Wheels: An e-mail from Bob says, "For years I have been using gear reduction on long hills, especially going down the Oakwood and Englewood hills. I learned this in the army while driving tanks, and also the hard way by getting the linings so hot there was warpage.

Conversely, several months ago Tom and Ray wrote in the Wheels section that using the brakes in this manner could cause engine problems, and that changing brakes is less costly than replacing an engine.

I personally have seen two vehicle fires out west, apparently started by riding the brakes in the mountains, which led to total car destruction.

This does raise the question about the maximum speeds for each setting as specified by the manufacturer. Does each gear selection actually have a built-in limit for speed that is self protecting, for example pump pressure, or is there a potential for future mechanical damage?

I have often wondered, but have been afraid to try, if placing a modern automatic transmission into reverse would help slow the vehicle?"

Halderman: There are two issues regarding braking and the use of the transmission including:

1. For normal driving, the brakes should be used to slow the vehicle. This includes normal hills and side streets.
2. If the grade is long and/or very steep, then the gear selector should be placed in "2" or "L" to allow the engine to slow the vehicle to prevent overheating the brakes. For example, this is the method that motorist must use when descending Pikes Peak in Colorado, as well as long grades, such as in the Smoky Mountains.

You are correct that the brakes can be overheated and severe damage done to brake rotors and calipers if the brakes are constantly applied for a long time when descending a long grade. Is there a danger to the engine? Maybe. It depends on the speed and the gear selected. For example, the very lowest gear, usually labeled "1" or "L," should be selected when trying to keep the vehicle speed down to about 20 MPH. Above that speed, the engine may be rotating too fast and damage could occur. If the vehicle has a tachometer, watch that the engine speed does not get into the red zone, called the "redline." If higher vehicle speed is held, select "2" or "3" on the gear selector, again keeping an eye on the tachometer, to be sure that the engine speed is not excessive. By the way, selecting "2" or "L" when traveling fast will not cause harm because the transmission will only downshift when the safe speed has been reached.

About trying to use reverse - do not try this, although I doubt anything would happen. Most automatic transmission and transaxles would prevent reverse from being engaged above a speed of about 5 MPH.

To summarize, use the brakes during all normal driving and only use the gear selector for long grades that would require constant force on the brake pedal to keep the vehicle under control. Usually these grades are labeled and warn drivers to use a lower gear.