CAR LIFE
ROAD TEST

Corvette 396 Sting Ray

Above All Else, It's Great Fun To Drive!

A CORVETTE is many things to many people. To the tweed-and-leather sports-car set, it passes as an acceptable vehicle, in spite of its slightly outlandish styling. To the GTO-cum-427 crowd it is a leading contender as a Hot Car. And to the man in the street, it can be simply a Prestige Car.

How can it be all these things? Consider the chassis: It is laid out in the best sports car idiom, with the engine set well back for optimum weight distribution; the front suspension, though basically that of the Chevrolet sedans, has its geometry reworked to give a higher roll center; the rear suspension is fully independent and cleverly articulated to give desirably small camber changes; the brakes, previously only adequate, are now outstanding with discs at all wheels; and the steering is quick and precise. A range of engines is available, all powerful. The most powerful in the line-up have been competitive with even those of the "Supercars" (May CL). And the general appearance of the car, inside and out, is exciting enough to entice even those who aren't really interested in cars at all.

With each annual model change since the advent of the Sting Ray, this car has become a little more to the first two groups and no less to the third. This year there are three major manifestations of this upgrading to consider—disc brakes, the new 396-cu. in. engine and a slight cleaning-up of the styling.

The car tested by *Car Life* just a year ago (August 1964) was equipped with the optional, at $629, competition brakes and cast-aluminum knock-off wheels. These brakes, which were very good indeed, consist of radially finned drums, backing-plate airscoops, sintered metallic linings, a dual-circuit master cylinder and vacuum assist. The 1965 car has as standard a new 4-wheel disc system which is, as far as we can judge, very nearly the equal of the competition system and far, far superior to the standard 1963-4 drum system. Though the old standard drums were liberal in size and adequate for everyday stopping they weren't always even in their action and could be made to fade fairly easily; still, relative to the contemporary domestic product, they were among the better standard brakes available.

Drum brakes are susceptible to fade because of an inherent characteristic of design: As they heat up, the drums expand, increasing the clearance be-

CHAN BUSH PHOTOS

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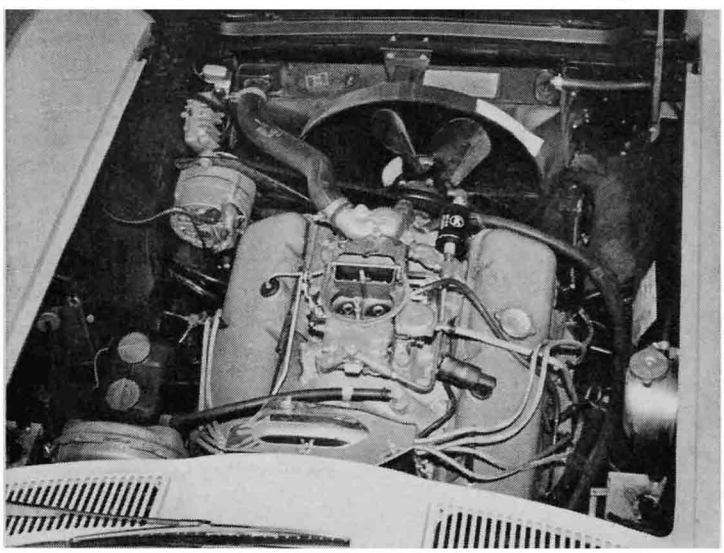
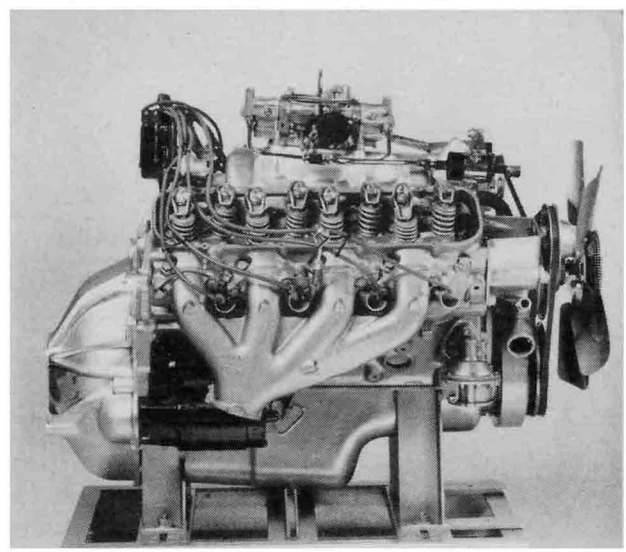
tween the shoes and the drum. Compounding the problem is their tendency to retain heat in the drum. Also, drums have long been generally made with "leading" shoes to provide a degree of self-energization which in effect assists the driver in applying the brakes, once he has begun to apply them. This self-energization, or "servo" action, reduces the pedal pressure required for a given stop, but also gives the brakes a mind of their own, so to speak, and the relationship between pedal pressure and braking action is not exactly direct.

