and the rear fender bulges. It's good, but the rest of the GM line is catching up with the refreshing styling that gave Pontiac a boost a few years ago. Pontiac is a cinch to produce a '67½ model, based on the Panther sporty car. The division has been showing a coupe called the Banshee, a reasonably accurate version of how the production model will appear.

AMERICAN MOTORS—Rumbles from within have it that some major restyling is ready for market, and from smiles of anticipation on the faces of company executives, it must be fairly interesting. The simple fact is that the crystal ball is cloudy on that side of the auto picture. We'll just have to wait and be surprised.

CHRYSLER CORP.—There are some big and not-so-big changes here. The full-sized Chryslers, which share the basic body shell with Plymouth Fury and Dodge Polara, get new sheet metal. The clever part is the way in which stylists add a piece here, take one off there, change a fender and come up with a stable of different cars—all from the same tooling. Be that as it may, the Chrysler will favor GM's looks as they relate to Buick, Oldsmobile and Pontiac. A pointed Pontiac nose, roofline extending well beyond the rear window, and more bulge, plus kick-up in the rear fenders, will be part of the package.

One look at the Barracuda shows that it has undergone quite a change. For one thing, there will be three versions—fastback, notchback and convertible. The fastback has a smaller rear window than the current model, while the notch-roof model (it may be a '67½) employs a rear window so concave that it would appear to be a good bet for extreme distortion. The grille is quite different from '66—a double cavity; the front fenders come to a sharp leading edge, Continental style; and the rear quarter-window treatment is more like the Dodge Charger. The front fender fades away into the quarter panel, and the quarter panel is chopped off abruptly at the end of the car, where a concave tail section encloses taillights and trim material. The "S" offers hood vents.

The Valiant does not share styling honors with the Barracuda. Instead Valiant and Dart, with whom it does share a body shell, get greatest restyling treatment—a softer line throughout. Very little change comes in the intermediate-size, the Plymouth Belvedere class.

The Imperial goes into a big switch, adds a low-priced model on the Chrysler body shell. One source has it going to unit construction, all models to share the Chrysler exterior sheet metal. However it emerges, the effect is more up to date, sort of Cadillacish in rear deck and hood.

There it is—a teaser of what's coming from mysterious Detroit this fall—the 1967 cars. There won't be any fewer models than before, which makes the selection large enough to offer something for just about any taste. ■

SAFETY FOR '67

The Buyer Can Expect Add-on Items And a $150 Price Boost

BY GENE BOOTH

NOW THAT THE initial furor has calmed, perhaps rational dialogue can be conducted on the inherent safety of the American passenger automobile. The 9-month confrontation between science and the safety crusaders during the past legislative season succeeded only in creating massive confusion among Americans about the role of the automobile in highway fatalities. Strident voices submerged realistic appraisal of the problem, so a clarification is in order to show the American motorist just where he stands.

The purchaser of a 1967 automobile can expect to pay an average of $50 more for the car than a comparable '66, according to *CAR LIFE* calculations. When 1968 models emerge, the tab will be $150 more. With one exception, this is the cost of design changes which, though of dubious safety value, have been dictated by the critics and their legislative sponsors. The exception is inclusion of exhaust emission control devices, averaging $50 in cost, which will be required nationwide in 1968 as protection against what is considered a health hazard.

Though cost responsibility here lies in Washington rather than Detroit, legislators tend to sweep this under the rug by asking if the car buyer can put a price on his safety. But just what sort of safety is the buyer going to get for his money? For 1967 he is to get 16 of the 17 items required by General Services Administration for publicly purchased cars; another nine GSA requirements and tougher standards for several of the original items are proposed for 1968.

THE '67 STANDARDS call for safety door latches and hinges, seat belt anchorages front and rear (and for shoulder belts in front), padded dash and visors, 4-way emergency signal flashers, safety glass, standard automatic transmission gear quadrant (PRNDL), multi-speed electric windshield wipers and washers, glare reducing surface on instrument panel and windshield wiper arms, smog reduction device, safety tires and rims, backup lights, outside rearview mirrors —most of which already are on '66 ▶


BROCKBANK

SAFETY '67

cars. Others are impact-absorbing steering wheel and column which limits rearward displacement to 8 in. in a 30-mph crash; positive anchorage of front and rear seats and backs; dual brake systems; recessed controls and instruments on the dash, and standard bumper heights at static load limits.

