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DECEMBER 1979





# DETROIT LISTENING POST

## The next decade in Detroit

Detroit's Big Three are busy reformulating, and in some cases accelerating, their future-product plans for the 1980s.

General Motors now plans to have over 90 percent of its passenger cars converted to front-wheel drive by 1985, leaving only performance-oriented sports cars with the conventional rear-drive system. As we reported last month, the sporty L-car front-driver that was to be produced for Olds and Buick Divisions by Isuzu of Japan has been scrubbed, but the J-car Chevy Monza/Pontiac Sunbird replacement is being readied for introduction in the spring of 1981. Also front-drive, this little beauty is envisioned as a "world car," variations of which will be produced in Europe, South America and elsewhere in addition to the United States.

The current GM A-car intermediates will be downsized to about 1980 X-car compact size and will convert to front-wheel drive for the '82 model year (instead of '83 as originally planned) while the A-Special personal coupes (Monte Carlo, Grand Prix, Cutlass Supreme and Century Regal) may wait until '85 for resizing and conversion. The standard size B- and C-cars are candidates for front-drive and another major size-down for '83, also a year sooner than previously planned.

Chevette, the subcompact T-car, which would seem to need the packaging advantages of front-wheel drive as soon as possible to remain competitive in the tough econobox market, apparently will not get it until 1985. This must be because the car already has excellent fuel economy and is a hot-seller in conventional form. GM sees its smallest car as a corporate price leader well into the 1980s and wants to keep the Chevette cheap and simple to produce for as long as possible.

Corvette and the Camaro/Firebird sporty coupes are scheduled for major revamping for '83 and '82, respectively, but will retain their conventional rear-drive layouts.

## Ford Ericka program expands

Ford Motor Co. has canceled its "Derby" front-drive program, which was to replace the compact Fairmont and Zephyr for '82, but only to make way for a more competitive

(with GM's X-cars) design. It probably will be based on a stretched version of the "Ericka" platform scheduled to supercede the current Pinto/Bobcat subcompact next fall. There will also be Ericka-based sporty coupes intended to go head to head with GM's J-car and Chrysler's Omni/Horizon coupes, most likely for '82-model introduction.

## Chrysler K-car coming

Chrysler Corp., meanwhile, is working hard to ready its K-car front-drive compacts to replace the Volare/Aspen series at '81 intro time next fall. These will be built on stretched Omni/Horizon platforms and will likely have fresh names to go with their new, trimmer size.

Slightly larger but sharing the same basic chassis and power train will be the '83-model LeBaron and Diplomat. Chrysler's full-size cars probably will be downsized again, also for '83, and further down the road they will share a new front-drive platform with the Cordoba and Mirada coupes and the soon-to-come LaScala superluxury two-door sedan. And word is that the Omni/Horizon coupes will be restyled for '82 with a distinct Porsche flavor.

## Good stuff from AMC/Renault

American Motors' French connection with Renault will yield an upgraded 1980 LeCar subcompact this winter with mild restyling, nicer interiors, a new 1.4-liter engine and a new four-door model. The larger, plusher Renault 18 sedan is due for importation a bit later in the year and may offer an optional 2.3-liter, four-cylinder diesel engine. And, in another couple of years, AMC should be building an all-new front-drive subcompact (replacing LeCar) that will be the first joint design-and-development project to emerge from the successful Franco-American partnership.

## Fuel-saving tips

Gulf Oil Co. has come up with "11 Simple Ways to Get the Most Out of the Gas You Buy" that are good to review:

1. Remove excess weight. Each 100 pounds of needless junk you take out of your car will buy an extra 200 miles a year.
2. Check tires. Radials can give an extra mile per gallon, but low infla-

tion will rob you of that and more... to say nothing of increased tire wear and blow-out danger.

3. Use a multigrade oil. A 10W-30 or 10W-40 oil gives less internal friction in your engine than a straight 30- or 40-weight.

4. Use nose. Gas leaks around carburetor or fuel lines are both wasteful and dangerous.

5. Check wheel alignment. Poor alignment eats gas and tires by increasing rolling resistance.

6. Adjust brakes. Dragging brakes also run up fuel bills.

7. Check sparkplugs. Worn, fouled or defective plugs (or ignition wires) hurt engine efficiency and waste fuel.

8. Check air filter. Engines have to breathe freely. They can't if their filters are clogged with dust, dirt and pollution.

