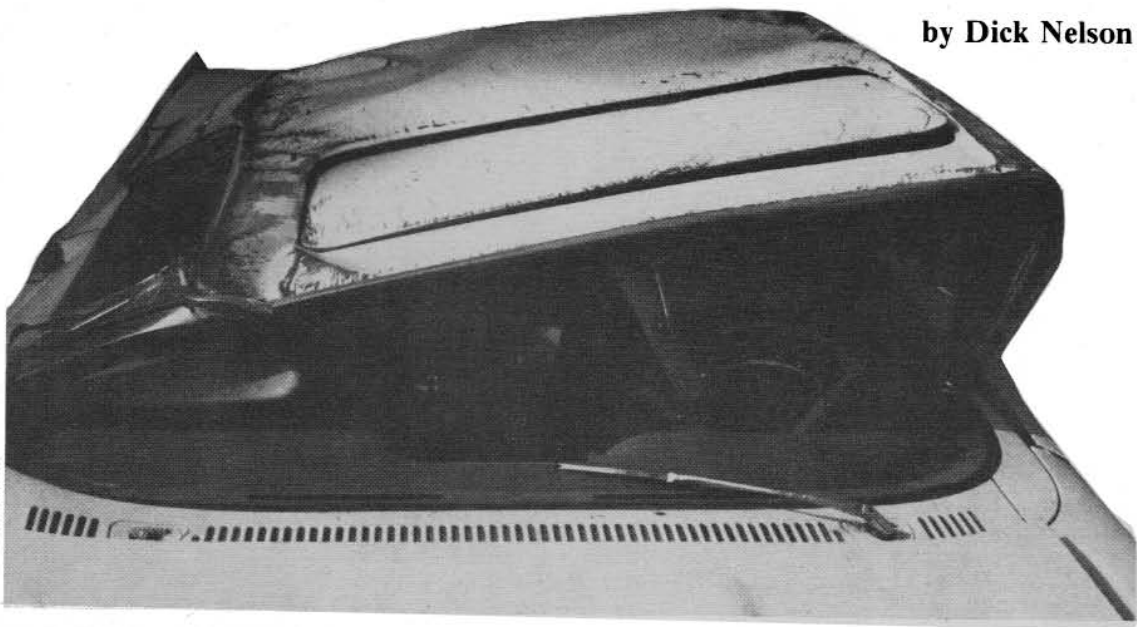
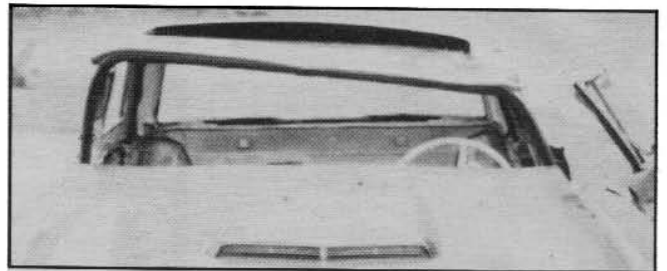
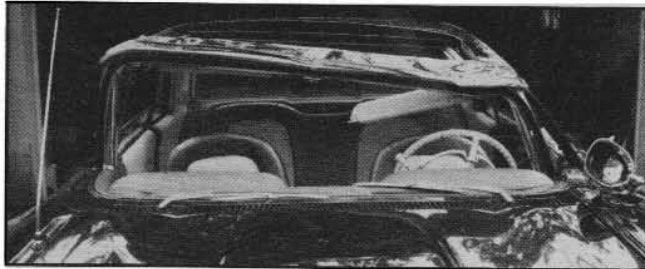


by Dick Nelson

PHOTOS BY THE AUTHOR



SQUASHED SQUAREBIRDS



Sometimes, T-Birds and T-bars don't mix.

IT HAPPENED at 6:42 p.m. in South Carolina after a long day. A seven a.m. departure from Annapolis on Father's Day, the heat, traffic, the terrible condition of I-95 between Richmond and Petersburg, Virginia, and the sections of 301 through North Carolina had taken their toll. We were tired; trying to stretch time in order to get my wife, Jan, to Miami by 4 p.m. Monday for a Bahamian cruise, her college graduation gift from her mom.

Jan was driving my 1960 T-Bird sunroof that had taken a third place at the Eastern Regional Squarebird Meet the previous day. Being towbarred behind her was another sunroof we had bought in Connecticut and driven to Annapolis. The white car was bought because it was complete down to the wind breaker bar, and the bar had been transferred to the black show car prior to the meet. I was in my trusty 1960 Edsel (300,000 miles, 352 engine, overdrive tranny, factory air) pulling a tandem trailer carrying a rusty 1965 Mustang GT convertible loaded with T-Bird parts, also bought in Connecticut. As I followed Jan across the South Carolina border, I became uneasy. She was pushing 60 and occasionally 65 mph.