For 1968, the revised standards proposed are:

More padding, to be added to the windshield corner posts and header and in areas of possible knee and side injuries.

Steering system, to absorb sufficient energy to prevent serious injuries in a barrier collision test of 30 mph (50 mph equivalent in normal driving).

Seat anchorages, to add some form of locking device for folding backs and pedestal-type seats.

Brake systems, to incorporate some form of moisture barrier in fluid reservoir and permitting some method other than hydraulic actuation for the emergency "back-up" system.

Glare reduction, to extend to "all interior surfaces in the operator's field of view."

Rearview mirrors, to be of "breakaway" design inside and a minimum of 5 in. in diameter outside.

The nine newly required standards govern:

Window and door levers, specifically the angles of placement, permissible size and extent of protrusion into the passenger compartment.

Ash trays and lighters, to be of such a design to protect passengers from injury when located on instrument panel, seat backs and armrests.

Padded armrests, of such a design to protect passengers against injuries in the pelvic area.

Seat frames, to be designed to absorb and dissipate energy in the top and back, for the protection of rear seat passengers in a collision.

Headrests, supposedly to protect against whiplash injuries, for the outside seating positions of the front seat.

Side marking provision, to assure notice in dark and inclement weather by either reflectors or lights.

Defoggers, to clear rear windows of fog and mist.

Rollbars, to apply only to utility-type trucks initially, including those with removable tops.

Rupture-proof fuel tanks and filler pipes, to maintain structural integrity and security in barrier crash tests of up to 30 mph.

While all of the foregoing are of only questionable value at best in the quest for reducing accident fatalities, two other provisions are more basic. Interestingly, they are the least costly and easily achieved. Anchorages for seat belts are now required for all school buses, and anchorages for shoulder harnesses are to be provided for the outside front seat positions in sedans and station wagons—also for 1968.

Detroit safety engineers emphasize that everything hinges around safety belts. None of the work of legislative designers can have any appreciable effect in injury and fatality reduction unless and until seat belts are used. Every gimcrack builds upon that base —a fastened seat belt—and at that adds only a minute quantity for danger reduction. Adding a shoulder harness represents a measurable quantity of improvement, but padding and recessed switches and breakaway mirrors and backup lights add virtually nothing if the belts aren't used. Nothing, that is, except cost.

NEVERTHELESS, FORD is expected to have squashable armrests on the doors for 1967. Some Ford cars will have padded steering wheel spokes and hub, and deeper dish design, with collapsible steering column coming later because its present columns meet the standards. General Motors and American Motors cars will have collapsible columns, as is well known by now, provided the engineers have managed to make them as safe as present columns by introduction time. Chrysler cars were to have received the same Saginaw columns, but production limitations have caused some question about just how they will meet the standards. All cars will have more padding, in more obvious places, and exteriors will be wiped relatively clean of pointed, sharp, or otherwise lethal-looking trim.

A great deal of effort has been going on since the early 1950s to develop some alternative to normal steering wheel/shaft/gearbox arrangement. Although the safety critics smugly assume they have forced General Motors to adopt the collapsible steering shaft for 1967—and then decry the previous lack of it—they are actually rather tardy in their demands. Engineers have demanded some replacement to the conventional system for several years and have proceeded to fabricate some of the more promising safety steering system concepts.

Wrist-twist type of steering controls developed by Lincoln-Mercury and, more recently, Chrysler are but the latest examples of elimination of the conventional steering wheel. The former uses a simple chain and sprocket arrangement to transfer steering inputs from small outboard dials to the steering shaft; the latter incorporates a more sophisticated electro-hydraulic system to achieve the same end, thereby becoming a more likely candidate for complete integration by overhaul of existing power-assisted steering arrangements. Even before that, however, there were items such as GM's Unicontrol "joy-sticks" (in various forms) and Ford's futuristic control tunnel-mounted steering dials that appeared as oversize radio tuning knobs (*CL*, Nov. '64).