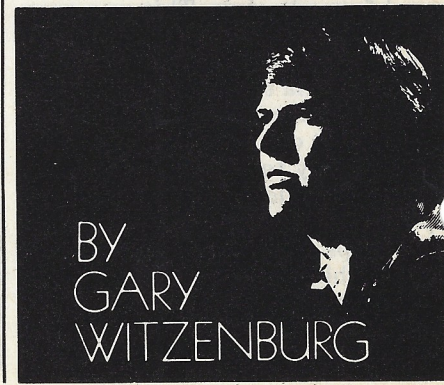
9. Combine trips. The same tank of gas could make 100 one-mile trips or ten 40-mile trips. That's four times the distance.

10. Drive at 55 mph. The average car will go about 21 percent farther per gallon at 55 mph than it will at 70 mph.


11. Keep a record of these and other service operations to keep your car in top running shape. You can't ignore a car like you do a refrigerator and expect it to deliver maximum efficiency for long.

## LUV minitruck to be U.S.-built

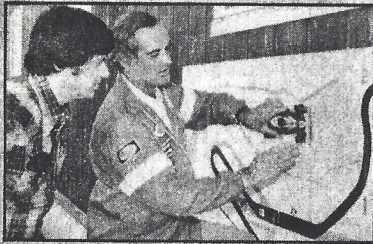
GM plans to be building its own minitrucks by 1981 in an Ohio plant formerly operated by the corporation's Frigidaire Appliance Div. Chevrolet Div. will convert and operate the facility, but both Chevy and GMC dealers will sell the little trucks. A second ex-Frigidaire plant (near Dayton) will be converted to diesel-engine production. **FM**







**The skills you need  
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Author (left), Bondurant in class

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# DRIVE SAFELY IN SNOW!

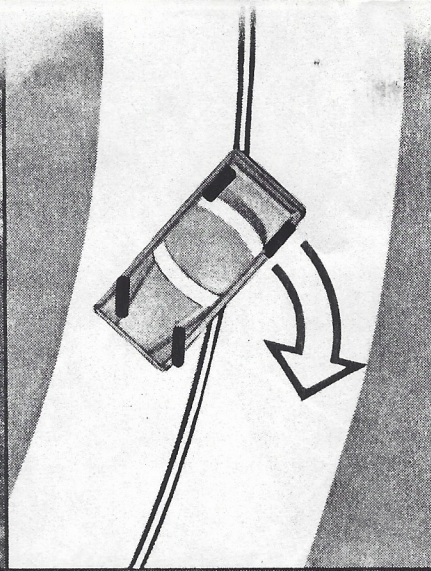
When tires start slipping and sliding on the race track, a driver has got to know the craft of car control. It's the same in snow and on icy roads, in either a front-wheel-drive or rear-wheel-drive car. That's why we went to a world-famous racing school in sunny California for these stay-alive, winter-driving tips.

by Gary Witzenburg DETROIT AUTO EDITOR

It was about halfway through a 100-mile race at the Mid-Ohio Sports Car Course near Lexington, Ohio. I was behind another car, hanging close to his rear bumper, looking for an opportunity to pass. As we accelerated nose-to-tail through a fast, left-hand turn, his engine suddenly exploded in a cloud of blue smoke. His car began skidding sideways in front of me as his rear tires ran into the oil from his broken engine. My front tires were already into the oil and had lost traction. I eased off the gas and managed to miss his spinning car as I passed through the oil and went off the track onto the narrow

Driver steers into skid to correct dangerous oversteer which can occur when the rear wheels lose their grip on slippery pavement.





## CORRECT OVERSTEER SKIDS QUICKLY SO YOU DON'T 'SPIN OUT'

grass verge between the pavement and the guardrail. Bouncing and fishtailing through the grass next to the rail, I finally got the car under control and eased it back onto the pavement. I was on my way with nothing but a scare.

A number of laps later I was driving through the same left-hand turn in the normal fashion, the slippery oil patch supposedly gone by then, or so I thought.

