved a mechanical malfunction on the part of the firearm (we'll examine that later in the "Firearms Safeties—How They Work" section of this article), all of these mishaps could have been avoided. Let's look at how.

Mishap 1. The mishap hunter shot and downed his game animal. Because he did not bring his rifle with him when he descended from the tree stand, he apparently did not expect to need a second shot to finish the deer. Since he did not need a

continued

second shot and the rifle would be out of immediate reach in any case, there was no need to chamber a fresh round. Had the hunter either completely unloaded the rifle or simply left the fired case in the chamber, there would have been no danger of an accidental discharge when the rifle fell from the stand.

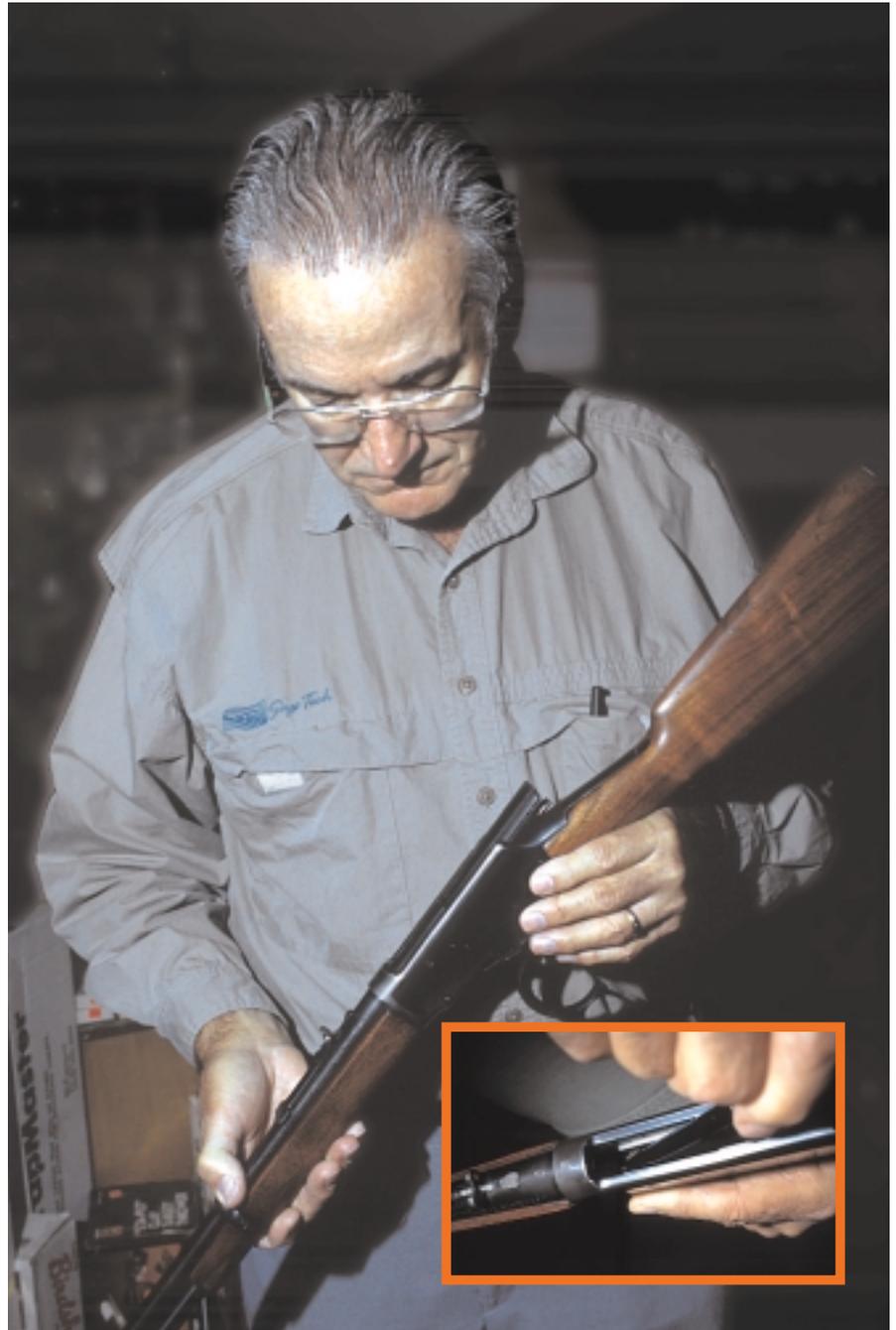
Lesson learned: Don't place a live cartridge in the chamber at any other time than when you expect to shoot at game.

Mishap 2. As the mishap hunter picked up his .357 Magnum revolver, it discharged into his left side.

Lesson learned: Modern production revolvers are marvelously safe firearms thanks to the widespread use of hammer block and transfer bar safeties (more on these later in the section on firearms safeties). These work automatically, making it impossible for the gun to discharge until the trigger is pulled. So how can an accident like this happen? It is almost certain the hunter had his finger on the trigger when he picked up the gun, and it is also very likely that the revolver was already cocked. In this condition, only a very light pull on the trigger—anywhere between 2 and 6 pounds of pull—was needed to discharge the gun. When hunting with a revolver, the trigger finger should never be placed inside the trigger guard nor should the hammer be cocked until the shooter is ready to fire. Note: Current production Colt Peacemaker revolvers—faithful to the original design dating from 1873—lack either of the above-mentioned safeties. While these are six-shot revolvers, safety dictates loading only five chambers and leaving the hammer resting on the empty sixth chamber.

Mishap 3. An intoxicated hunter saw a deer, cocked his rifle (an older model Winchester Model 94 lever action), tried to follow it through the woods, and accidentally shot himself—perhaps by stumbling or tripping—while carrying a loaded and cocked gun.

Lessons learned: First, drinking and hunting don't go together any



Charles Domenici, owner of Charlie's Sporting Goods, visually inspects the chamber of this Winchester Model 94 rifle. Because cartridges can become jammed in the rifle's tubular magazine, Domenici suggests shooters use a pen or some other object to ensure the magazine follower is fully rearward (inset photo).

better than drinking and driving. A hunter needs to have his wits about him and be completely alert while carrying a firearm. Second, while newer Winchester Model 94 rifles have a hammer block safety that allows the gun to be carried safely with the hammer cocked, older Model 94s don't have this safety feature (see the photo accompanying this story). Older Model 94s are

designed to be carried with the hammer drawn back and set in the half-cock position. In this position, the gun is safe until the hammer is pulled all of the way back, the lever is squeezed tightly against the frame, and the trigger pulled. This hunter ignored the half-cock safety feature on his firearm and died as a result.

Mishap 4. This hunter's .45 cal-



This Winchester Model 70's safety is in the forward or "fire" position. The Model 70's three-position safety allows the shooter to eject a chambered cartridge without any danger of an accidental discharge.



This Remington Model 700's two-position safety is in the rear, or "safe," position. Current production model 700's allow the shooter to eject an unfired cartridge with the safety in the "safe" position.



Some bolt action rifles, such as this older Ruger Model 77 and the Savage 110 series, use a two-position sliding safety. These guns normally require their safeties be in the "fire" position to eject an unfired cartridge from the chamber. Hunters need to exercise care not to accidentally discharge these firearms.

iber handgun went off while he was sitting on a rock and shifting his weight.

Lessons learned: Without knowing whether the handgun involved was a revolver or a semiautomatic, it is impossible to know all of the details of what happened. Whichever type of handgun it was, it's likely the hammer was cocked as the force needed to pull the trigger all the way through a double-action stroke (used when the trigger is used to pull the hammer back) is typically 10 to 12 pounds or more. It's unlikely that the hunter shifting his weight could create sufficient force or move the trigger far enough to complete a double-action pull. It takes only a fraction of a second to cock the hammer to make an accurate hunting shot. It takes MUCH longer, however, for a bullet wound to heal.

Mishap 5. A hunter leaned his shotgun against the side of his truck, then was injured when it fell and discharged.