Since other folks use towbars, it's worth reviewing this method of transporting cars with safety in mind, and also to present an uncomplicated lesson about the forces at work on a towbarred combination.

Diagram 1 shows a towbarred combination being braked with a force of $\frac{1}{2}$ G. Braking at this rate while running straight is not generally hazardous on dry roads; but in a turn or on wet pavement or with a towbar other than parallel to the road surface, it will get you in trouble. We have arbitrarily used a 10° angle in the diagram to calculate the side force of 434 pounds that exists at the ball. Diagram 2 shows the forces tending to destabilize the same combination at the same braking force with the towbar angled at 5° . An up load of 217 pounds is also an increased down load of 217 pounds on the other vehicle, but only the up load is destabilizing. What you don't need when braking are forces which effectively remove weight from the tires of either vehicle or add side force to the rear of the towing vehicle. **RULE: Brake hard only when traveling straight ahead and always install the towbar parallel with the road.**

If you think our arbitrary 10° turn angle is exaggerated, try an emergency stop on wet blacktop. You'll go through 10° , and a lot more, before you can react. That maneuver is called a jackknife and the side force caused it.

TOWBARRING HAS some other peculiarities—the method of trailer hitch mounting and attachment of the towbar. Hitches are rated by weight allowed on the ball, and generally a 150 pound limit is common on the popular Class I hitch. If the

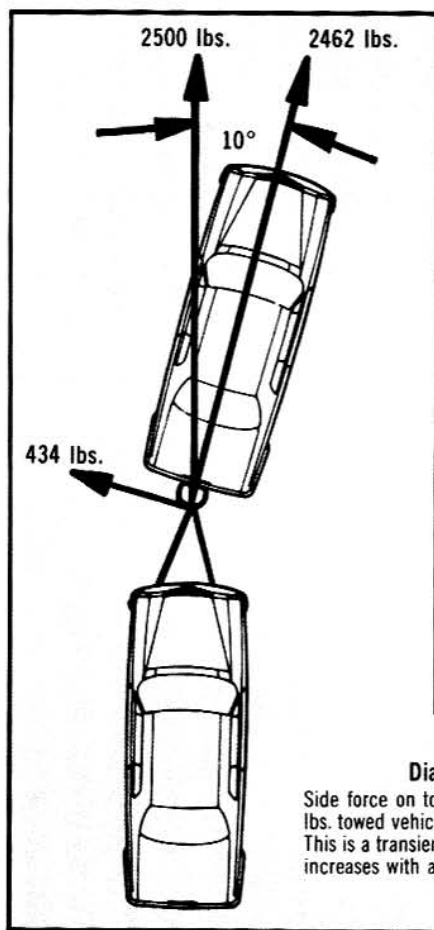
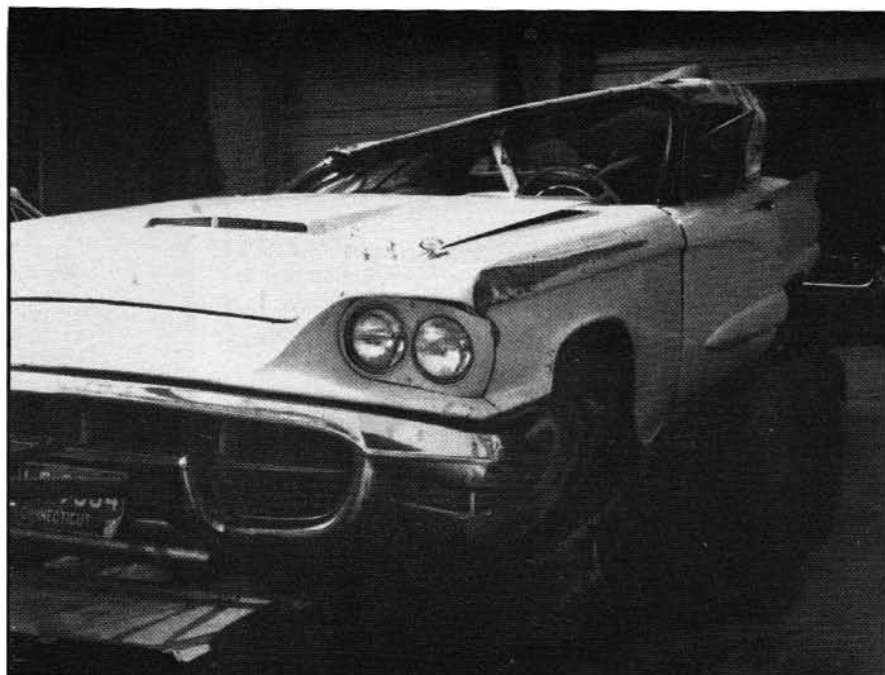


Diagram #1

Side force on towing vehicle with 500 lbs. towed vehicle at ½ G braking force. This is a transient condition. Side force increases with angle.