All of the sudden, the rear end of my car snapped sideways to the right, pitching me directly toward the inside rail. I caught the skid by turning the steering wheel as fast and as far to the right as I could, then quickly cranked it back the other way to correct for the inevitable counterskid and got back on the throttle as soon as I was pointed the right way. Another scare, but no damage.

You may never encounter oil on a race track at high speed, but I use these examples to illustrate what can sometimes happen in slippery winter driving. Substitute a patch of ice or heavy slush for the oil and you have a real-life situation that can be disastrous if it's not handled correctly.

### Understeer and oversteer

The first incident is an example of "understeer," where your front tires lose traction and the car steers *less* than you want it to, tending to continue in a straight line instead of turning. (Oval-track drivers call this "pushing," meaning the car is reluctant to turn into corners and wants to "push" straight ahead into the wall.) Nearly everyone has experienced mild understeer at one time or another, such as when leaving a parkway on a curved exit ramp on a wet day.

The second situation illustrates classic "oversteer," where the rear tires skid, causing your car to turn much *more* sharply than you intended. This is a scary situation for most drivers because a slow or improper reaction often results in a spinout or worse.

Three factors saved me from an expensive accident during that race at Mid-Ohio: instinct, experience and training... some very valuable training I received a while back from a master of car control named Bob Bondurant. Bob is an ex-world-class road-racing driver who now operates the Bob Bondurant School of High Performance Driving at Sears

Oversteer is illustrated above as Pontiac's rear end "comes around" in a skid. Diagram shows how rear wheels can lose adhesion on a slippery road, causing the back of car to run wide. To recover, turn the front wheels quickly in the direction of skid before the car starts spinning.

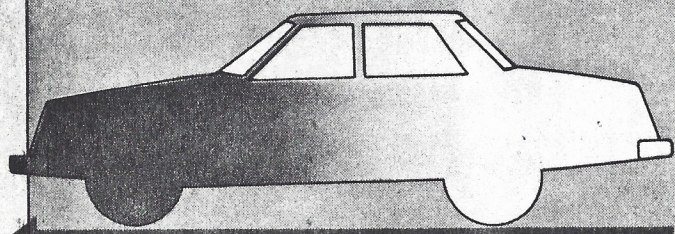
Point International Raceway near Sonoma, Calif.

### Front drive vs. rear drive

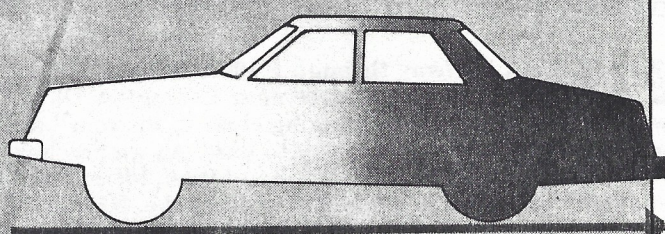
Front-wheel drive seems to be the trend today in automobile design, chiefly because of its interior space-saving potential. You may have heard, too, the oft-repeated opinion that front-drive cars are "great in the snow." Perhaps you already own one and you're a believer. The truth is that they are... and they aren't—depending on what sort of driver you are and what you expect from a car when the road gets slick.

There are two basic factors that make a front-drive car handle differently from a conventional, rear-drive one. First, with all the powertrain mechanicals up front, this car's weight distribution is in the range of 60 percent front/40 percent rear, compared to the typical rear-drive's 55/45 weight distribution. This gives it excellent traction and