As a matter of fact, a substantially realistic appraisal of what is likely to happen with steering arrangements can be deduced from looking at the various proposals which have appeared in show cars. Overlook those that are based upon hydraulics, because there remain some questions about reliability, longevity and troublefree operation. Instead, look at the cantilever steering arm in Ford's experimental Allegro, attached to a central steering shaft. Replace the wheel with a wrist-twist arrangement and the "spear" that was the steering column has been totally neutralized. Of course, what is left of the steering shaft can be moved to the outboard side of the car where it is just as effectively directed away from the driver's chest.

Alternatively, suppose the steering wheel is retained, but the shaft is only carried to the cowl. From there, a chain-and-sprocket carries its motion to a lower jack shaft mounted parallel to the frame rails, which in turn operates in the steering gearbox. Then, bring the padded dashboard back to form a protective hood over the wheel. Even in the unlikely event that the chain would break, the driver would be spared the worry about the possibility of being speared in the accident.

There are other areas in which changes can be made to assuage the critics in shorter time and with less chaos in the industry. Primary among these is the type and style of control knobs and switches. Within the typical lead-time available (still 27 months —overall—for a new model), it is possible to incorporate this sort of change as late as one year before introduction. In that vein, the safety hearings may well have determined that these be achieved on a crash basis for 1968 models. The changes will make such controls less protuberant, thereby less deadly in appearance, and quite possibly they will incorporate a differing action, i.e., simple rocker levers instead of push-pull knobs. Yet, there is a limit to such placating of the critics:

Car makers must be realistic about the degree of convenience and operating ease for the controls because of the strict product liability interpretations with which the courts have saddled them.

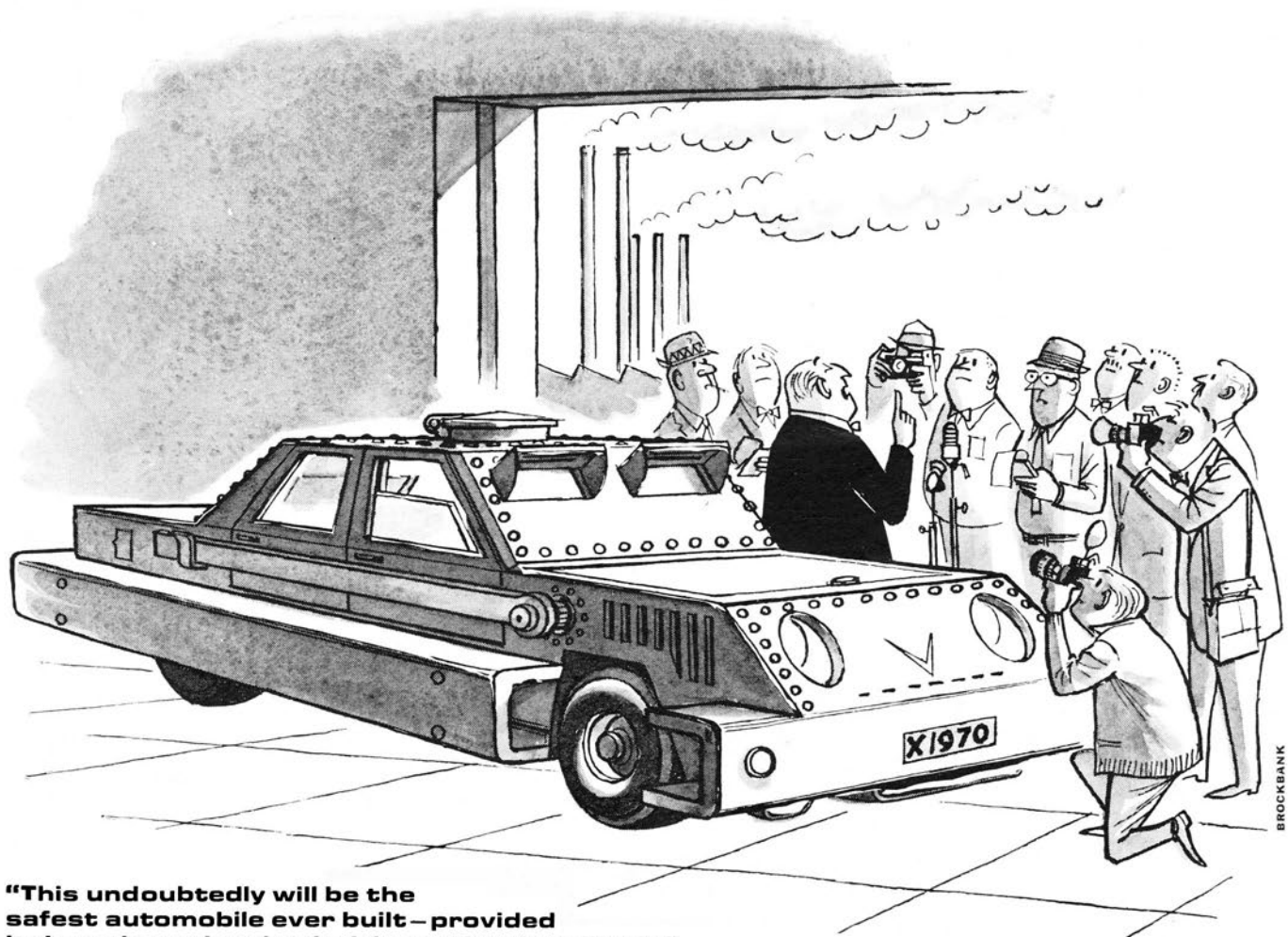
An interesting dichotomy presents itself in this area, which safety critics have yet to recognize. Chrysler Corp., which for years retained unique push-button operation for its automatic transmissions, finally gave up and returned to shift levers because of very real sales resistance to the buttons. But shift levers are under blanket condemnation from the critics as the cause of one fatality the critics are fond of reciting. Is it possible that a single accident report is sufficient to cause all the sales resistance to vanish?