Squarebird that was being towed sustained most of its damage on right side, ended up on roof in middle of highway.



Twisted hitch on tow car gives mute evidence of the forces involved when accident happened. Prize-winning Squarebird rolled to the left.

towbar is parallel to the ground, however, there is no weight, but lots of fore, aft and side load which can overstress many installations in an emergency. The best way to correct these inadequacies is to weld an extension on the tongue under the gas tank or trunk floor, and weld a cross member to the frame to hold the forward end of the tongue extension. When bolts are used, thick flat washers are necessary to distribute the load on thin trunk floors and flimsy cross members. Lock washers should always be used under the nuts.

A towbar that fastens to a bumper is like lifting your dog by his tail. Bumpers generally respond by bending. Just about anyone handy with a torch and welder can fabricate two adapters that will bolt on the front face through the bumper brackets. You can then pull on the stiff brackets rather than the relatively thin bumper edge. Still, the best mechanical installation can be thwarted by human error.

We left Annapolis with Jan driving the Edsel. However, the 8-foot-wide trailer was a problem for her on the narrowed sections of the "Virginia Turnpike." She also had the CB and was privy to conversations between truckers about "that beaver in the Edsel using both lanes."

Although I felt more comfortable chauffeuring the T-Birds myself, I reluctantly agreed to swap with her at Rocky Mount, North Carolina. Reluctantly, because I was not totally convinced she was qualified for towbarring a 5000 pound load. But there was no time for talking about emergencies, and I really didn't have the words then that I do now.

As we left Rocky Mount, Jan immediately accelerated to 60 and was able to get far ahead of me. When I finally caught up, she was running faster than I liked, but again, no time to stop and talk about it. We stopped once more for gas, and I mentioned her pulling away from me in a combination she had never driven. Her reaction was, "You know me." That statement was contrary to Jan's disposition, and very much against all the rules I have created for myself over the years and miles I have towbarred. I always feel out a new combination at reasonable speeds like 35 or 40 before going on to faster things. Get to know what the reactions are for different steering inputs. Does it wander? Is

Squashed Squarebirds

continued

overcontrolling a problem? What braking effort is required for a decent deceleration? Sort of a seat of the pants feeling that is necessary to me for adequate control in case of emergency.

JUST A FEW miles into South Carolina, Jan swung the T-Birds into the left lane to pass a slower car. It was a wide swing and the left four tires of the combination were in the grass. Suddenly, the black sunroof swerved sharply towards the slower car. As the tires on the right side lifted from the road, I knew the trip was over. Side force had sneaked up on Jan.

"The car being passed seemed to speed up and I had just decided to give up the attempt when I realized the wheels were off the pavement," Jan said. "I was in trouble. I got off the accelerator and on the brake lightly. It seemed there were two choices—back to the pavement, or into the wide grassy median. I chose the pavement and while still braking, turned the wheel to the right. I can remember saying aloud, 'Oh no!' and a small voice telling me to hold on tight, then rolling over. The scraping sound as I slid and rolled down the highway seemed endless and I expected to feel the impact of someone crashing into me."

I don't remember heading for the right shoulder, but as the Edsel bounced through the grass and down the embankment, I watched Jan in the black sunroof rolling sideways down the middle of I-95. Racing back up the bank before the Edsel had stopped moving, I knew I'd lost at least one sunroof and was afraid I'd lost Jan, too. The car lay on its roof, wheels still spinning, the rear seat bottom blocking the driver's door that was open. A faint voice from inside



Right side of black 'bird came out nearly unscathed. Both cars had scarce sunroof option. Sunroof on tow car popped out, roof on white car stayed in place.