## CONTROL WEIGHT TRANSFER—DON'T LET IT CONTROL YOU

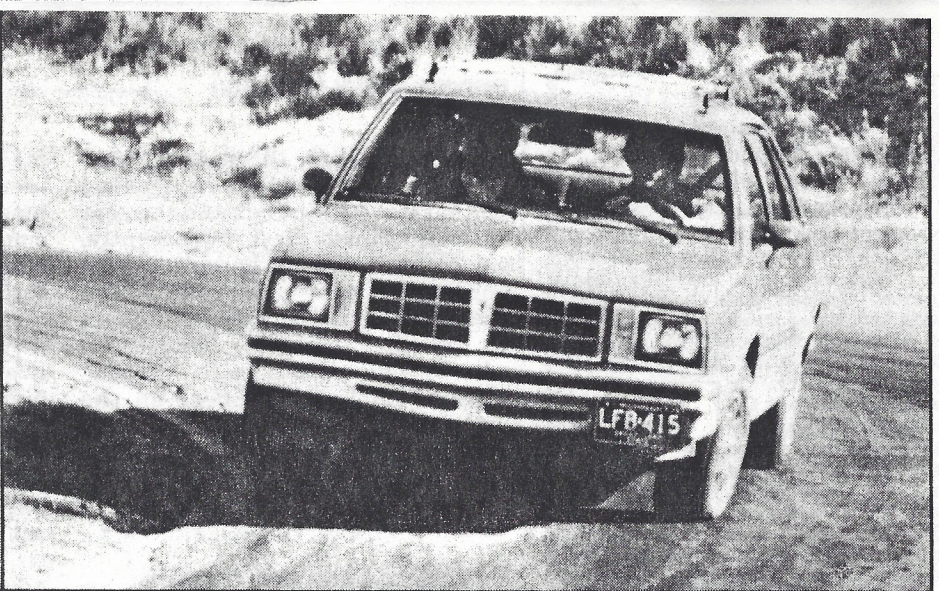
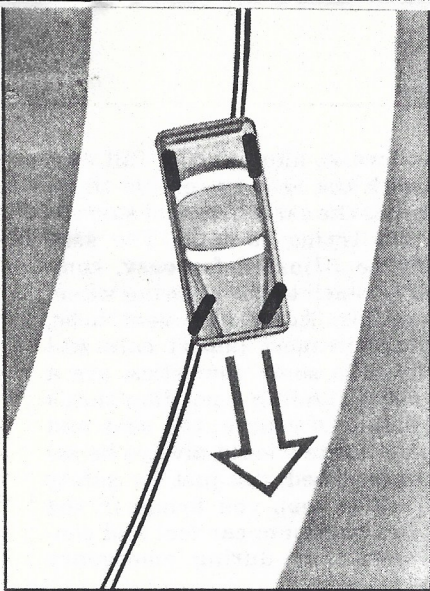


In front-wheel-drive car, transferring weight forward by slowing down can help lessen common understeer problem.



Trailing throttle oversteer, common in fwd cars, can be corrected by accelerating, which transfers weight to the rear.





## PREVENT UNDERSTEER SKIDS—LEARN YOUR CAR'S LIMITS

Understeering is when your vehicle turns less than you had intended. You must learn to feel when your car's front wheels are struggling for adhesion, as they are on the Pontiac above. On ice and snow (diagram), note how car wants to go straight, even though its wheels are turned to the right.

makes it very stable in a straight line (like a dart with a weighted tip), but that very stability also makes it somewhat reluctant to change direction when the road is slippery, giving it a tendency to understeer.

Second, a front-drive car's front tires, by design, have to perform both steering and driving functions, tasks that are equally divided in a rear-drive automobile. Thus, if the front tires lose traction on snow or ice because you've stepped on the gas too hard and started them spinning (or you've jumped on the brakes and locked them up), they're not about to steer the car until trac-

tion is regained. The result is more understeer.

### Learning by experience

I grew up driving in snow and very quickly discovered understeer and oversteer. The very first night I had my license, I was rounding a slippery corner and goosed the gas on purpose to slide the rear end. But I wasn't prepared for the violent oversteer that resulted when my rear tires hit a patch of ice. The rear end slid sideways, then hit dry pavement, and suddenly the car lurched forward. I was over the curb before I could stop it.

Just a few weeks later, I ran into some slush rounding another corner and lost steering traction. The result was instant understeer and another over-the-curb excursion.

Like most people who grow up in northern climates, I soon learned

through experience how to handle a car in slippery weather and avoid such mistakes. But, like most American drivers, my experience has been exclusively in rear-drive vehicles. With front-drive cars becoming increasingly popular, you may be among the many who are facing this winter's driving in a front-drive car whose handling you may be still getting accustomed to. With that in mind, we recently borrowed a new Pontiac Phoenix and revisited the Bondurant school for some additional tips and training on front-drive handling in slippery conditions.