Or, consider the case of the Studebaker Avanti, which located all of the light control switches on the windshield header. Though this moved them from vulnerable positions on the instrument panel, it would seem unsafe now because there is all this emphasis upon padding the windshield headers. An occupant just might fly upward to strike the header if his seat belt were unfastened.

It might be well to remember that every dream car or styling project vehicle which has been unveiled at an auto show since World War II has included several items which have been, in effect, safety devices. But most of the ideas never reach the showrooms, even though the styling touches do, for one of two primary reasons: They either are too costly or too unreliable. More damning is a third factor which happens with surprising frequency: The appearance of safety that such a device presents actually camouflages a very realistic danger in that device.

LOOKING FAR AHEAD down the road to safer driving, the shape of hardware yet to arrive is vague and indistinct. Certainly, one can perceive frightful sights should the present emphasis be carried to its logical conclusion. It's possible to see all hoods painted a dull, non-specular black; knobs and hand controls buried in mounds of padding; a roof-top periscope to view traffic rearward, once the driver moves his head into position and re-focuses his eyes to accommodate its strange optics; a ring of multi-colored lights around the car, each signifying something different and distinct; a fender that crumples when the door of the car in the adjoining parking slot is carelessly thrown open against it.

Yet, without discounting the very real potential for such a situation, there are several indications that automotive design and engineering for safety will remain in the hands of those most competent to do the job, the Detroit carmakers. Politicians, whatever their foibles, are capable of recognizing economic facts. There was a quick reminder of those facts during the height of the Congressional hearings: GM, which suffered the most criticism, reported serious sales setbacks and lower dividends which became a factor in a significant slide of stock market values. The Senatorial version of industry callback campaigns was so patently fraudulent that almost every car owner ignored it. Charges from the leading critic of the industry degenerated into obvious nonsense as his headline value diminished. And a Gallup poll found that the crusaders had support from only a small percentage of the American public, while the majority recognized that Detroit should design cars. The same poll showed that an overwhelming majority knows that drivers, not cars, cause more than 80% of the accidents. ■



"This undoubtedly will be the safest automobile ever built—provided it doesn't get involved with another just like it."