Lessons learned: The hunter should have unloaded his shotgun prior to returning to his vehicle. Placing a loaded weapon against a relatively smooth surface—like the side of a vehicle—is just begging to have it fall over with the slightest jostle. Also, it's a smart practice to unload your weapon outside of your camp or before arriving back at your vehicle. You're not likely to scare up any game at this point, but you might have an accidental discharge and injure yourself or a hunting companion.

Mishap 6. A hunter attempting to unload a shotgun inside a vehicle accidentally shot his companion.

Lessons learned: The front seat of a car or a pickup is a very confined place for one or more individuals to handle their rifles or shotguns. It's even more awkward when you're trying to unload a weapon—especially when the other person may be moving about and end up in the line of fire. The right move is to unload your firearm *before* getting into your vehicle.

Mishap 7. This hunter apparently pulled his loaded black powder rifle toward himself muzzle first and

continued on page 13

Firearms Safeties—How They Work

Hunting Rifles

Bolt actions—When Paul Mauser developed his famous Gewehr (Rifle) 98 for the German Army, he created the quintessential bolt action system—one that would be copied for nearly every bolt action sporting rifle built this century. The Mauser 98—designed to be as soldier-proof as possible—has a three-position safety. When the safety is laid all the way over to the left, the bolt can be operated and the gun fired. When the safety is pointed straight up, the gun cannot be fired, but the bolt can be worked to eject unfired cartridges. Laying the safety all the way to the right both prevents the gun from being fired and locks the bolt in the closed position.

This positive three-position safety allowed the infantryman to load, fire, and unload his weapon with little danger of an accidental discharge and the Model 98 worked well enough to equip the German Army during both World Wars. Since that time, many American sporting rifle makers have copied much of the Mauser 98's design; however, they have often opted for different safety systems. We'll look at those in this section.

- ◆ **Winchester Model 70**—This rifle virtually copied the three-position Mauser system except that it was designed to move in the horizontal plane so that a scope could be mounted low over the bolt. When the safety is fully forward, the gun may be fired. When the safety is pivoted one stop toward the rear, the gun can't be fired, but the bolt can be moved to eject an unfired cartridge from the chamber. When the safety is pivoted fully to the rear, the bolt is locked shut and the gun cannot be fired.
- ◆ **Remington Model 700**—This rifle uses a two-position safety that was modified during the 1980s. On current production Model 700s, the forward position allows the bolt to be worked and the gun fired. The rear position prevents the gun from being fired but allows the bolt to be worked to eject a live cartridge from the chamber. Older Model 700s, such as the one involved in Mishap 8, used a two-position safety which locked the bolt closed when the safety was in the rear, or safe, position. Ejecting a live round meant placing the safety forward in the "fire" position so that the bolt could be worked. This meant that if a hunter accidentally placed his finger on the trigger while attempting to unload the gun, he could suffer an accidental discharge.
- ◆ **Ruger Model 77/Savage 110**—Current production Rugers feature a three-position safety similar to the Winchester Model 70; however, older Ruger rifles and the Savage 110 series of rifles use a two-position safety. In the forward position, the rifle may be fired. In the rear position, the rifle cannot be fired nor can the bolt be worked to eject a live cartridge from the chamber.

Lever Actions—No hunting rifle is quite so associated with the history of America as the lever action. Current

production Winchester Model 94s and Marlin 336s feature a crossbolt safety designed to block the hammer so that it can't move forward and strike the firing pin. Older Winchester and Marlin rifles relied upon a half-cock setting for the hammer and a spring-loaded safety pin in the bottom of the frame. First, the gun was loaded by working the lever, then the trigger was pulled while the hunter put his thumb on the hammer, letting it move gently forward to its half-cock or "safe" setting. Failing to place the hammer in its half-cock position contributed significantly to the fatality in Mishap 3.

Semiautomatic/Pump-Action Rifles and Shotguns—While there are a variety of safeties on these firearms, most have a crossbolt safety on or near the trigger guard. Some, such as the Mossberg 500, have a tang-mounted sliding safety. Many of these firearms will have a separate button or other device that can be pushed to allow them to be safely unloaded.

Over/Under and Side-by-Side Double Barrel Shotguns—Most of these shotguns have a two-position sliding safety on their tang. They can be unloaded with the safety in the "safe" position by pushing the loading lever, normally also mounted on the tang, and breaking open the shotgun's action.

Handgun Safeties

- ◆ **Revolvers**—Modern revolvers typically feature either a hammer block or transfer bar safety that operates automatically as the weapon is used. Hammer block safeties place a metal block in the path of the hammer, preventing it from moving fully forward until the trigger is pulled. Transfer bar safeties rise from a recess in the gun's frame to bridge an open space between the hammer and the firing pin. Only when the transfer bar is in place, which occurs when the trigger is pulled, can the firing pin be driven forward far enough to discharge the cartridge.
- ◆ **Semiautomatics**—With the possible exception of the Colt Model 1911, commonly chambered in .45 Automatic, few centerfire semiautomatic handguns are used for hunting. Most semiautomatic handguns used for hunting are chambered in .22 Long Rifle and are intended for hunting small game. The Browning, Ruger, and Smith and Wesson .22 caliber pistols use a two-position safety lever on the left side of the frame. Normally, pushing the safety lever down moves the safety to the "fire" position, while moving the safety up prevents the pistol from firing. The Colt .22 Target differs in that it uses a frame-mounted crossbolt safety that is pushed to the right for the "fire" position, then back to the left to make the firearm safe. The Colt 1911 has three safeties, a thumb-operated lever on the left side of the frame, a magazine safety which prevents the gun from being fired if the magazine is removed, and a spring-loaded grip safety which prevents the gun from being fired unless the handgrip is firmly



The hammer block safety system used in this Smith and Wesson revolver prevents it from being fired until the trigger is pulled back.



Pulling the trigger lowers the hammer block safety out of the hammer's path and allows the firing pin to come forward and fire the cartridge.

squeezed. This handgun cannot fire unless it is held firmly in the shooter's hand.

Parting Thoughts

Although the author enjoys shooting a variety of hunting and military rifles, the best expert on guns is inevitably a trained gunsmith. Charles Jackson has 15 years' experience working on and repairing firearms at Charlie's Sporting Goods store in Albuquerque. While he'll tell you the safeties in modern rifles are excellent, he'll also tell you that safety is ultimately in the hands of the hunter. He advises hunters leave the chamber empty until they're ready to fire.

"Accidents can happen—something can break," he said. "Even on a bolt action gun, if something breaks just right, it can go off. The only way it's safe is if there is no round in the chamber."

He gave an example. "A couple years ago, a man and his son went deer hunting. He was using one of the safest guns made—a Marlin 336 with a crossbolt safety. As he was taking it out of the (truck) rifle rack, he shot his son through the middle of the back. It should have never been loaded."

Jackson added that rifles typically have rebounding firing pins—firing pins that are shorter than the channel they move in inside the bolt and are actually held back by a heavy spring. Only a powerful forward blow from a hammer or striker can force these firing pins forward with enough force to strike the primer and fire the cartridge. Dropping a rifle—even from a considerable height—normally won't drive the firing pin forward forcefully enough to fire the cartridge.

Proper maintenance is also important, Jackson said. "Lack of maintenance can cause the safety not to engage." He explained poor maintenance can lead to ever more dangerous problems. "I had a single-shot 20 gauge shotgun come in. The guy said that as soon as he dropped a shell in and closed the gun, it went off. The firing pin was rusted in the (forward) firing position. If it had been a semiautomatic (shotgun), it would have fired fully automatic."

Citing the information being taught currently in Hunter Safety courses, Jackson advised hunters never enter their camp or get inside a vehicle without first unloading their gun and opening the action. "Would you walk into camp with a bow and arrow and the bowstring drawn all the way back? Then why walk into camp with a loaded weapon?" ■

was killed when the weapon discharged.

