THE CAR CRITIC

BY ROGER HUNTINGTON

Hotter Buick V-8 for '56 Myths of brake cooling 350 mph Streamliners in sight

BUICK will go to a 10-to-1 compression ratio on their next models!

The rumor mill has been buzzing about 10-to-1 ratios within two or three years, but my buck says it'll be '56. The next Buick will also have some cam changes, dual exhausts will be *standard* . . . and they say the horsepower rating will be around 270!

With the current Century doing 0-60 mph in around 10 seconds and making a top of over 110 on 236 hp, heaven knows what the next one will do. Also heard a rumble about some of Buick's *1957* engine plans. They plan to increase bore one-eighth of an inch on the large V-8—giving 342 cubic inches in all—and I heard that experimental versions of this engine have shown as high as *327 hp* on the dyno!

Incidentally, the light, compact Buick V-8 engine is getting ever-increasing attention from the hop-up school lately. Early models were generally shunned because of a poor combustion chamber and small valve and port sizes. But the overall design has been improved a lot since then, and you don't have to look any further than the stop-watch to know that these '54 and '55 jobs are really putting out.

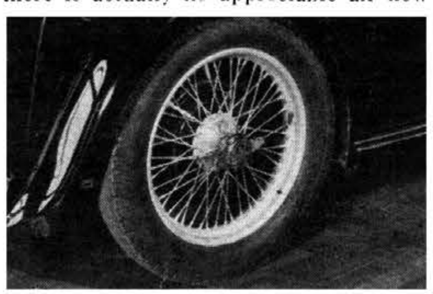
One reason they like the Buick engine is that its rpm potential is 'way ahead of the other ohv V-8's—due to the very short stroke and short, light rockers. They regularly turn it over 7000 rpm in competition.

Matter of fact, Buick engineering has checked into this pretty thoroughly. I understand they ran one of them (with special lifters and valve springs) on a dynamometer at *8000 rpm for four hours* without failure or apparent damage. Then they kicked it up to 9000 . . . and it actually ran *five minutes* before it blew! Modern engine design, I guess you'd say. I still don't like the Buick combustion chamber and valve layout; but you've got to give 'em credit—she goes. That's what counts today.

I learned something the other day that came as quite a surprise. Did you know that the car manufacturers pay only between $4 and $8 each for the tires they put on your car as original equipment? That's only about one-fifth of the retail price. Just another example of the super-critical cost situation in our industry today. The cost departments couldn't any more think of paying twice as much for tires to get better quality than they could of using ermine floor mats. And yet you can't help but wonder just how much real quality you can put in a tire for $4, even in mass quantities. You shell out $3000 for the iron and run it 100 mph on $20 worth of rubber. Hmmmmmmm!

RECENT AMERICAN RESEARCH on automobile brake design has apparently exploded a couple of popular myths on the subject. One is the belief by most auto enthusiasts that wire wheels promote brake cooling.

The researchers now tell us that the whirling spokes set up a very effective barrier to normal air circulation, and that there is actually no appreciable air flow



across this turbulent layer of air. Other factors equal, they say there's no great difference in brake cooling when using wire wheels as compared with conventional disc wheels. Quite a shock, eh? I'm sure the slide rule boys will get some argument on this one from the sports car clique.

The other myth that has apparently been debunked is the idea that having the brake unit "buried" deep in a wide-base disc wheel greatly impairs cooling—and that cooling would be improved if the brake could be moved inboard a few inches into the air stream.

Engineers of the Budd Company rigged up a special front end layout on an experimental car that permitted the front brakes to be set three inches inboard into the full air stream; temperature tests were made in this position and with the brake in the normal position inside the wheel. They said the difference in cooling was so small that it wouldn't be practical to make any change.