SAFETY '67

MARVIN LYONS PHOTO

General Service Administration Standards

1. Rear seat package shelf removal or redesign to prevent packages from flying forward in sudden stops.
2. Design of forward firewall to provide downward engine deflection in collision.
3. Design of a bulkhead between trunk and passenger compartment to prevent dislocation of heavy items into the passenger compartment.
4. Thorough padding of roof interior for occupant safety.
5. Steering systems which prevent or minimize contact with driver during collision.
6. Relocate gear shift lever or redesign as buttons or dials.
7. Remove or redesign instrument panel to avoid contact with head or upper torso.
8. Design lower instrument panel surfaces to protect occupant legs.
9. Design knobs and levers to break away at minimum impact or to be completely recessed.
10. Utilize cushioning materials of greater absorption characteristics.
11. Fire resistant materials for interior.
12. Easy fastening and release for seat belts and hardware.
13. Seat structures strong enough to serve as attachment supports for seat and shoulder belts.
14. More effective and more easily used design for upper torso restraints.
15. Inertia reels for upper torso restraints that permit reasonable movement.
16. Load leveling suspensions to maintain optimum vehicle attitude.
17. Bumper installations providing increased impact absorption.
18. Greater impact absorption characteristics for windshield and other glass.
19. Energy absorption limits of body and frame for longitudinal impact.
20. Energy absorption limits of body and frame for lateral impact.
21. Strength limits for roof structure or rollbars to prevent roll-over cave-in.
22. Stability standards for suspension in violent maneuvers.
23. Eliminate exterior protuberances that create pedestrian hazards.
24. Non-displaceable hub and wheel covers.
25. Design knobs and levers for blind-feel identification.
26. Locate knobs and levers for non-confusing blind-feel identification.
27. "Safe" limits on oversteer and understeer characteristics of design.
28. Adequate feedback in steering to determine front wheel angle and position.
29. Positive self-centering of steering.
30. Design power steering system to operate with reduced effort after power failure.
31. Design foot pedals for minimum confusion and reaction time.
32. Design automatic transmission control with positive detents.
33. Design folding or breakaway shift lever for floor-mounted transmission controls.
34. Eliminate rear quarter blind spots and increase field of view to within 30° of lateral on each side.
35. Maximum unobstructed forward vision.
36. Greater windshield wiper cleaning area.
37. Rear window wipers, specifically on station wagons.
38. Improved window defrosting.
39. Reflection and glare reduction from interior surfaces.
40. Reflection and glare reduction from exterior surfaces.
41. Criteria for vision, reflection and glare based upon vision capabilities of elderly drivers.
42. Improved legibility for instruments.
43. Color-coded lights to signal specific operations, such as braking, deceleration, turning, etc.
44. Separation specifications for taillights to aid distance recognition.
45. Height specifications for all lights to aid in recognition under congested conditions.
46. Daytime running lights.
47. Parking lights and reflectors.
48. Lights to signal deceleration without braking.
49. Backup lights to signal reversing to following traffic.
50. Audible signal to warn of reversing.
51. Side marking lights or reflectors.
52. Service brake effectiveness standards.
53. Parking brake effectiveness standards.
54. Design anti-lock brake system.
55. Design fail-safe brakes, to operate after normal system failure.
56. Design emergency brake system usable in actual emergencies.
57. Provide positive directional control during emergency stops.
58. Minimum tire safety requirements.
59. Standardize effects of various tire inflations on vehicle handling.
60. Minimum traction requirements.
61. Design method of continued operation with flat tire.
62. Rupture-proof fuel tanks.
63. Engine compartment fire extinguishing system.
64. Design positive ventilation system to prevent engine and exhaust fume entry to passenger compartment.
65. Design windshield wipers to remain effective at high speeds.
66. Design interlocks to prevent vehicle operation with any door unlatched.
67. Wheel chocks for jacking operations.