Lessons learned: Never pull any weapon—be it a modern firearm or a muzzleloading rifle—toward you by the barrel. Should the firearm discharge, you are right in the path of the blast. Because a muzzleloading rifle cannot be unloaded—the charge must be shot out—many primitive weapons hunters are tempted to place a loaded gun in their vehicle if they have to drive to a different location during their hunt. Removing the percussion cap from a percussion rifle or the priming powder from the pan of a flintlock will drastically reduce the likelihood the gun will fire. However, even those actions don't ensure 100 percent safety because black powder can be ignited by static electricity. The safest practice is to shoot the load out of the gun before placing it in your vehicle. Reloading is a bit of a chore, but it beats a .50 caliber hole in your anatomy.

Mishap 8. A hunter accidentally shot himself in the foot while attempting to unload an unfamiliar hunting rifle while sitting in the front seat of a pickup.

Lessons learned: This one is a lot like Mishap 6—unloading a weapon inside a vehicle is asking for trouble. In addition, however, this hunter was unfamiliar with the rifle he was using and its safety system. Before shooting any firearm, it is imperative to know how the safety works. Not all rifle and shotgun safeties work the same, and getting confused can lead to a painful accident. ■

continued from page 11



Safety With a Smokepole

BOB VAN ELSBERG
Managing Editor

Photos by MSgt Perry J. Heimer

It was a beautiful fall morning in Missouri. Sitting under a hickory tree, I could hear the barking of a tree squirrel somewhere in the leafy canopy above me. Sitting almost motionless, I slowly moved my head to scan the tree limbs. In my hands I held a modern-made replica of a .36-caliber Kentucky rifle. My hunting load, a .350 patched ball sitting on top of 30 grains of FFFg black powder, would take a squirrel cleanly out to 75 yards or so without damaging too much of the meat.

Sitting there in the morning mist I felt like I had stepped back 150 years in history. I knew what it felt like to really hunt—to have to make one shot count—not just spray bullets at my game, as I might be tempted with a .22 semiautomatic rifle. But then, wasn't this more of what hunting was supposed to be? Not man overwhelming nature with technology, but rather a challenge of a man's marksmanship, a fairer equation between the hunter and the hunted.

Much the same motive brings thousands of American hunters into the woods each fall, not only to hunt

small game like squirrel, but also to bring home big game such as deer or elk. And an essential part of a successful hunt is being safe. The following is a short primer on how to safely load and carry these interesting primitive weapons.

As their name suggests, muzzleloading rifles are loaded from the front. Anyone who has seen a movie about the early American frontier has seen a rifleman pour powder from a flask down the muzzle of his rifle. But like so many things from Hollywood, this example is inaccurate and, in fact, downright dangerous. A burning ember inside the barrel from a previous shot could ignite the new powder charge, travel back up to the flask, and explode it like a hand grenade. When you consider a flask may hold as much as a half-pound of black powder, the potential for a devastating explosion that could take off a hand—or worse—is obvious.

The proper way to load a powder charge is to pour the powder into a preset measure, then pour the powder from the measure into the barrel. Should a spark ignite the charge, most—if not all—of the charge will be burned in the barrel, posing little threat to the shooter.

To prevent even the possibility of this happening and to preserve the accuracy of their weapons, many hunters swab the barrel with a damp patch after each



To safely load a muzzleloading rifle, the black powder charge should be poured from the powder flask into a powder measure—not directly down the firearm's barrel.



Once the proper powder charge has been poured into the measure, the charge is then poured from the measure directly down the bore.

shot, following it with a dry patch before reloading.

Once the powder has been poured down the barrel, the next chore is to load the projectile. Muzzleloading rifles traditionally have used either a patched lead ball or a conical-shaped lead bullet with a hollow base. In the case of a patched ball, a slightly undersized lead ball is placed in the center of a fabric patch and rammed down onto the powder charge. The patch, rather than the ball, engages the rifling when the gun is fired and spins the ball so that it flies accurately. By comparison, conical bullets have a hollow base that expands upon firing to engage the rifling. Today, some hunters use a plastic sabot much like a patch, loading a modern pistol bullet into the sabot and ramming the combination down the barrel. Once the desired projectile is loaded, the final step is to place a percussion cap on the nipple of a percussion gun, or prime the pan of a flintlock. The key point to remember while loading is to NEVER allow the muzzle to point at any part of your body!

Once the rifle is loaded, you're ready to go hunting. Jim Traver, owner of the Front Stuffer, a sporting goods dealer specializing in black powder firearms, suggests one of two ways to safely carry a percussion cap-fired muzzleloading rifle.

"Most hunters use the half-cock setting on their hammer so that the gun is safe but can be cocked and fired quickly if needed," he said. However, he added,

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A lead round ball is then placed in the center of a cloth patch, positioned directly over the muzzle, then started down the bore with a short starter. Once the patched ball is a few inches down the bore, a standard ramrod will be used to seat it firmly against the powder charge.



The last step in loading a muzzleloading rifle is to place a percussion cap on the nipple.



Muzzleloading rifles typically have a half-cock position which allows the rifle to be carried safely while hunting. Some hunters increase their margin of safety by placing a piece of leather between the hammer and the nipple.

continued from page 15

it is not impossible for a hammer to slip off of its half-cock setting, so he sometimes uses another, possibly safer method. "I put a small piece of leather between the hammer and the percussion cap, then let the hammer all of the way down." He explained that the leather serves as a cushion, preventing a sudden blow against the hammer from firing the percussion cap.

With flintlock rifles, the half-cock setting is the prime means of carrying the rifle safely in the field, Traver said. While there are leather guards that can be slipped over the frizzen, removing them is time-consuming when the hunter is trying to quickly get a shot off at his game. ■

THE TEN COMMANDMENTS OF MUZZLELOADING

1. Muzzleloading firearms are not toys. Treat them with the same respect due any firearm.
2. Use only black powder of the proper granulation size in your muzzleloading firearms. Such guns are not designed to withstand the higher pressures developed by modern smokeless powders.
3. NEVER fire a muzzleloader unless the ball or shot charge is firmly seated against the powder charge. An air space between powder and projectile will cause the barrel to be ringed or bulged, thus ruined for accurate shooting, and in some cases may cause the barrel to rupture, with attendant injury to the shooter and bystanders.
4. Do not exceed manufacturer's recommended maximum loads or attempt to load multiple projectile loads. When in doubt, secure information concerning proper loads from an authoritative source.
5. When loading your muzzleloading firearm, do not expose your body to the muzzle. Grasp the ramrod only a short distance above where it protrudes from the barrel, pushing it down in short strokes, rather than grasping it near the outer end, where, in the event the rod breaks, the shooter's arm could be injured by the splintered end of the broken rod.
6. Always make sure that your downrange area is a safe impact area for your projectiles. Maximum range of a firearm is obtained by firing at a 35-degree angle above horizontal. Round balls may carry as far as 800 yards and elongated projectiles well beyond this distance.
7. Never smoke while loading, shooting, or handling black powder.
8. Do not load directly from powder horn or flask. Use a separate measure. A lingering spark in the barrel can ignite the incoming charge, causing the horn or flask to explode in your hand.
9. The half-cock notch is the safety notch on a muzzleloader. Always be sure it is functioning properly. If your lock or triggers seem to be improperly functioning, take your firearm to a competent muzzleloading gunsmith to have the problem checked and corrected.
10. The nature of a muzzleloading firearm requires that you, the shooter, exercise caution and skill in the care, loading, and use of such a firearm. Make certain that you are informed as to the proper steps in such care and use.

Courtesy The National Muzzleloading Rifle Association

Short Circuits



NOTEWORTHY NEWS

Get the Facts Before Buying

If you've ever bought a car—especially a used one—you've probably wondered, "Are they asking a fair price?" "Where has the car been?" "Does it have a history as a lemon?" "Who owned it, and is there anything bad about the car I should know about?"

While the dealer will gladly tell you the price, you've probably gotten the standard "I dunno" answer if you asked about the vehicle's history. Well, you don't have to be in the dark any longer. If you have access to the Internet, the vehicle's VIN (Vehicle Identification Number), and you're willing to spend \$14.95 on your credit card, you can answer those nagging questions before you sign a purchase contract.