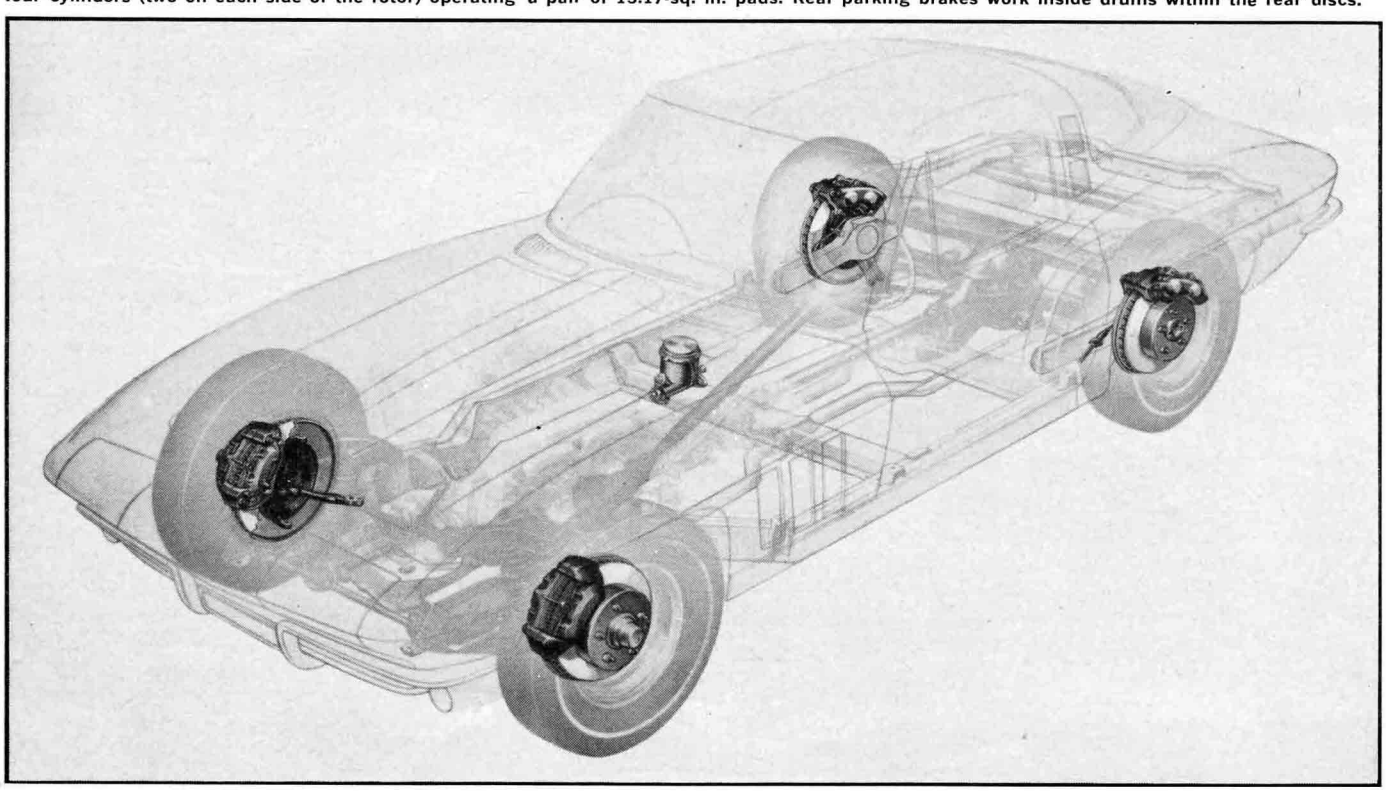
To overcome the fade characteristic, the Corvette competition system had a compensating adjustment added that would adjust the shoes as the car was being driven forward and thus compensate for the expansion of the drums. Also, a metallic lining material was used, which had better heat-dissipating qualities than the standard organic material and was thus less prone to contribute its part to the heat build-up. But the metallic material had the disadvantage of having a large change of friction coefficient with its temperature changes. So, to insure that