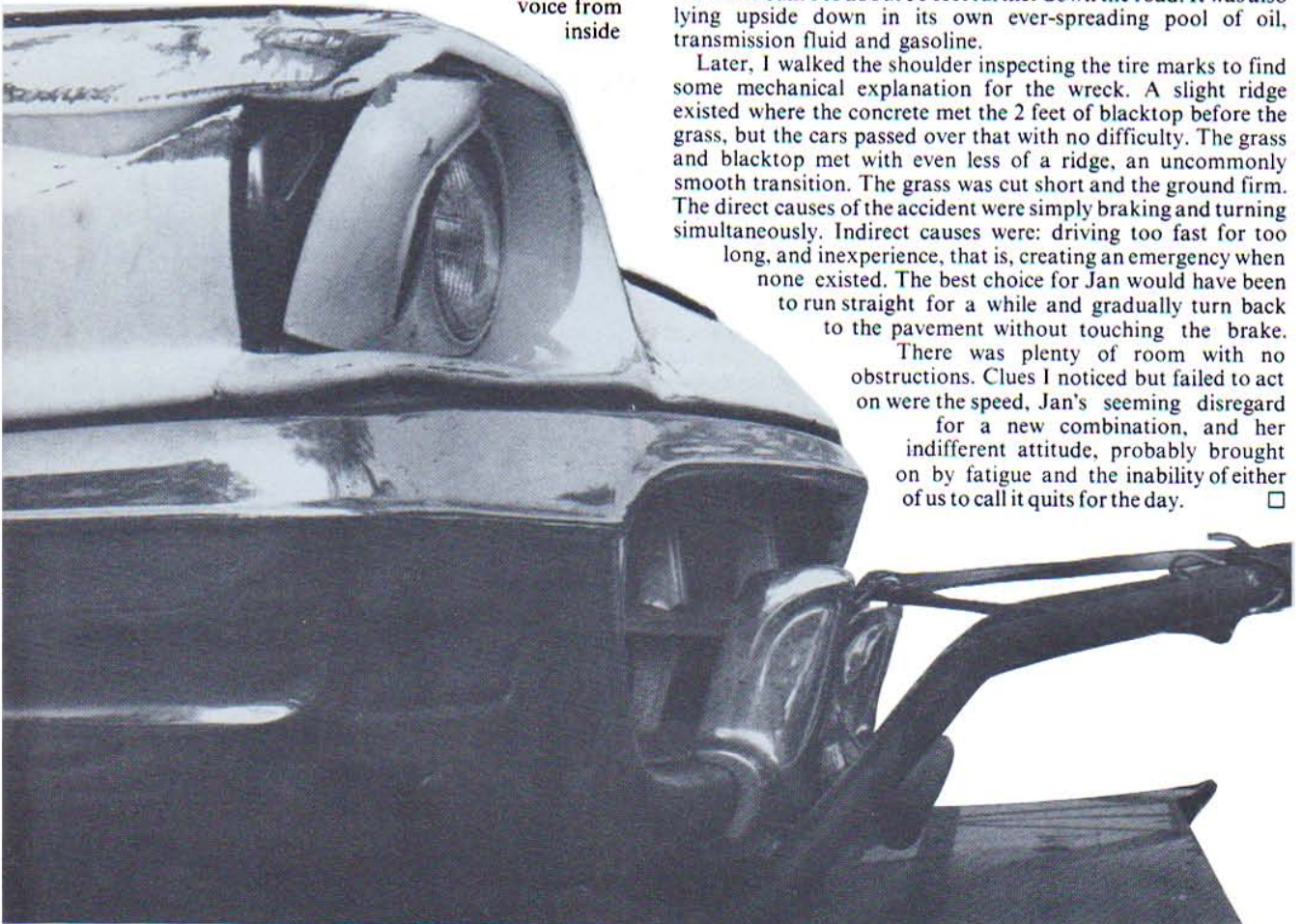
was saying, "I'm OK, but look what I did to your cars."

"I heard Dick calling and sobbing—all I could think was how totally I had destroyed months of hard work, his labor of love, to say nothing about dollar loss."

It wasn't until after I had helped Jan climb out that I noticed the white sunroof about 50 feet further down the road. It was also lying upside down in its own ever-spreading pool of oil, transmission fluid and gasoline.

Later, I walked the shoulder inspecting the tire marks to find some mechanical explanation for the wreck. A slight ridge existed where the concrete met the 2 feet of blacktop before the grass, but the cars passed over that with no difficulty. The grass and blacktop met with even less of a ridge, an uncommonly smooth transition. The grass was cut short and the ground firm. The direct causes of the accident were simply braking and turning simultaneously. Indirect causes were: driving too fast for too long, and inexperience, that is, creating an emergency when none existed. The best choice for Jan would have been to run straight for a while and gradually turn back to the pavement without touching the brake.

There was plenty of room with no obstructions. Clues I noticed but failed to act on were the speed, Jan's seeming disregard for a new combination, and her indifferent attitude, probably brought on by fatigue and the inability of either of us to call it quits for the day. □



Clockwise from top right: Author's wife, who was driving the tow car, emerged unhurt from what could have been a very nasty accident. Squarebird's roof stood up well to the beating it took. White 'bird did a full 180° flip onto its roof, which ended up squashed considerably more than its brother's.