How? The answer is simple. Look up the Kelley Blue Book Web Page at www.kbb.com, then click on "Used Car Values." This will take you to a screen that offers "trade-in" or "retail" values. Click on "Retail," then on the next screen, click on the year model of the car. You'll then get a screen asking you to "Select a Make," so click on the make of the vehicle. The next screen will ask you to select the model, so be sure to enter the correct model as many cars come in two or three versions. Next you'll be asked for the vehicle's mileage, the zip code where the dealership is lo-



cated, and to click on the options the car comes equipped with. In addition, you'll also be asked your estimate of the vehicle's condition.

Click on the "Submit" button at the bottom left of the page, and the next screen will tell you the retail value of the car—something you should know when bargaining with the dealer. More importantly, the paragraph on the screen titled "Consumer Rated Condition" will have within it the words "title history" highlighted. This is where you can begin your search on the history of the used vehicle you're thinking about buying.

Clicking on "title history" will bring up the Kelley Blue Book's "Carfax Vehicle History Service" page. You'll see a block where you can enter the VIN number and another block for your zip code. Enter these numbers, then click on the "Go" button. The next screen will identify the vehicle, where it was made, and the number of "History Records" for the vehicle. Click on the highlighted words telling you how many history records were found on the vehicle. (For instance, the author recently purchased a program car—a

1998 Chevrolet Lumina—which showed "three records.")

The next screen will allow you to choose between two options—checking the title histories for several vehicles for a one-time charge of \$19.95, or checking the title of a single vehicle for \$14.95. Click on whichever you desire, then be ready to enter your credit card number and expiration date in the blocks provided.

Does it work? You betcha! In less than a minute, you'll be reading the title history of the vehicle, when and where it was bought and sold, who owned it, if it was a commercial company such as a rental car service, and whether or not there are any liens against the title. In addition, you'll be able to see other facts, including any manufacturer buybacks (lemon) listings against the vehicle, if it has been in an accident or rebuilt because of accident damage, or if it has been repossessed or suffered flood damage.

These useful facts which dealerships will rarely—if ever—provide you, can keep you from making a costly mistake. Oh, and what about the three records on the author's used Lumina? As suspected, the car was originally purchased by a car rental company in California, then sold during an auto auction to a local dealership. And although you didn't ask, the author paid \$2,000 less than the Kelley Blue Book listing of \$15,065—a fair price reduction considering the vehicle's miles and history.

When considering buying a used car, always remember caveat emptor (buyer beware)! ■



BOB VAN ELSBERG
Managing Editor

Family photos courtesy Karolyn Nunnallee

Editor's Note: Are you about to crack a cool one, then head out on the road? If you think you can "handle it" and still handle your car, then read on. Remember the terrible tragedies at Littleton, Colorado, and Jonesboro, Arkansas? They don't match the carnage caused by one man 11 years ago armed, not with a gun, but with a pickup truck and a blood alcohol content (BAC) of .24. That night, Larry Ma-

honey killed 27 people—the youngest being the daughter of Lt Col Jim and Karolyn Nunnallee—in the worst drunk driving crash in US history. And make no mistake about it—what happened that night was no "accident." As Mothers Against Drunk Driving (MADD) President Karolyn Nunnallee will tell you, when you drive drunk, what happens is never just an "accident."

The steady hum of the tires rolling over the highway helped lull to sleep many of the 66 passengers in the back of the bus. Not that they didn't have good reason to be tired anyway, thought John Pearman, the bus driver and one of four chaperones who'd spent the day shepherding the kids at King's Island amusement park in Ohio. He drove the bus carefully as they headed southward toward Radcliff, Kentucky, and home. He glanced at the road sign for Carrollton, then looked at his watch. It was 5 minutes before 11 p.m., and they still had nearly 100 miles to go.

Listening to the hum of the tires, 10-year-old Patty Nunnallee closed her eyes and thought about the fun she'd had that day and

how lucky she had been to be on the trip. Her best friend, Robin, had invited her and was sitting next to her in the second row of seats on the right side of the bus. However, it had taken a call from Robin's mother to convince Karolyn that the trip, sponsored by the Radcliff Assembly of God Church, would be safe.

"I thought she'd be going in a private car," Karolyn said. "I originally said 'no'—because private cars have crashes, and I didn't want her in a car. But Joy called and said they would be going on a church bus. So I said,



The force of the head-on collision destroyed Larry Mahoney's pickup truck. Although Mahoney survived, the impact ruptured the bus's fuel tank, causing a fire that killed Patty Nunnallee and 26 other passengers.

Photo by Bill Luster, © The Courier-Journal, Louisville, Kentucky

'What could be safer than that?' and let her go. I knew she was safe. She was with an adult supervisor who loved her (Joy) and her best friend. They were going to have a good day."

Safety had always been important to the Nunnallees. As an Air Force family, they'd been taught to wear their seat belts both on- and off-base. Patty had been born in Germany where the law required kids under the age of 12 to always ride in the backseat. Jim and Karolyn liked that idea enough to make it a permanent family rule. Although she was young, Patty already knew to be responsible for herself and her own safety.

Unknown to the Nunnallees or to the bus passengers headed southward into Kentucky, another driver would be getting on the road that night. Larry Mahoney had put in three back-to-back shifts at his job and had finally gotten off that day around noon. He didn't have an amusement park to go to, but he could make do with a steady supply of beer and vodka and friends to drink with.

The Nunnallees had also used alcohol, but always in moderation. Living in Germany for part of Jim's Air Force career, they'd occasionally enjoyed a glass of beer or wine with friends at social outings or over a meal. However, Jim—a weapons system operator in F-4s and

later in F-111s—learned early in his career that misusing alcohol could be a sure ticket out of the service. As a result, he and Karolyn had committed themselves to the decision to never drink and drive. Too much was at stake to throw away a career—and maybe lives—over a few drinks.

Mahoney, however, hadn't made the same decision. He'd already had one DUI arrest and had been sent to a 4-hour drunk-driving class. However, that class would not prove an effective deterrent this night.

As the bus passed Carrollton, Patty thought how much fun she'd had that day. She thought about the stories she'd tell her 6-year-old sister Jeanne—who she loved and spent a lot of time with. She thought about her dad, who'd let her stay with Robin the night before so the two friends could start the trip together. She also thought about her mother, who had gone to Florida to be with her own mother who was ill and in the hospital. While Karolyn was gone, dad had been playing "Mr. Mom"—taking care of Patty and Jeanne. However, as 10:54 p.m. ticked by, neither he nor Karolyn could know that someone much less concerned about the safety of others was on the road. Yet, Patty's safety had been on Karolyn's mind that night.

"I called Jim late that night and asked him how things

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Lt. Col. Jim Nunnallee, his wife Karolyn, and their surviving daughter Jeanne shortly after losing their daughter, Patty, in the worst DUI crash in U.S. history. Two weeks after her daughter's death, Karolyn joined Mothers Against Drunk Driving to actively combat one of America's worst safety problems.

were going," Karolyn explained. "He said things were going 'fine' and that the kids were supposed to get in late that night... Basically, it was 'no cares in the world'—everything was okay."

But things weren't "okay." After spending much of the afternoon and evening drinking, even Mahoney's friends didn't want him on the road and took his keys away from him. But like so many drunks, Mahoney could argue persuasively.

"He said, 'I'll go straight home,' so they gave him his keys back," Karolyn said, reflecting on their testimony in the police report that would follow later. "However, they knew when he turned out of the driveway that he wasn't going home because he turned the opposite direction."

As Pearman guided the bus down Interstate 71, he was grateful it was divided by a 62-foot-wide median. At least the oncoming headlights in the northbound lanes were offset to the left some, so he wouldn't have to stare directly into their glare. Now it was a matter of just "keeping it between the lines"—in the left-hand lane—until he could hit the 265 Loop and go south around Louisville. It was an easy enough drive so long as he was careful.

Somewhere around 10:30, Mahoney had left Carrollton and headed south on Interstate 71. After driving south for awhile, he changed his mind and decided to head back north again. With a BAC of .24—more than twice the legal limit—he was confused.