HUGE, HUSKY 396-cu. in. V-8 is a close fit in the Corvette's engine compartment; battery is at lower left, radiator expansion tank at right. Staggered, odd-angled valves characterize the new "Porcupine" engine. Mechanical lifters, cast headers help produce that 425 bhp.





DUAL CIRCUIT hydraulic disc brake system is standard equipment for the Corvette and features 11.75-in. radially vented discs. Each caliper has four cylinders (two on each side of the rotor) operating a pair of 13.17-sq. in. pads. Rear parking brakes work inside drums within the rear discs.

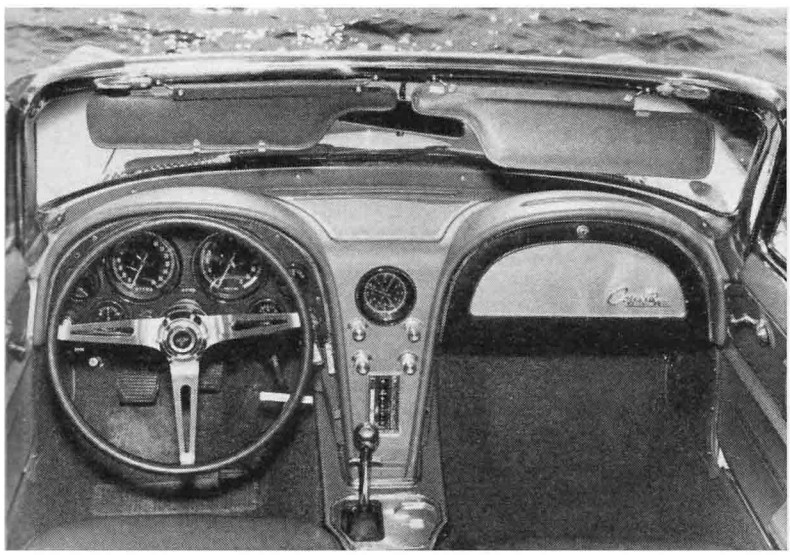


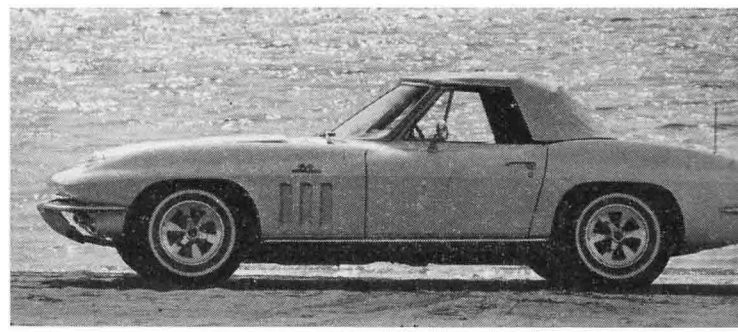
the driver could provide sufficient line pressure for all the conditions of lining frictional properties, a vacuum booster was considered necessary. The result of all this was, as we said, a superb brake system—derived from drums and various crutches, and necessarily very expensive.