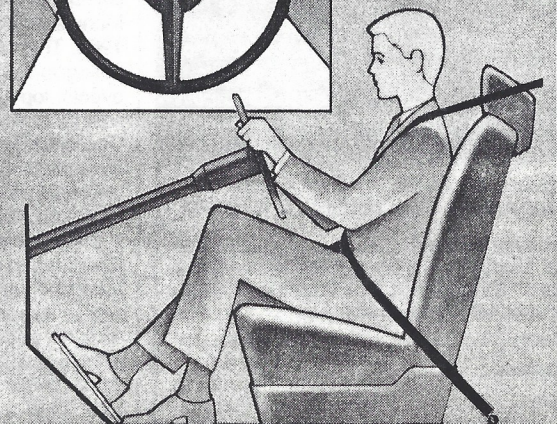
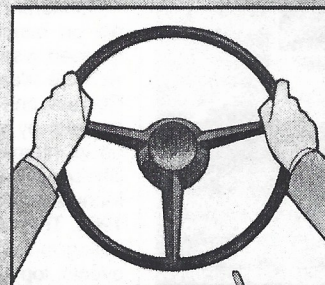
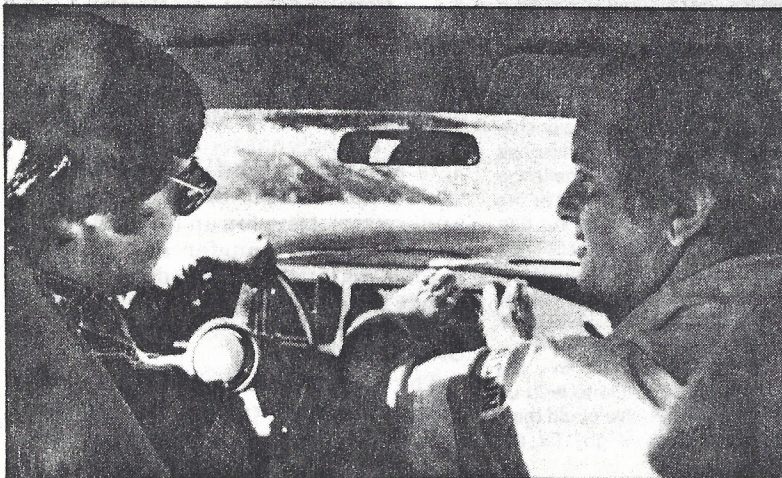
### Control begins with 'feel'

Bondurant stresses that car control begins with car "feel." This involves receiving and interpreting the messages sent to you from those four small patches where the tires

*(Please turn to page 140)*

## GET IN CORRECT CONTACT WITH YOUR CAR

Author (at wheel) and Bondurant discuss the importance of proper driving position. Steering wheel is held with thumbs over spokes at 10:00 and 2:00 o'clock positions. Adjust seat so you can work all controls easily, sit erect and feel what the car is doing through the "seat of your pants."





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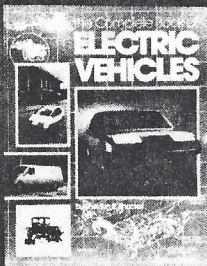
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**DRIVE SAFELY IN SNOW!** (Continued from page 89)

contact the road, through the suspension, frame, body, steering wheel and seat, to your hands and the seat of your pants. Most importantly, you're not going to be able to feel and react to those messages if you're slouched in the seat with two fingers on the wheel and your mind somewhere else. Good, safe driving, whether in competition or on the road, requires your concentration. "When your body slumps, so does your mind," says Bondurant, "and concentration is especially important in slippery winter conditions."

**Driving position and controls**

You should sit straight up in the seat, buttocks and back firmly against the seatback and left foot against the floorboards to keep you there. This doesn't mean tight and rigid, because comfort is also important for concentration; but it does

**A Bondurant biography**

Bob Bondurant was one of America's foremost road-racing drivers, competing both here and in Europe, when a bad crash in 1967 (caused by a suspension failure) put him in the hospital and into a reflective mood. He had trained actors James Garner and Yves Montand for driving scenes in the movie *Grand Prix* the previous year, and had observed European race-driver training methods. So he decided to put his driving and instructing skills together and form the first such school in the United States.