Whether he made a U-turn thinking he was on a two-way road, or got off the interstate then took the wrong ramp to get back on, has never been answered. As he guided his pickup by what he thought was the fog line on the right side of the road, cars flashed their lights at him and semis blew their horns. However, neither was enough to jolt him into

alertness. Car after car swerved out of the way to avoid being hit head-on, but Mahoney was too drunk to realize that he was going the wrong way in the southbound fast lane.

Pearman stared into the darkness ahead as he kept the bus steady in its lane. He knew there were some bends in the road that made oncoming cars look like they were coming straight at him. But what was that up ahead? Suddenly, he recognized that the headlights were in his lane—filling the bus's windshield as they came straight at him!

Desperately turning the wheel to the left as fast as he could and jamming on the brakes, he tried to swerve into the median—but there just wasn't enough time. Mahoney's truck slammed into the bus's right front bumper and fender, tore away the right front wheel, then smashed its way down the bus's side, hitting a leaf spring and puncturing the gas tank. The gas tank was located near the front of the bus and just beneath Patty's seat.

Behind the wheel, John fought to keep the bus under control as it skidded nearly 120 feet down the road. Inside the bus, the impact had slammed the passengers

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The Deadly Facts

- ✓ Drunk driving is the nation's most frequently committed violent crime.
- ✓ Approximately three out of every five Americans will be affected by an alcohol-related crash at some time during their life.
- ✓ In 1997, 16,189 people were killed, and more than a million others were injured in crashes involving alcohol.
- ✓ In 1995, alcohol-related traffic deaths and injuries cost society \$114.5 billion, including lost quality of life.
- ✓ Since October 1992, more than 110 Air Force members have died in alcohol-related POV mishaps. Nearly one-third of those were passengers in a vehicle driven by a drunk driver.

Photo by Bill Luster, © The Courier-Journal, Louisville, Kentucky



The head-on collision tore off the bus's right front tire, jamming a leaf spring into the fuel tank and causing a fire that incinerated the bus and killed 27 passengers.

into the seats in front of them and tossed others into the aisle. Inside the bus, many of the stunned children and adults thought they'd hit a deer. As they sat wondering what had happened, they heard a "wha-wumpf" and saw an orange glow in the front of the bus. To their horror, moments later Chuck Kytta, the church's youth director, stood up on the entry steps at the front of the bus. He was engulfed in flames.

The fire, fed by the gasoline and fuel vapors gushing from the ruptured fuel tank, began to rapidly spread through the bus, turning the inside into an inferno.

With the right side of the bus smashed, the only way out was the rear emergency exit. Kids and adults struggled to get out, climbing over seats or trying to make their way down the center aisle—but only 40 made it. There was too little time, too many people, and too much fire and smoke. Seated near the front, Patty tried her best to reach the back of the bus, but made it only a few feet. Overcome by the heat and flames, she and 26 other victims burned to death. They never had a chance.

Happening so late in the evening and so far away from home, it took time for the families in Radcliff to find out about the crash. Finally, Jim got word and called his father in Florida. Hours earlier, Karolyn's mother's condition had improved, and things had seemed to take a turn for the better there as the family prepared to keep watch over her at the hospital. For the first Sunday morning in years, Karolyn had been able to enjoy going to church with her nieces and nephews. When she arrived home, she saw her father-in-law's car in the driveway. She thought Jim's parents were out for a Sunday drive. But as she walked into the house...

"I remember seeing my father sitting there. I looked into his face and immediately thought mother must have died. From the look he had, I knew something was wrong. Then my father-in-law stood up and said, 'Karolyn, there has been an accident.'"

At first she thought it was Jim.

"As military wives, we're prepared for our husbands to die. But, in the next breath, he said, 'Patty.' I cried, 'No—no—this can't be happening!'"

Jim's dad had watched CNN news reports about the crash late Saturday night. However, until Jim's call, he had no idea that his granddaughter had been involved. Now the still-sketchy information from the news reports—the fire at the crash and the fact many of the victims had been burned—gripped the entire family. Then Jim called again—with a chilling request.

"He asked where Patty's dental records were, so I knew something was wrong," she said. "I bartered with God. I prayed, 'Just let her be lost—just let her be in a hospital somewhere with a little smudge mark on her face.'"

Karolyn flew back to Kentucky to search for what she hoped would be a missing—but still alive—daughter. With the injured children having been taken to several different hospitals, Karolyn searched for Patty's name among the living and held out hope.

"For three days after I got back they had a rolling list

of the victims on the television—but her name was always spelled wrong. I kept saying, 'That's not her because that's not her right name.' It took them three days to identify all of the children. For those three days in my mind it wasn't going to be her...I just kept saying, 'There's been a mistake'...until they brought us all together and handed out the death certificates."

The blow landed hard on Karolyn and Jim. Patty and Karolyn had grown especially close together—become "best friends," as Karolyn put it—while Jim had served a 1-year remote in Korea and later while he was gone for Squadron Officer's School. "She was not just a child to me; she was pretty much wise beyond her years...we'd had a wonderful relationship," Karolyn explained.

Jim had seen death up close before. When his best friend's airplane went down, Jim served on the Safety Investigation Board (SIB) to help find the cause and prevent it from happening again. But there was nothing he could do after Patty's death to bring sense out of what had been a senseless tragedy.

Explaining to their 6-year-old daughter Jeanne—who, like most little girls, lived in a fantasy world at that time—that her sister had died was even harder, according to Karolyn.

"We painted what we thought was the right answer—that her sister had died and was in a wonderful place," Karolyn explained. "We talked about heaven, which we found out later was really the wrong way to tell her. Sometimes, if you tell children that their best friend is in a much better place, they want to go there. There is a high suicide rate among these children."

Meanwhile, the local community was pulling together in the aftermath of this tragedy.

"There were memorial services," Karolyn said. "We have a book full of the names of people who came to the house. Once the word got out, there were phone calls from military families all over the world who called to see how we were doing."

The memory of Patty's funeral was fresh in Karolyn's mind when she asked herself what her daughter would have done were the situation reversed. She knew the answer wasn't to become bitter but rather to try and make things better. Two weeks later, she made a decision—she joined MADD.

"I knew if I could get involved with MADD, I could fight drunk driving for Patty so that her death would not have been in vain," Karolyn said.

Karolyn went to the local MADD chapter and was given a shoebox full of red ribbons and membership brochures. She explained, "I knew that as a victim I needed to do something positive even while I was still grieving...I sent them all over the world to military friends and families because I wanted to stop drunk driving. As I look back on my 11-year history with MADD, I think of that little box and how insignificant from the big scope of things it really was. But it was what I needed at that time, and I felt like I was doing something positive."

She stuck with it. When the Air Force assigned Jim to Cannon AFB, New Mexico, a state with one of the worst



The Nunnallee family today, currently, Karolyn Nunnallee is the president of Mothers Against Drunk Driving, America's best-known anti-drunk driving organization.

Help Is Available

MADD is the largest crime victim's assistance organization in the world. Air Force families who have been the victims of a drunk driver may call MADD's hotline at 1-800-GET-MADD to reach trained staff or volunteers for immediate emotional support as well as guidance through the criminal justice system. MADD can also provide a host of low-cost booklets designed to provide helpful information for families and survivors in the aftermath of a drunk-driving accident. These booklets are designed to help survivors and families deal with grief, find professional legal help, help a relative or friend who drinks and drives, along with many other issues. Air Force families desiring more information about MADD should contact their local MADD Chapter or visit the MADD web site at www.madd.org.

DUI problems in the country, she co-founded the MADD Curry County Chapter. After Jim's retirement in 1992, they moved to Florida where she co-founded the MADD Polk County Chapter. Becoming President of MADD in 1998, Karolyn fought for "Zero Tolerance"—a nation-wide law to prevent underage drinkers from getting on the road, and she continues to fight for a national BAC level of .08 for drunk driving.

But she never forgets 14 May 1988, or what one drunk driver did to her family and to an entire community. On Karolyn's desk at MADD's National Headquarters in Irving, Texas, is Patty's picture, a picture of a little girl who'd planned to follow her father into the Air Force, then serve others through the country's legal system.