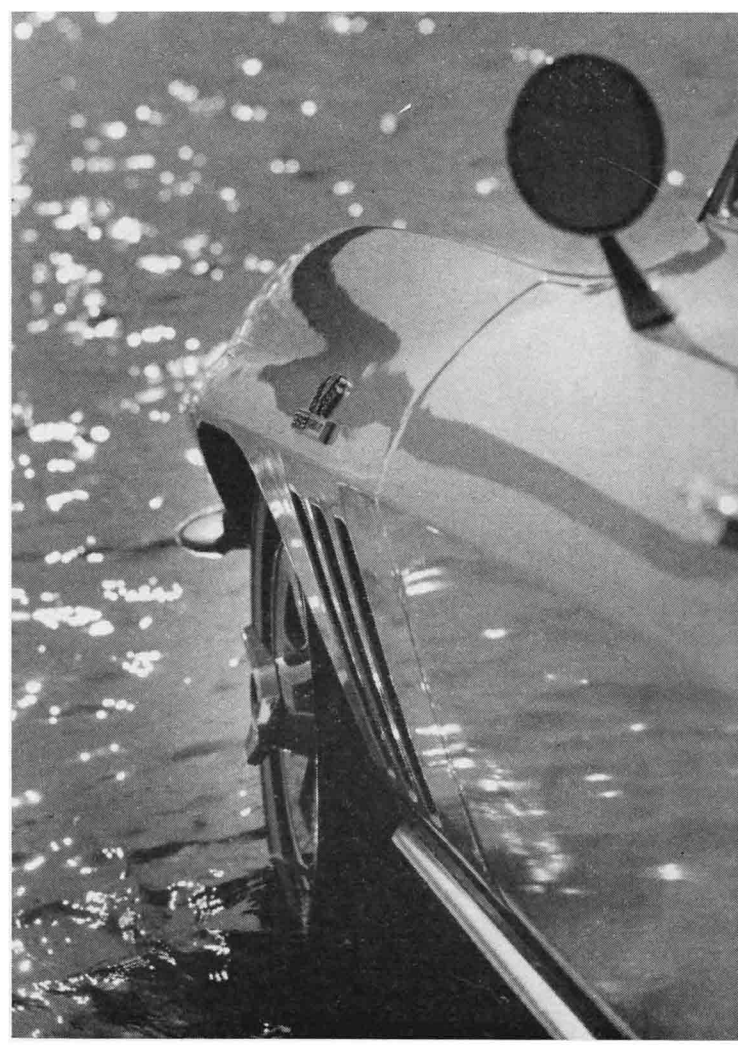
Disc brakes are not handicapped by a natural tendency to fade, as expansion of the units does not increase the clearance between the friction surfaces; furthermore, because of their open design, air cooling is more readily available. They are in no way self-energizing, so that braking force is more nearly proportional to pedal effort. This last point is important in giving the driver a good brake "feel," or modulation, just as steering that accurately represents to the driver what is happening at the tires is important. The Corvette disc system lives up to expectations. It gave us straight-line, fade-free decelerations from 110 mph, time after time. Under more normal driving conditions, it always pulled the car down evenly and smoothly. The test car also was equipped with a vacuum booster, and having tried the same system without it, our personal preference is for the unassisted system. Pedal efforts are quite reasonable without the booster—this is a breakthrough for cars with 4-wheel discs—and we feel that the brakes are somewhat light and touchy with it, nullifying to some extent the improved modulation of the discs.

We would like to say that the brakes gave us 1 G deceleration—but, unfortunately, we can't. The limiting factor, we're quite sure, was the tires. These were U.S. Royal "Laredo" tires and, though these low-profile tires are probably quite adequate for a medium-powered sedan, they simply are not suitable for a car of such performance potential—from both a braking and an acceleration standpoint. There is a wide variety of premium tires available ▶