The Bondurant School of High Performance Driving was founded early in 1968 at Orange County Raceway in southern California and then moved into new facilities at the Ontario Motor Speedway two years later. It grew and prospered and soon became the country's best-known professional driver-training organization. In 1974, it moved again to the present location at Sears Point International Raceway near Sonoma, Calif., which is just north of San Francisco.

Bondurant's racing career began in California on motorcycles in 1950, and then progressed to sports cars in 1956. By 1959 he had won the West Coast class championship in a Corvette and was named top Corvette racer of the year by Valvoline Oil Co. He soon moved on to international competition with the Ford Shelby Cobra team and helped win the World Manufacturers' Championship for Ford in 1965. That year, Bondurant also began competing in Formula One World Championship events, top rung on the road-racing ladder, as well as in the Canadian-American Challenge Cup unlimited sports-car series. It was in the Sunoco-sponsored Can-Am car that he had the end-over-end wreck that ultimately put him full-time into the driver-instruction business.

Still an active driver on a parttime basis, Bondurant is now part owner of the Sears Point track and serves as general manager, in addition to running the school. He took time out from his impossibly busy schedule to help us with the accompanying article. We could think of no better instructor, or nicer guy for the job.—G.W.

mean awake, alert and in full contact with the seat to receive those messages the car's tires and suspension are trying to send. The seat should be adjusted for easy, comfortable reach to the steering wheel and pedals. Adjustable seatbacks, standard in most import cars and available in some domestics, are a big help in finding a position that's just right. Of course, the seat and shoulder belts should always be securely fastened, not just for safety but also to keep you firmly in the seat for maximum car feel and control, especially during emergency maneuvers.

Most steering wheels have spokes somewhere between the 10:00- and 2:00- o'clock and 9:00- and 3:00- o'clock positions, and Bondurant recommends hooking your thumbs lightly over these near-horizontal spokes. This is a technique used by all racing drivers because it gives both excellent feel for what the front tires are doing and leverage to turn the wheel. It also prevents losing your grip if the steering column is wrenched one way or the other by a violent bump or irregularity in the road surface.

Also important are inputs from the pedals, especially the brake. You should push or "squeeze" the brake with the ball of your foot so you can feel when a tire is beginning to lock up and slide.

In a manual-shift car, the shift lever should be gently guided—pushed with the palm and pulled with the fingers into each gear—not gripped like a baseball bat and jammed back and forth.

Control motions should always be smooth, because rough inputs to the steering, throttle, brake or clutch cause sudden weight transfer that can lead to a skid.

What do we mean by weight transfer? Step on the gas in your car and the rear end crouches while the front comes up. Get on the brakes and the front end dives while the rear goes up. Turn into a corner and notice how the car leans toward the outside. This is weight being transferred in the chassis as the car reacts to control inputs, and it has a tremendous effect on tire traction and control. Develop an understanding of weight transfer and you've made a major step in handling emergency situations.

**Understeer**

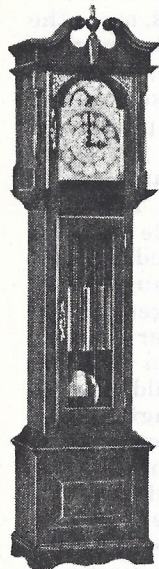
The key to controlling a front-wheel skid (understeer), Bondurant explains, is to transfer weight for-

(Please turn to page 142)



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## DRIVE SAFELY IN SNOW! (Continued from page 140)

ward to push down on the front wheels and help them regain traction. This is done by easing off the throttle and (if necessary) squeezing gently on the brakes. The first is a natural reaction, but the second requires both thought and restraint. If you hit the brakes too hard or too suddenly, you'll lock up the front wheels and lose steering control.

If this happens, ease off the brakes until the tires stop skidding and start steering. Then gently squeeze on the brakes again, if necessary, trying to keep the braking force just below the point of lockup. This gentle pumping of the brakes, combined with steering input to get you headed in the right direction, should take care of any normal understeering condition.

In a front-drive car, you can also use a little throttle to get the front tires pulling you through the turn. If you give it too much and lose traction because the front wheels are spinning, simply ease off a bit until you feel them rolling and gripping the road as they should.