Had she lived and her dream been fulfilled, Patty might have been in her senior year at the Air Force Academy. And Karolyn believes that if she could speak from beyond that tragic night 11 years ago, this is what she would say to young airmen today:

"No one is invincible. The laws in this country are there for a reason. They're there to protect us, not to hinder us... You have to realize that if you choose to drink and drive, it's not like choosing not to wear your seat belt. If you don't wear your seat belt, you endanger *you*, but if you drink and drive, you endanger *me*. Would you take a gun and walk down Main Street and open fire? Then think of a car as a 2,000-pound deadly weapon—because that's what it is when you drink and drive."

P.S. The author wishes to thank Kentucky State Patrol Officer Henry "Sonny" Cease—who investigated this tragic crash—for many of the details used in this story. ■



A Motorcyclists' Nightmare— Head-On at 110 MPH!

SSGT MARK LYTAL
615 AMOS SCOA

“Mark, don’t move.” Those were the first words I heard after landing on the ground. The next thing I knew, I was hearing calls for 911, a fire extinguisher, and help. “What just happened?” was my initial thought.

It was just another Sunday. Another instructor, John, and I had been teaching a motorcycle safety class in Napa, California. The weather had started to get bad, and we had decided to call the class early for safety reasons. As we started putting the equipment away, the weather broke, and the sun started shining. It turned out to be a really nice day af-

ter all. We were looking forward to the motorcycle ride home.

After we got everything put away, we headed to our motorcycles and, as always, took the time to put on our safety gear. Now dressed and ready for the ride, we headed back for Travis AFB. Traffic was normally heavy on Sunday afternoons on this particular stretch of road, and this afternoon was no different. Turning from Highway 29 south to Highway 12 east, the road narrows to two lanes and is considered one of the 10 most dangerous roads in the country. However, it’s the link between Travis AFB and Napa, California. The road was clear and the sun was shining. I had just looked at my clock, and it was 12:50 p.m. The

overall conditions, barring the traffic, could not have been better.

We were riding in a staggered pattern formation, with me in front and John about two car lengths behind. About 100 yards ahead of me, I noticed a car veering into oncoming traffic. This is when instinct took over. I slowed down and moved towards the shoulder of the road to provide as much space cushion in front as I could. Being a skilled rider, John followed my lead. He couldn’t see the car yet, but soon would. I was sure the car would hit one of the cars ahead of me in my lane. Suddenly the car shot back into his lane, then his right-side tires left the roadway, and the car immediately shot back into the left lane. The car was



The location where the accident occurred on Highway 12 – one of America's 10 most dangerous roads.

Photos courtesy of the author

obviously out of control at this point and was coming right at me. We had nowhere to go. Realizing this, the only thing we could do was prepare for the impact and anticipate the collision. I started to rise off the seat and looked toward the shoulder, knowing this was where I wanted to land. John could see everything that happened. The impact was so intense I had no idea what had happened to me.

Coming out of a haze I heard, "Mark, don't move...Call 911...Get a fire extinguisher...Don't remove his helmet!!"

"John, is that you? Are you okay?" I asked. John told me he had been struck as well, but had only minor injuries. He also asked me where I hurt and told me not to move. I asked that he roll me over because I was face down in the dirt. My helmet was still intact and in place, as was the rest of my protective gear. John informed me that the ambulance was on the way and not to move. From there I was taken to David Grant Medical Center at Travis AFB. John went with the tow truck driver and later rode with his wife to the hospital to be checked out.

According to the police report, my impact speed with the car was a combined total of 110 mph while John's was slightly less. I was thrown 70 feet into the air and over a

small tree while John was thrown directly onto the asphalt. The injuries we incurred were minimal, all things considered. Most of my injuries were to my knees, while John's amounted to severe bruising. Those don't take into account the emotional aspects of this type of accident.

Our first thoughts were "How could this happen to us?" After all,

we were highly experienced motorcycle riders and instructors. Was there anything different we could have done to prevent this from happening? Then we realized we were alive because of experience, training, continuous practice, and, above all, our diligence in wearing the proper protective gear.

Every week we teach new motorcycle riders the importance of training, practice, and protective gear. Every day we both see riders in T-shirts, shorts, and tennis shoes, etc. How would we have fared in that kind of gear?

When we had our accident, we were wearing full-faced helmets, full-fingered gloves, jackets (mine was a Tourmaster Cordura™, John's was made of leather), jeans, and boots. To put it simply, we have a rule: "No skin below the chin, and always wear a helmet."

Motorcycling is a great sport. Like any sport, though, it takes proper training, preparation, and protective gear to get the most enjoyment and success out of it. "Because the more you know and the better you protect yourself when you're on the road, the better motorcycling is." ■



The 1984 Volkswagen Rabbit involved in the crash also suffered extensive damage.

Tales From the Crypt ...Almost



TSGT ROBERT BROTTEN
192d Fighter Wing (VA ANG)

Editor's Note: Most of the articles people send to me talk about one particularly memorable mishap. TSgt Brotten, however, sent me a "triple-header," any of which could have been a Class A. His experiences offer some thoughtful insights into off-duty personal safety.

In Such a Big Hurry...

During 1982, I attended a semiprofessional wrestling match in Mississippi to watch a friend compete. Things got out of hand, and in an attempt to escape, I suffered a head injury. A companion offered to take me to the hospital for sutures.

My first mistake was allowing him to drive. In his anxiousness to get me to the hospital, he roared down the road at excessive speeds.

Mistake No. 2 was not insisting he show some prudence behind the wheel. He knew

of a hospital in Memphis, Tennessee, and in his hurry to get me there, he ran a red light.

Mistake No. 3 was my not insisting he stop for that light. As we crossed the intersection, we were rammed in the right front door. The impact caused the car to spin out of control, flip, then slide down the road on its roof for more than 150 feet before hitting a curb and a light pole.

As a result, the car was totaled. The front passenger's seat was ripped from its mounts, the windows were shattered, and the fuel tank ruptured, soaking us both with gasoline. The driver had been lucky. He'd suffered only a few scratches, some small cuts from the broken glass, and a sprained ankle.

I wasn't as fortunate. I'd suffered a severe concussion, multiple lacerations from the broken glass, a separated left shoulder, a dislocated right knee, and a broken spine. Not counting the time I spent hospitalized, I was out of work and on minimal duty for more than 6 months. Oh, did I mention that neither of us was wearing our seat belts? What that accident cost me was incalculable—and I wasn't even driving!

It's been 17 years since that accident. I now have a family of my own—but I'm still limited in my activity. I'm reminded of that every time my son says to me, "Come on, Dad, let's wrestle," and I can't. I learned the hard way that my health and safety are MY responsibility!

Glad to Be Belted on New Year's

On New Year's Day 1994, my son and I were going to visit a friend after an unusually heavy snowstorm had begun to clear up. Driving on the familiar, snow-coated roads mandated the use of caution. Instead of going the posted speed limit of 35 mph, I was going only about 20 mph when we ran over some black ice in a curve and slid off the road and straight into a tree. The force of the impact, even at just 20 mph, was incredible.

The impact caused the car to spin out of control, flip, then slide down the road on its roof for more than 150 feet before hitting a curb and a light pole.

As a result, the car was totaled. The front passenger's seat was ripped from its mounts, the windows were shattered, and the fuel tank ruptured, soaking us both with gasoline.

We hit the tree so hard the windshield popped out. Our vehicle, a full-size sedan, was mangled—there was more than \$8,000 worth of damage.

The good news was that my son and I walked away, a little shaken to be sure, but without so much as a bruise. We were wearing our seat belts during that trip, just as always. An accident may not be the best way to teach a child, but

now my son is always the first to "buckle-up" and helps the rest of us remember!

In Less Than a Second

In an article on swimming pool safety published in the summer 1996 issue of *Road & Rec* it says, "In less than a second, a child can...drown before anyone notices." Those are true words.

My family owns a membership in private campground on a beach on the Piankitank River. This section of the river feeds directly into Chesapeake Bay and can have a swift current. At the time, I was holding onto an 18-inch rope and "towing" my 2-year-old son in a small raft along the shore in water about 2 feet deep. My oldest son called to get my attention, which caused me to glance away from the raft for a split second. When I turned back to the raft, all I saw was the bottom of one foot descending into the murky water. I lunged to grab him, but it was too late. He was already gone.