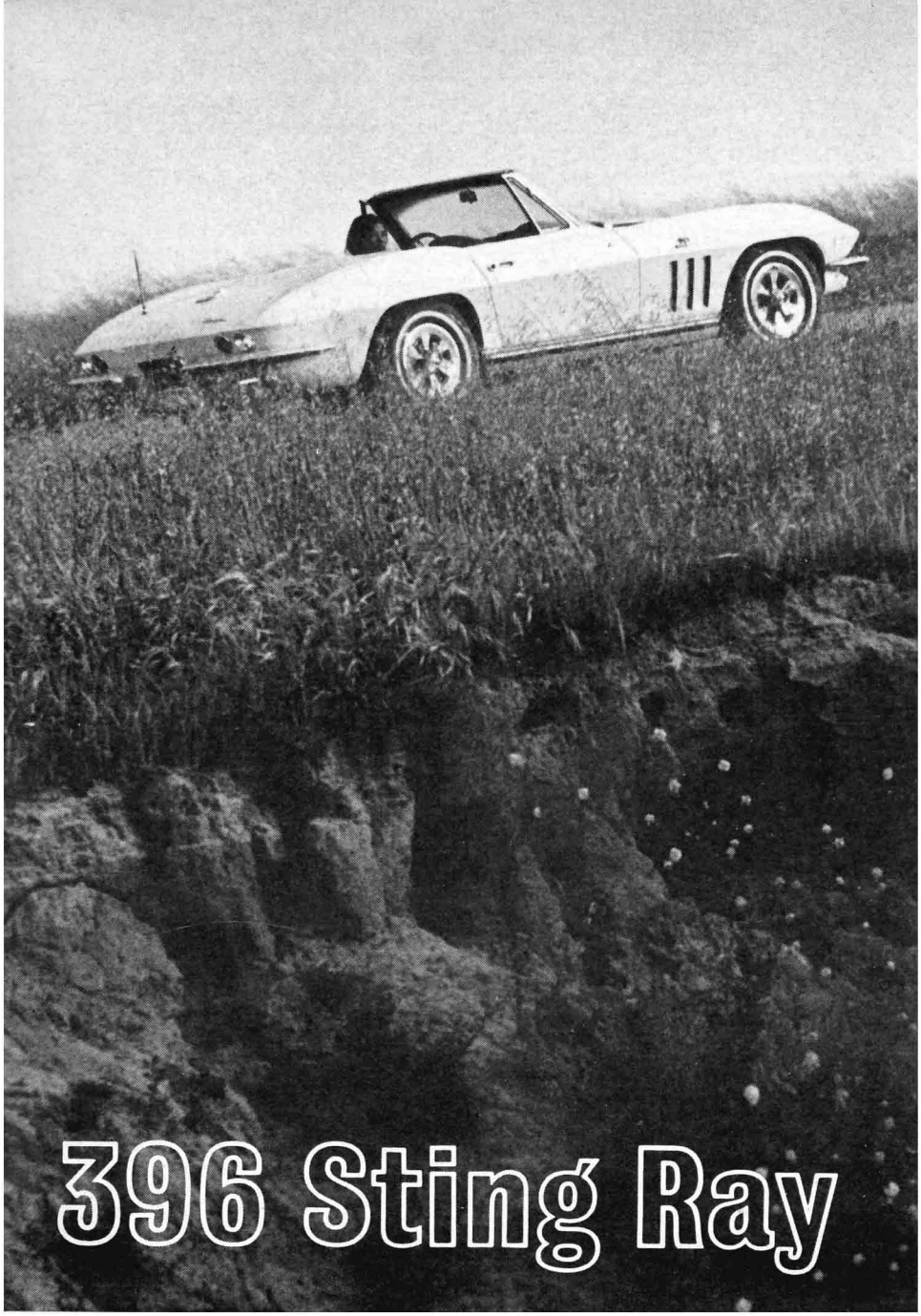
BIG TACHOMETER and speedometer are flanked by necessary gauges in simple, delightful fashion. Clock, radio are in console upright.







CORVETTE'S TRUNK opens the wrong way! Tonneau opens to enclose the top, revealing generous, but hard to get at, luggage compartment.



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and we think something much better than a standard tire should be regular equipment on this car. From personal experience with a similar (staff-owned) car we know that it can be rather treacherous on wet pavement with the standard tires and have seen positive evidence that radial-ply tires can improve this situation considerably, albeit at an increase in ride harshness and road noise. Conventional high-speed tires would be an improvement in that they are capable of sustaining high road speeds in safety; but our experience with them has been that they are no better, and sometimes worse, than standard tires for traction on wet pavement. At any rate, we were unable to get better than 26 ft./sec./sec. because of wheel lock-up, and so we must place the blame on the tires.

In order to maintain the Corvette's "image" in the face of such fierce competitors as the Pontiac GTO, it became obvious to Chevrolet that something bigger than the 327-cu. in. engine was needed. Certainly the 327's output in the hottest versions was impressive, but it was beginning to fall behind in the race for sheer brute performance, an area dominated by engines of close to 400 cu. in. displacement. Thus a new engine had been expected for some time and it was fairly common knowledge that it would be a 396-cu. in. version of the Mark II Daytona engine of 427 cu. in., seen briefly three years ago before GM's edict on corporate racing activities. A full description of the engine appeared in the March, 1965, issue of *Car Life*.

