You may recall that I commented about laser headlights being offered on the BMW i8. Audi is equipping its limited-edition R8 LMX with laser headlights, also. Audi engineer Wolfgang Huhn is quoted as saying, "It's tough to measure in a light tunnel; it reaches too far." But we won't be getting any "light tunnels" at the fronts of any cars in the United States, unless regulations change. Current regulations require that headlight intensity for vehicles sold in this country not exceed 150,000 candelas; the laser headlights can be as bright as 430,000 candelas. (The candela is a common measure of luminous intensity; the definition is too technical to specify here.) Perhaps if those laser headlights do more good than harm in Europe, American regulations will be changed to allow their use here.

There were two car-to-pole staged crashes at the 2014 crash conference in Charleston, SC. The photograph below shows the Ford Taurus milliseconds after it first made contact with the pole. The photograph at the top of the next column shows the front of the Taurus after that staged collision. The struck pole was of 6-30 type. It was broken at a point 2 feet above ground level as it was installed. The stub remaining in the ground was partially extracted as the Taurus rode over it. The Taurus traveled 180 feet after impact. Numerical analysis of the energy involved in damaging the front of the Taurus, in breaking the pole, in partially extracting the pole, and the remaining energy after leaving the pole (as demonstrated by its post-impact travel) revealed a calculated impact speed of 51 mph. The documented (instrumented) impact speed was 50 mph. Close enough!

One interesting aspect of the damage to the Taurus was the difference between the apparent crush and the actual crush. After impact, the permanent, inward deformation of the front bumper appeared to be seven inches. Was that the amount of crush needed to be used to determine an equivalent barrier speed for the damage? No! The front fascia had a foam backing which was originally four inches thick in the region of the crush. The structural steel crossbar behind the front fascia, which actually served as the structural member which provided most of the impact strength,

was actually crushed to a distance 19 inches to the rear from the original front of the Taurus, meaning that the actual rearward crush of the structural component was 15 inches—19 inches minus the four-inch thickness of the foam, which provided no significant crush resistance. The front fascia and foam had significant restitution, rebounding substantially forward after impact. This characteristic is common with many modern vehicles—when measuring the crush, it is important to notice whether or not the fascia has any foam backing and what the depth of that backing is and to measure any deformations which occurred in any structural components. Also, with pole and tree impacts, it's important to measure the diameter of the struck object.

Measuring a diameter of a pole or tree can be difficult, since most people don't carry calipers which open to three feet. However, with a flexible ruler, like a fiberglass measuring tape, the circumference can be easily measured. Once the circumference is known, the diameter can be directly calculated as that circumference divided by π—3.14 is a reasonable value to use.

On the computer front, can you believe a video card with 2 GB of its own video RAM? That's right—2 Gigabytes. EVGA is now selling their GeForce GT720 video card with up to 2 GB of video RAM. I remember the time when 16 Megabytes of system RAM on the motherboard was considered more than adequate. I now have 16 GB of system RAM and a video card with 4 GB of its own video RAM. And my machine is now archaic! But it works well, so I'll keep it. ☺

More new hardware! To be able to take better photographs under a wider variety of conditions, I have added three new cameras to my collection. The camera shown to the left of this text is my best mirrorless camera, a Sony Alpha a7R, which features a 36.8 megapixel, full-frame (essentially 24 x 36 mm) image sensor. Since it is mirrorless, it has a 2.4-million dot OLED electronic viewfinder. It includes automatic ISO sensitivity or an ISO range of 100 to 25600 and has a burst rate of four frames per second with full 36

MP size images, among many other features and capabilities. This camera provides images with the sharpness and quality of a medium format camera without the size, weight, and huge cost of medium format. This camera and the two described below both use Class 10 SDHC cards.

The other cameras I bought are a Sony Alpha SLT-a58 and a Sony Alpha NEX-6. The a58 features a 20-megapixel APS-C CMOS sensor and a translucent mirror. The image to the left shows this camera with Sony's 18-55 mm f/3.5-5.6 lens. The sensor size of 20 MP is quite large for an APS-C camera. This camera can shoot five frames per second at full resolution. A unique feature of this camera is multi-frame image noise reduction and hand-held twilight shooting, in which six different images at higher shutter speeds are combined to minimize image blur due to camera movement at lower shutter speeds.

Several other features of the a58 include the ability to continuously record images at approximately 8 frames per second (best done with the camera on a tripod) and the ability to record a series of shots to be constructed into a panorama. The camera and lens combination also has a macro function for close-up work. The Sony NEX-6 camera is a mirrorless camera with a 16-megapixel sensor. I added a 30 mm macro lens and a 50 mm lens to my collection of Sony E-frame lenses for APS-C cameras. Technology keeps advancing. Soon, these new cameras will have been superseded with better models, probably at the same cost or perhaps costing even less. My two "old" cameras, a Canon EOS 5D Mark II and a Sony Alpha A900, still take excellent pictures and so far have been as reliable as sunrise. My oldest digital camera, a Fuji FinePix 4700, takes exceptionally good photographs at extremely close distances in Super Macro mode but only stores images in JPEG format.

In early September of this year, I attended a Bosch CDR course on the latest hardware and software involved in accessing event data recorders and analyzing the downloaded data sets. My Bosch CDR Toolkit is maintained with all cables and accessories and with the latest version of the Bosch software, and I keep up with the technical aspects of the system and the results of the interrogations. I found it interesting that Volvo calls a non-deployment record a "close deployment." When there has been a deployment, it is called "no close deployment." There must be some semantics issue in translating from Swedish to English. Please contact me anytime you have a question concerning crash data retrieval in cars and light trucks, even if it's a Volvo. ☺

Crash conferences are great places to conduct staged collisions, learn about the latest techniques, and fellowship with other reconstructionists. Plans are already well underway for a huge crash conference, to be called WREX 2016 and to be held in Orlando, Florida, in 2016. It is expected to draw attendees from all over the United States and from some foreign countries. I'll be there, good Lord willin' and the creek don't rise. ☺

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