I took two steps downstream frantically feeling in the water for him. By a miracle, my pinkie glanced across the toes of his right foot. I squeezed for all I was worth and jerked up with my hand. I hoisted my 20-pound son by his little toe, and he WAS NOT happy. As I held him upside down, brown water drained from his nose and mouth, and then he screamed. What a sweet sound that was! Since this incident, we have insisted on swimming lessons and personal flotation devices. I was lucky that day. "In less than a second"—I almost lost a son. ■



My Helmet: I Never Leave Home (on a Bicycle) Without It!

SHELLEY PULLIAM
Defense Logistics Information Service
Battle Creek, Michigan

My husband Rick and I have been riding a tandem (bicycle-built-for-two) for 18 of our 26 married years. Even though it takes much more coordination and communication than riding two single bikes, we've had a lot more fun than arguments, and our tandem is very special to both of us.

Having read in *Bicycling* magazine

that it was possible for the material in older helmets to deteriorate and be less effective in preventing injuries, we decided in the spring of 1993 to replace our approximately 15-year-old helmets with newer ones. At a somewhat costly \$90 each (there are cheaper helmets available which meet Snell standards), we bought new helmets. Besides being lighter in weight, they looked more stylish and had an edging of colorful flags of some of the countries that had participated in the 1993 Olympics. Now we had matching helmets—most tan-

dem riders like to wear outfits that match.

The Eastern Tandem Rally was held in Williamsburg, Virginia, the last weekend of June 1993. Our plan was to attend, spend some additional time in Williamsburg, and travel a few more days in the area before returning home. Volunteers hold these rallies annually in a state in the eastern portion of the U.S. Similar rallies are held in other parts of the country at various times of the year. All of the rallies encourage helmet use. Some require them!



Photo courtesy of the author

The Sunday ride was to Jamestown, but we never made it there. We were about 10 miles out of Williamsburg, riding with a group of other tandems on a lovely two-lane country road with almost no traffic. The weather was perfect—sunny and cool. We were wearing lightweight matching (of course!) jackets.

A group of single bikes from a local bicycle club passed us. We were a little ahead of the other tandems in our casually formed group when we started on a steep downhill. Rick believes we had reached a speed of 30 mph when the last single rider ahead of us dropped a water bottle and pulled over to the right side of the road. Thinking he was going to stop there, Rick steered our tandem to-

ward the centerline to give the bicyclist plenty of room.

Evidently the man didn't realize there was another bike close behind him, and he made a U-turn right in front of us. There was no possible way to avoid him, nor could we brake in time—try stopping a tandem quickly on a downhill! What happened next seemed to take several minutes rather than the actual 2 or 3 seconds—it was like slow motion. I remember seeing the water bottle on the road (it was red) and hearing Rick say, "We're going to hit!"

The next thing I was aware of, following some strange dreams, was lying on the ground with my feet still in the clipless pedals. In a nice, soothing voice, the "ambulance man" was telling me I had had an accident. My first thought was, "Where's Rick? Is he all right?" Then I heard my husband's voice nearby and was reassured.

After being disconnected from the bike, I could wiggle my hands and feet—everything moved all right. I didn't feel any particular pain, so I knew I was okay. For some reason, I couldn't see. I suppose the concussion I suffered temporarily interfered with my eyesight. The strange thing was it seemed natural and not at all alarming.

The paramedic asked me a series of questions. "What is your name?" "Where are you from?" "How old are you?" I was able to answer all his questions correctly until he asked if I knew where I was. My answer? "Massachusetts." Well, the previous evening we had spent time with friends from the Boston area, so perhaps that was on my mind. At least I knew I was somewhere in the east with a lot of colonial things!

Both of us hit our heads (I was unconscious for perhaps 5 or 10 minutes). From the crushed areas on our helmets, it appeared our heads struck the pavement at least twice. I had a harder impact due to the crack-the-whip effect from being on the back of the bike, and later my neck hurt more than my head. We both had a few scrapes on our arms and legs, Rick getting the worst of it. He told me he thought his hand was broken, and it turned out he was correct. The bone

below his right thumb was fractured, and later that day he had surgery to place a pin to hold it together.

The single bike had struck us near the front of our tandem. The impact knocked us over into the far side of the other lane, and we landed on our left side. Luckily, there was no oncoming traffic! By another coincidence, at the top of the hill we had passed a fire station with a rescue squad, so they were on the scene very quickly. Also, the doctor on duty at the hospital just happened to be an orthopedic surgeon!

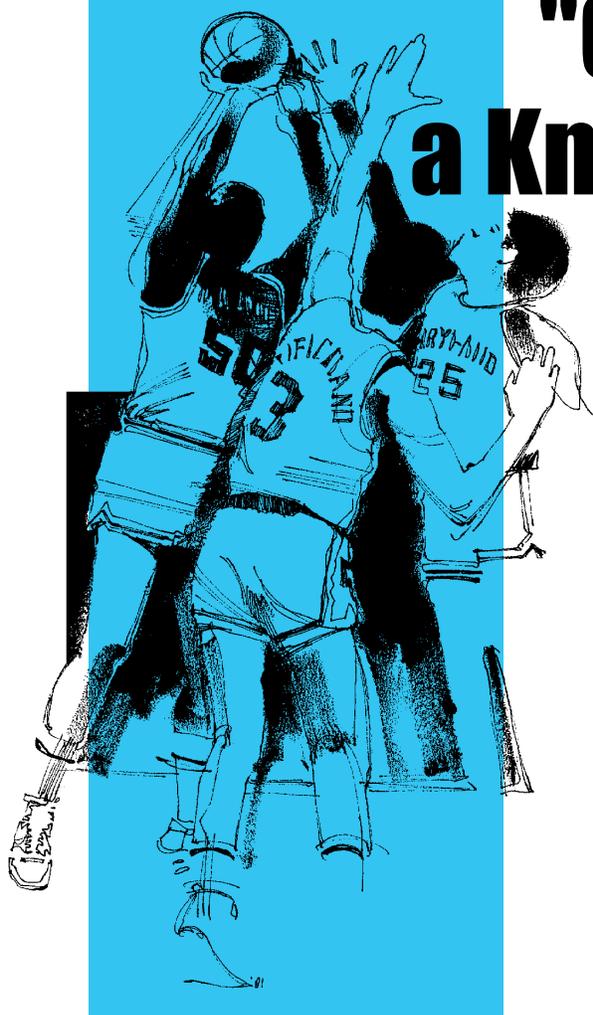
The single rider wasn't hurt although his bike was damaged. Except for scraping off some handlebar tape and getting some of his blue paint on our dark green bike, our tandem was okay.

The company manufacturing our helmets has a policy of replacing any of their helmets that have "crashed" for a very minimal cost of \$15 each. We sent ours in and received two new helmets, unfortunately minus the little Olympic flags I liked so much. This seems to me to be a very commendable way for a manufacturer to stand behind their product, although I realize part of their rationale is to be able to perform research on crashed helmets in order to improve them.

After the accident, we were really glad we had replaced our old helmets 2 months previously. While I'm sure the older helmets would have helped—and any helmet is better than no helmet—we both believe the new ones did a superior job protecting us. It was probably the best \$180 we had ever spent! Rick didn't receive as severe a blow to his head as I did, but if he hadn't had the helmet, it would have been much more serious. I can't state as fact that I would have been killed without the helmet, although I'm sure it's possible. However, without a doubt, I would have had a much more severe head injury had I not been wearing my helmet. Having even a mild concussion is no fun—I can say that because I know.

We have worn helmets during our 20 years of biking, and now we make doubly sure we have them whenever we set out for a ride. We have always supported helmet use, but now we speak from personal experience. ■

Don't "Court" a Knee Injury



CAPT (DR.) ERIC M. CHUMBLEY, MC
59TH AMDS
Lackland AFB, Texas

It's Thursday night at the Health and Wellness Center (HAWC), and the base intramural basketball tournament is in full swing. The security police are beating the civil engineers—again—and it's late in the game. But the CE's shooting guard has been hot and hits a trey to bring his team to within a point with 5 seconds to go. On the SP's in-bounds pass, a CE forward streaks out from the post to steal the ball, then pivots on his right foot to face the basket. Everyone within 15 feet hears a pop and watches him go down on the court. Within minutes, his right knee is visibly swollen. he won't be back tonight.