Could be . . . but I can't believe the inboard brake is a dead issue. The latest Mercedes-Benz racing cars feature inboard front brakes, with the torque fed through U-jointed shafts. This isn't a particularly good deal mechanically, and it probably wouldn't be practical for passenger cars—but certainly those sharp M-B engineers wouldn't be going to the bother if it didn't help brake cooling a lot. And there's another very important advantage that results from inboard brakes: A large reduction in unsprung weight. This not only helps cornering and high-speed stability, but it improves the *ride*. You might even see inboard brakes out of Detroit some day!

I'VE OFTEN WONDERED how the streamlining of some of our cleaner Bonneville "backyard bombs" would measure up with that on some of the $100,000 wind-tunnel-developed cars that hold various world speed records. I touched on this subject briefly in my article on the Auto-Union vs. American hot rods in the May issue of MOTOR *Life*. Since then I've dug up some additional info on the subject; I'm not yet ready to publish the full scope of this new data on super-speed cars, but I can now speak with a little more confidence on the streamlining figures.

First of all, engineers rate the relative aerodynamic cleanness of various types of car bodies in terms of a "drag coefficient." I'm not going to take space to go into this right now; suffice it to say that this coefficient is proportional to the wind resistance (air drag) of bodies of similar size or frontal area. For instance, the drag coefficient on your late Detroit iron will run from about .46 to .55. Fully streamlined bodies have much lower figures, of course.

Now undoubtedly the most perfectly streamlined car that's ever been built is the Railton-Mobil Special that holds the world absolute land speed record at 394 mph. It was designed by the brilliant British engineer, Reid Railton (now living in California). The drag coefficient for this body is .13. Presumably much of this low drag is due to the rounded body sides and bottom, instead of the usual more or less flat surfaces, and having the bubble for the driver's head at the front instead of the middle or rear.

Another very clean world record car that Railton designed, a car that turned 200 mph on less than 200 hp, was Goldie Gardner's famous MG Special. This one,

however, was designed along more conventional lines, similar to the Bonneville streamliners, and had a drag coefficient of .19. The pre-war German streamlined record cars, Auto-Union and Mercedes-Benz, had coefficients in the low .20's.

So where does this leave our Bonneville rods? Some of these—like Bill Kenz' two-engine job, the Shadoff Chrysler, the LeBlanc twin, the Hill-Davis Special, Chet Herbert's "Beast"—look as clean as any of the overseas stuff of equivalent size and weight. Actually they are, and more so. Careful analysis suggests coefficients as low as .18, and possibly .17, for some of these jobbies. (These figures are based on what the cars actually *did* on the Flats with known power outputs.)

The coefficients are still 'way above that of the Railton, but they're real good when you consider that frontal area on these rods has been held to only about *half* that of the world record car (on the Railton, in fact, frontal area was *increased* to get a lower coefficient).

Our job now is to somehow re-arrange the chassis and engine layout on these Bonneville streamliners to allow a body shape that will show a drag coefficient of maybe .14—and still hold frontal section to 12-16 sq. ft. Then, given a little more horsepower, some tires that won't throw treads . . . and the day of the 350-mph hot rod is in sight!

READ some interesting data recently on Packard's highly publicized 25,000-mile endurance run last fall with the new V-8. You'll recall they averaged 104.73 mph for some ten days, breaking all world records for that distance (though the run wasn't officially timed and entered for a record). They claimed they didn't run wide open at any time; the actual average maintained when running—which excludes time lost on the 216 pit stops—was just a bit higher at 106.4 mph!

Incidentally, the pit crew could really move; their average time for changing four wheels was a shade under 50 seconds (and they weren't knock-off hubs, either)!

The feature of the run that most impressed the Packard engineers was the extremely low oil consumption of the new short-stroke V-8 engine. The thing never burned more than a quart per 600 miles on the entire run. The engineers said that earlier long-stroke straight-8's would be fairly easy on oil for the first 18,000 miles or so on one of these high-speed endurance runs . . . but then the oil consumption would shoot up at a terrific rate, sometimes going as high as *15 miles per quart!* Proof-positive of the benefits of a short stroke and modern engine construction, I think. ●