### Oversteer

A rear-wheel skid (oversteer), is a bit trickier to control because your natural reactions—getting off the gas and on the brakes—transfer weight forward, away from the skidding tires, which can make the situation worse. The first crucial thing to remember is *never touch the brakes!*

If the skid was caused by too much braking in the first place, *get off of the brakes immediately and stay off until the skid is under control.* This is easier said than done when you're in a panic situation, but it's absolutely necessary to regain control.

The second critical factor is steering. You've probably heard that you should *turn into the skid*, and what this means is to turn the front wheels in the direction the rear end is sliding to get both ends of the car going the same way. This has to be done immediately and decisively—turn the steering wheel fast to stop the rear end from pivoting around the front.

If you can do those two things—stay off the brakes and steer hard and fast the way the rear end is skidding—you can catch almost any potential spin. But once you've caught it, the job isn't quite done. Many people, even experienced race drivers, sometimes lose control because they don't anticipate the second, often more violent skid in the opposite direction that usually follows

the initial slide. Once you've caught the rear end and it starts back, immediately crank the steering wheel just as quickly and decisively back the other way to counteract the second skid. That done, you can return the steering to center, add just a little throttle to transfer weight back to the rear tires (once you're pointed the right way) and you're home free.

### Not too quickly

Another thing to be very careful of, especially in a front-heavy, front-drive car, is lifting off of the throttle too quickly when the oversteer condition first occurs. Remember that lifting, like braking, transfers weight and therefore traction away from the rear tires and can worsen a rear-wheel slide. This "trailing throttle oversteer" tendency is common to all cars, but typically much worse in front-drive or in rear engine, rear-drive models.

Most of us have experienced mild oversteer in rear-drive vehicles when we've started the rear tires spinning with too much throttle. Easing off on the gas to regain traction while steering into the skid will get us out of that sort of problem. But beware of trailing throttle oversteer if your drive wheels are in front. It's best to leave the throttle where it is and just concentrate on the steering when your rear end slides. Or, if you can remain cool and calm enough, you'll find that adding a little throttle in an oversteering front-drive car actually helps pull the rear end back in line.

### Practicing on skid pads

There isn't much snow or ice in Sonoma, Calif. So students practice skid control on the Bondurant skid pad, which is a section of oiled-down asphalt that's at least as slippery as glare ice. Bondurant and his instructors first show how all steering control is lost when the brakes are on and the front tires sliding. Then they demonstrate the proper techniques to recover from every sort of skid. We got plenty of opportunity to practice on the skid pad, even learning more advanced maneuvers.

For instance, if you don't catch an oversteer condition quickly enough, and the back end does skid around, you can straighten the wheels and steer it going backwards to avoid hitting something. Or, you can even crank the wheel one way or the other to spin it another 180° and drive off the way you were going in the first place! In a front-drive car, you

(Please turn to page 144)



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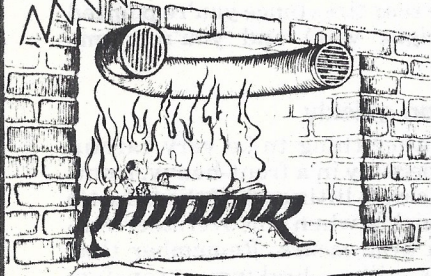


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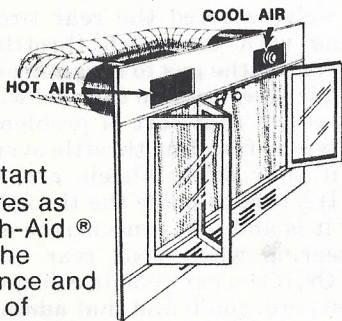
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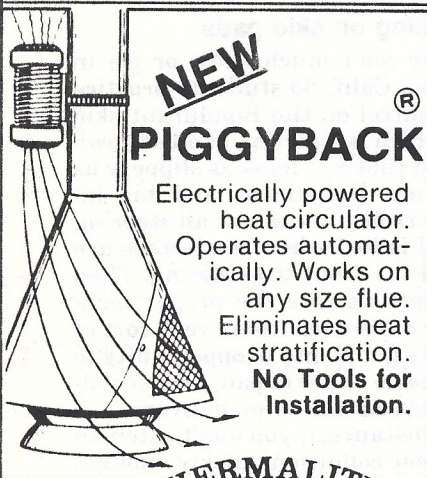
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## DRIVE SAFELY IN SNOW!