How does it go? A look at the acceleration times shows that the chief improvement comes at somewhat higher speeds. And if it were not for the limitations of the tires, we are sure that the times to the lower speeds would be much improved over the 327/365 bhp fuel-injection model tested last year. We eventually found that our best acceleration times were achieved by minimizing wheelspin and letting the engine lug off the line—this in spite of the Corvette's excellent built-in properties, independent rear suspension and good weight distribution, for getting the power to the ground. This engine also is noticeably quieter than the mechanical-lifter 327, and has lots more torque at low speeds.

Driving at almost any speed is easy and quiet, except for a carburetion problem which makes the engine quite untractable on mild acceleration below 1500 rpm. It bucks and falters and the warm-up period in the morning is especially traumatic. Of course, we don't expect this sort of engine to be as tame as a Reliable Six, but it does need more development work. We know that Chevrolet engineers are working on this; our test car later had a modification kit installed on its Holley 4-barrel carburetor (1.686-in. throats, both primary and secondary). The engine idled lumpily at 1100 rpm, but with the carburetion problems resolved, it should be able to idle at the recommended 700 rpm. It is not at all unusual for such problems as this to find their way into early production models and, though the engine will be nicer when it is worked out, this cannot be regarded as a major problem with this type of engine. We think this engine will have a much wider appeal than the fuel-injection 327, for it offers more ultimate performance at a cost much lower than the $538 charged for the injection. The f.i. model, at least for the moment, is continued and this 396/425 engine replaces the 327/365 version. The engine line-up, therefore, is 327/250, 327/300, 327/350, 327/375 (fuel injection) and 396/425.

For 1965, the styling details are again varied slightly: New wheel covers, simulating "mag" wheels and providing some wheel ventilation; new rocker-panel molding; elimination of the indentations in the hood on either side; a "floating" grille; and new front-fender vents, now functional. In the interior, there are new seats and door panels, molded carpets and flat-faced instruments, plus little catches for the seat-belt buckles that provide a place to put the buckles when getting out. In our opinion, the styling changes are mostly to the good. We appreciate greatly the absence of the hood in-

dentations, although this improvement is almost negated by the bubble necessary to clear the 396 engine; and it's nice to see the fender vents made functional. The wheel covers are less happy, for now they imitate not only knock-off hubs, but mag wheels as well. The new instrument faces are a joy to behold, no longer looking like the product of a poor stylist's quota. The seats are improved to give more thigh support, and the driver-adjustable steering wheel may be old hat to the sports-car buffs, but it's mighty nice to have it.

Installation of the larger engine has had a few minor effects on the total car, but the general driving feel is much the same as before. The increase in curb weight amounts to 160 lb., most of which is at the front. The test weight distribution proved to be 51/49% on this car, a baby step backward from the original Sting Ray concept. The bulk of the weight increase is attributable to the large engine, but the disc brakes account for 10 lb. per wheel, or 40 lb. of the increase. The engine occupies quite a bit more space in its compartment and it looks as if the clutch linkage and brake booster unit would have to be removed to get the battery out.

