Wheels: Mike writes, “My wife drives a 2000 Olds Silhouette van that has had the same electrical problem for years. The van has 70,000 miles on it. When the car is idling, all of the interior lights that are on, as well as the headlights, running lights, and taillights are oscillating; that is, they go bright, dim, bright, dim while the engine idles. If you increase engine RPMs, the frequency of the oscillations simply increases. While all of this has been going on, the wiring harnesses that attach to both of the tail lamp assemblies have burned up. The connectors have melted, as well as some of the wiring. I spliced new ones in 18 months ago and they are doing it again. Some of the tail lamp sockets have melted as well. I suspect these two problems are related. The van has the original battery and alternator. I have long thought the alternator is the cause. The battery voltage seems to be level (can see no fluctuation with a DVM) and within range. Could it be a ground problem?”

Halderman: I think you could have more than one problem. The easy one first; the rear wiring harness and burned sockets indicate excessive current flow rather than a poor ground connection, which would increase circuit resistance and reduce current flow. Look for a wire that is touching metal. Another possible reason is the use of the wrong taillight bulbs. Installing bulbs with the incorrect wattage could cause the wiring and the sockets to overheat.
The lighting that oscillates and the burned wiring problems could be connected, especially if the wrong bulbs were installed. The additional current flow through the wiring could have damaged the headlight switch, causing the oscillations in brightness you mentioned. If this is the case, then all of your problems are corrected by replacing the incorrect bulbs. However, if the bulbs are OK, then the headlight switch itself could still be at fault. Another possible, but unlikely, cause could be the alternator. An easy way to check to see if there is a bad diode inside the alternator is to check the battery voltage with the engine running and the headlights on to create an electrical load. Select the AC voltage reading on the digital meter and read the AC volts. If the reading is higher than 0.5 volt (1/2 volt), then the alternator has a bad diode and should be replaced.