(Continued from page 142)

can also learn to overcome understeer in slick conditions by using the handbrake to lock up the rear wheels and slide the back end around until you're pointed the way you want to go. (This only works in cars whose handbrakes operate the rear wheels; but don't try it on the road without practicing it in a safe place first.)

### Practice safely

Bondurant doesn't offer specific winter driving or fwd training as such, but his courses are aimed at teaching car control, skid recovery, emergency avoidance and safe, alert driving in general. Both conventional and front-drive techniques are covered. The Datsun sedans and sports cars at the school are all rear-drive. Still, it's cheaper to use your own car and it's a good way to get thoroughly familiar with its particular handling characteristics. If you drive a front-wheel-drive car, you *should* use it when you take the course.

We think that every driver should have at least some Bondurant-type skid-pad and accident-avoidance experience. The \$100 to \$500 fee will be more than compensated for the first time it gets you safely through a potentially disastrous situation. If you can't get to a professional school, do yourself a favor by learning and practicing these techniques in a safe place, whenever possible. Pick a large, deserted, snow-covered parking lot with plenty of room between curbs, light posts and other obstacles, and try initiating skids and recovering from them at low speeds until the procedures become second nature. The next time an emergency comes up is no time to start trying to remember what to do.

Front-drive, rear-drive or four-wheel drive, the basic rules are the same: Stay alert, pay attention, watch your mirrors and everyone around you, leave plenty of maneuvering space between you and other cars, drive defensively, anticipate the actions of other drivers, and trust no one else on the road to do the right thing.

All of these precautions, plus the techniques we've discussed for proper control of your car, are especially important in winter, when roads get slick, visibility may be impaired and the actions of others are more unpredictable than ever. The same methods race drivers use to get them through dangerous situations will work just as well for you this winter, and every winter. **PM**

## MAKE SNOW REMOVAL PAINLESS!

(Continued from page 116)

off the starter pulley and create a service problem.

If the temperature is below 10° F., prime the engine. Hold primer button in, slowly pull recoil starter.

When the engine starts, move the choke lever to the 3/4-choke position. As the engine warms up, move the choke lever to the 1/2-choke position, and then to the no-choke position. A travel control lever lets you select from three to five forward speeds, depending on the model, and a reverse drive. The throttle controls the engine speed and speed of travel in each drive setting. An auger drive control engages the auger blades. On newer models, a lever on each handle must be held down while operating the auger. Should you release both levers, the engine automatically shuts off, a protection in case you fall on the machine.

### 7. Discharge with the wind.

Rotate the chute on the blower or adjust snow thrower's spout or discharge vanes so that you *discharge snow with the wind*, rather than against it. As you begin to throw snow from your garage doorway, clear the side of the driveway to windward, so that the wind helps you keep the discharged snow from drifting back into the cleared area. When you clear one path, turn the snow thrower and change direction of discharge for walk back to garage. Repeat until driveway is clear.

### 8. How to clear snow properly.

Work in fairly short passes. You don't want to build up too much snow in front of the blade during any one pass, putting an undue strain on the tractor engine or surpassing the pushing ability of your tractor. Work in diagonal strips, scraping the snow from one side of the driveway to the other. Reverse, back-up and make the next strip in the same direction. Start each pass from the windward side of the drive. Some blades may be equipped with an optional rubber squeegee blade that protects paved driveways.

### 9. Adjust volume of discharge.

For maximum snow discharge, run engine at full throttle. If the engine lugs down or loses power, reduce amount of snow being blown.

### 10. Use a drift knife.

A drift-knife accessory can be added to the side of the auger shell on many blower models. Knife cuts vertical wall through high drifts, keeps snow from falling into cleared area.

### 11. Add a cab for comfort.

A walk-under cab, or windshield, is a vinyl windbreaker that fits onto the handlebars of some blowers. **PM**