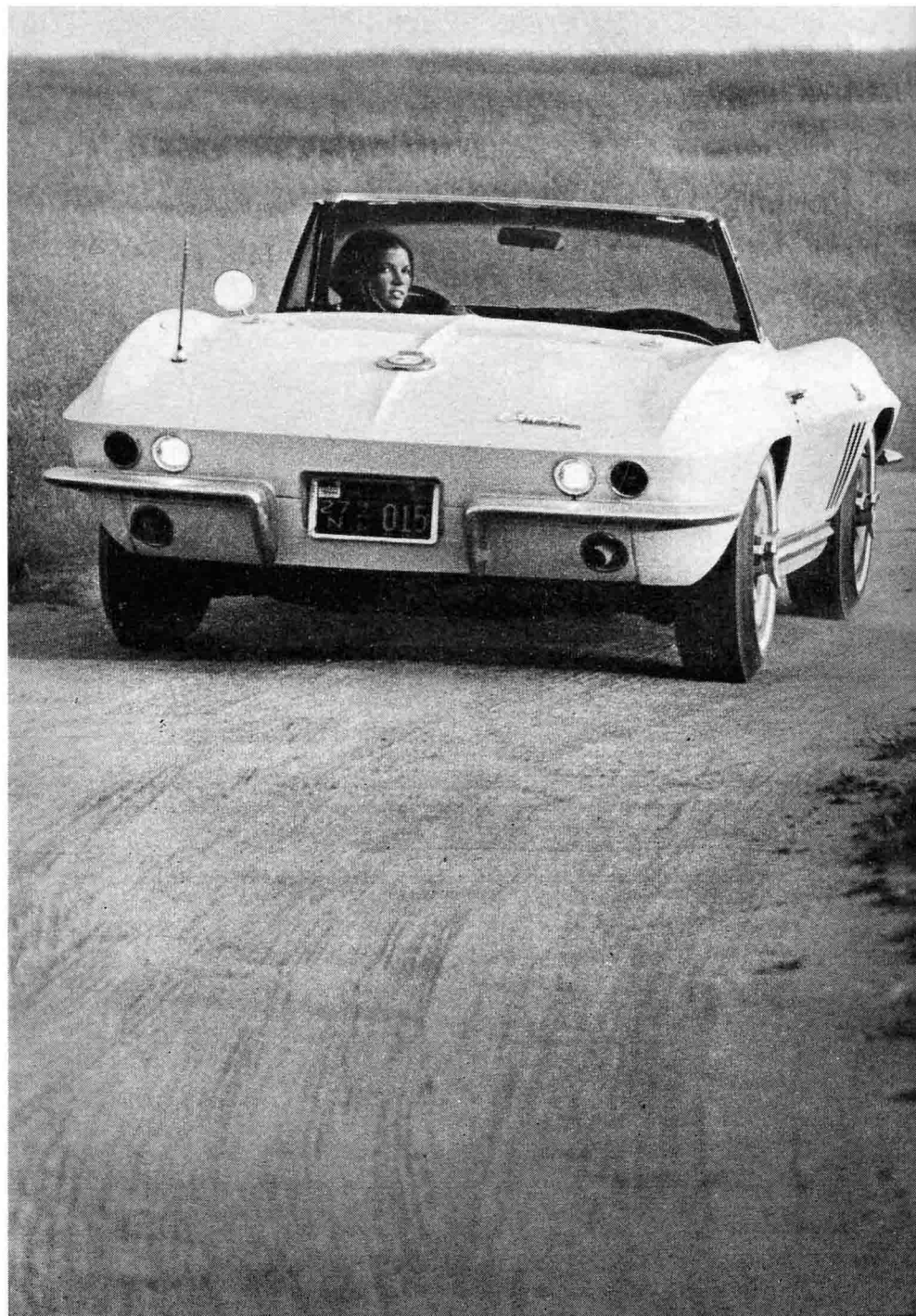
Ride and handling of this car are still basically the same as before—and still a combination of both that establishes a standard for the rest of the American industry to look up to. As we said last year, the chassis of this car cries for imitation and proves that brilliant handling is not at all irreconcilable with a good ride. Spring rates remain the same as with the 327; our understanding is that the front rates are lowered from 100 lb./in. in 1964 to 80 in 1965, the rear rates being virtually unchanged at 123 lb./in. (all rates measured at the wheels and are average because of variable-rate springs). The front stabilizer bar, unchanged on 1965 327s, is enlarged from 0.6875 in. to 0.875 in. on the 396, and a similar bar is introduced at the rear for the 396; its diameter is 0.5625 in.

Compared with the 1964 Corvette, body roll in cornering is not noticeably different—presumably the result of softer springs, larger stabilizer bar, greater weight at the front and the small bar at the rear. Response to small movements of the steering wheel feels slightly quicker, probably because of the lower slip angles of the new low-profile tires and new balance of front-rear roll resistance. Steering effort, surprisingly, does not seem to have been increased much by the added weight.