Since James Naismith nailed up the first peach basket in 1891, basketball has grown amazingly in popularity. As the game has spread, so has the incidence of injuries. Air Force studies today indicate that a large portion of off-duty recreational injuries occur on the basketball court and involve the knee. The National Basketball Trainers Association notes that in basketball, knee injuries are

second only to ankle injuries in acute injuries. However, they account for the most missed practices and games. Clearly, basketball is both popular and tough on knees, and any measures that can help prevent injuries are welcome.

Knee injuries can be grouped into two broad categories. *Overuse* injuries occur with continued abuse of the knee. Small, repeated stresses eventually overcome the body's ability to heal itself, resulting in injury. An example is patellofemoral pain, or "runner's knee."

On the other hand, *acute* injury happens when one large force causes failure of some part of the knee. The well-known torn anterior cruciate ligament (ACL) illustrates this group.

The first category, overuse, tends to be more common in basketball. The most frequent knee problem in basketball is called patellofemoral pain, or PFP. This is actually a broad group of problems leading to pain between the patella, or kneecap, and femur, or thighbone. It also goes by many other names, including retropatellar pain syndrome (since the pain comes from the back of the kneecap) and patellofemoral arthralgia.

This pain is felt in the front of the knee. It tends to get worse with activities such as running and going up and down stairs. It comes on slowly and gradually worsens if nothing is done to treat it. Sometimes it is accompanied by swelling in the front of the knee.

Many different things can lead to PFP. Some are extrinsic to the knee, which means they are not part of the knee itself. First and foremost is doing too much too fast. Often the athlete has had an extended period of time away from exercise. He or she then tries to just jump right in at the same level as a month or more earlier, not thinking about the losses in endurance, strength, and flexibility that come on quickly when they do not keep in shape. The muscles, tendons, and ligaments are no longer adapted to extended exercise, and injuries result. This can be avoided by either building up activity gradually or, preferably, staying in good condition.

Other causes are intrinsic, or part of the knee itself and surrounding structures. Poor flexibility is among the most important intrinsic causes of knee pain. Tight hamstrings (the muscles in back of the thigh that bend the knee and move the leg backward at the hip) have been shown to lead to many problems of the leg, most notably patellofemoral pain. Closely related is weakness of the quadriceps (the muscles in front of the thigh that straighten the knee and move the leg forward at the hip). Many runners, for example, have strong, tight hamstrings and do not develop their quadriceps. Good training habits, including balanced strength training and stretching, can prevent these two from becoming a problem.

Some intrinsic factors are more difficult to correct. The back of the kneecap articulates, or fits together, with the far end of the thighbone. The back of the kneecap is wedge-shaped and must fit smoothly into the groove at the far end of the thighbone as the kneecap moves up and down during motion of the knee. If the alignment is off for some reason, PFP can result. Women in general have more alignment problems since they have broader hips. This increases what is called the quadriceps angle, or makes them look more “knock-kneed” than men. Some people have kneecaps that can move side-to-side too much and some have kneecaps that do not move enough. Surgery is often needed to correct alignment problems in competitive athletes.

Many athletes have problems below the knee that can lead to PFP. Overpronation is a correctable condition that can be identified by an athletic trainer or other sports medicine professional. Basically, the foot is too flexible while walking and running, and several overuse problems of the leg, foot, and ankle can result. It can be improved with orthotics (shoe inserts) or simply buying the right kind of shoes. A knowledgeable athletic shoe salesperson or sports medicine professional can give advice about appropriate footwear.

Knee sprains and meniscal tears are the next most common causes of basketball-related knee injuries. A sprain is an injury to a ligament, the kind of tissue that holds bones together at a joint. Sprains to the medial collateral ligament (MCL) are most common, followed by the ACL. MCL injuries can be either contact or non-contact, as the knee is abnormally bent inward, toward the other leg. These injuries do not usually need surgery, but can keep the athlete out of the game for some time while they heal. ACL injuries are very frequently non-contact, as the player usually plants the foot of the affected leg and pivots. Often, a pop is noted in the knee at the time of the injury, accompanied by a feeling of instability. Within a few hours, the knee usually swells noticeably. In fact, the majority of people who get large swelling right away after an acute knee injury (what doctors call an acute hemarthrosis, or blood in the joint) have a torn ACL. Like the civil engineering forward above. In many people, surgery is the treatment of choice.

A meniscus is one of a pair of special shock absorbers in each knee joint between the thigh bone and tibia, or shin bone. Meniscal tears often happen much the same way as ACL sprains, but the swelling usually comes on a bit more slowly. Unfortunately, these injuries often occur together. If the tear is large, the knee may lock or become impossible to fully straighten. Locked knees need to have surgery. Otherwise, some small tears heal by themselves, some are surgically repaired, and some are surgically removed.

How can active duty members keep themselves on the court and out of this alphabet soup? For both overuse and acute injuries, the better the overall condition of the player, the less likely they are to suffer an injury. This means aerobic, strength, and flexibility training. An overall program of regular conditioning that emphasizes all three aspects is the best defense. Of course, all three forms of training can result in injury if they are done incorrectly. Any new activity should be done ini-

tially at a low level, with a gradual buildup.

Played regularly and intensely, full-court basketball offers a fine means of aerobic conditioning. For those who prefer their basketball on the half court or at a leisurely pace, another form of aerobic training is needed. To achieve some degree of fitness, the American College of Sports Medicine recommends keeping the heart rate in a training range for at least 20 to 60 minutes, three to five times a week. A simple gauge of intensity is breathing. If it becomes a little difficult to speak during exercise, the pace is adequate. What form of exercise does this best? Anything that the athlete enjoys and will continue to do.

Explosive power is an important part of the game, and a quick look at an NBA game indicates that these men spend time in the weight room. Fortunately, 20-inch biceps are not necessary to play pickup basketball. But whole-body strength training done 2 to 4 days a week can go a long way toward reducing injury, not to mention owning the paint. Such a program should include both upper and lower body training, being careful to work antagonistic muscle groups (both the “push” and the “pull” movements of the joint) equally. Machines are usually easier to work with, especially for beginners, while free weights offer greater gains in strength. They also require more training to use safely and effectively, as well as a partner. A trip to the local HAWC for consultation with one of the experts there will put interested athletes on the right track to correct strength training.

The last leg of conditioning for injury prevention is flexibility. As mentioned earlier, tight hamstrings are big players in overuse knee injuries, but tight quadriceps and calf muscles can lead to problems as well. Unfortunately, flexibility training does not receive much emphasis in the media or from peers. When was the last time anyone heard, “Wow, you have really limber legs”? On the other hand, speed, strength, massive muscles, and endurance tend to be glorified. When all else is equal, though, flexibility can make the difference in performance and in avoiding injury.

Like endurance and strength training, flexibility training must be approached systematically. Four key points deserve mention. First, stretching is most effective and least likely to actually cause injury when performed on warm muscles. Enough light exercise to break a sweat is plenty to prepare the muscles for stretching. Second, it should be done on a regular basis—at least whenever endurance or strength training is done. Third, all muscle groups should receive equal attention. Fourth, stretching has to be progressive. This means that the athlete strives to improve, not just hold the stretch at the same length every time. Again, the HAWC can be a great starting point to get on the road to increased flexibility.

Finally, a word about preventing those acute injuries. Cool it on the court. Play under control. Nobody reading this article has a multimillion dollar contract to play basketball or has to worry about going one-on-one with David Robinson. But everybody reading this article has a responsibility to do his or her job day in and day out and may someday have to go toe-to-toe with an enemy in the desert, the jungle, or the forest. Wearing the uniform means maintaining readiness, and irresponsible play just doesn't make sense. ■



**A DRUNK DRIVER
KILLED SOMEONE I LOVE
AND I AM MADD**