The ride seems to be just a little improved with regard to the 1964 car, especially in impact harshness, or reaction to small, abrupt irregularities in the road. The Corvette, even with its variable-rate springing (which is relatively soft for small movements, stiffening up for larger movements), has not been at its best in this respect, but now this is up to the good level of the other ride characteristics. Probably harshness could be reduced further by the use of coil springs at the rear in place of the single transverse multi-leaf spring as leaf springs contribute quite a bit to such harshness because of the inter-leaf friction inherent in them. However, the use of the leaf spring was dictated by space limitations and this has not changed since the Sting Ray was introduced. All of this is in the nature of lint-picking, anyway, because, as we said, the Corvette's combination of ride and handling is unchallenged among American cars and right up with the best production sports cars made anywhere.

The Corvette continues with its still-unusual fiberglass body construction. Production figures are probably approaching the crossover point for economical production with the fiberglass (around 25,000 units will be made this year), and since lower cost for small production quantities was the primary reason for its being used in the first place, there is the strong possibility that sometime in the future the Corvette might get a steel body, or a combination of steel and aluminum, although this is purely speculation.

Fiberglass bodies have some unique virtues of their own, quite apart from ▶



the lower cost of production and perhaps these have become real selling points. Foremost of these virtues is of course the fact that the body won't rust—and this is very meaningful in the northern parts of this country where salt is used on the roads for melting ice. Squeaks and rattles are an unfortunate by-product of this body construction and the test car already had its share of them. Certainly the car has improved over the years in this regard, though. Likewise, it has improved somewhat in the quality of its finish. It seems that each year the characteristic ripples of the panels get a little less noticeable. In the past, too, the sound-transmitting properties of the material had made Corvettes rather noisy; but great strides were made with the 1964 model in insulation and cushioning of the body, and currently the car is one of the quietest sports cars around—it rivals many sedate sedans for low noise level.

All considered, we have naught but enthusiasm for the Corvette. It is easily the most interesting, and sophisticated, of American cars. And as we have said before, there is so much in its chassis that could be used to improve the more ordinary cars, at small extra cost for them. It goes, it stops, it handles, and it does all in comfort, silence and reliability. And, above all else, it's great fun to drive. There's just nothing quite like it at within $1000 of its price. ■

CAR LIFE ROAD TEST

1965 CHEVROLET
Corvette 396 Convertible

SPECIFICATIONS

List price	$4106
Price, as tested	5185
Curb weight, lb.	3260
Test weight	3570
distribution, %	51/49
Tire size	7.75-15
Tire capacity, lb. @ 24 psi	4400
Brake swept area	461
Engine type	V-8, ohv
Bore & stroke	4.09 x 3.76
Displacement, cu. in.	396
Compression ratio	11.0:1
Carburetion	1x4
Bhp @ rpm	425 @ 6400
equivalent mph	136
Torque, lb.-ft.	415 @ 4000
equivalent mph	85

DIMENSIONS

Wheelbase, in.	98.0
Tread, f & r	56.8/57.6
Overall length, in.	175.1
width	69.6
height	49.8
equivalent vol., cu. ft.	351
Frontal area, sq. ft.	19.3
Ground clearance, in.	5.0
Steering ratio, o/a	20.2
turns, lock to lock	3.4
turning circle, ft.	41.6
Hip room, front	2 x 20.5
Hip room, rear	n.a.
Pedal to seat back, max.	44.2
Floor to ground	9.5
Luggage vol., cu. ft.	8.3
Fuel tank capacity, gal.	18.5

EXTRA-COST OPTIONS

396/425 V-8, 4-speed trans., non-slip diff., power brakes, am/fm radio, 7.75-15 wsw tires, tinted glass.

GEAR RATIOS

4th (1.00) overall	3.70
3rd (1.28)	4.73
2nd (1.64)	6.07
1st (2.20)	8.13

CALCULATED DATA

Lb./bhp (test wt.)	8.41
Cu. ft./ton mile	181
Mph/1000 rpm	21.2
Engine revs/mile	2820
Piston travel, ft./mile	1770
Car Life wear index	49.9

SPEEDOMETER ERROR

30 mph, actual	27.4
60 mph	57.8
90 mph	88.2

FUEL CONSUMPTION

Normal range, mpg	10-13

PERFORMANCE

Top speed (6500), mph	138
Shifts @ mph (manual)	
3rd (6450)	108
2nd (6450)	84
1st (6450)	63
Total drag at 60 mph, lb.	125

ACCELERATION

0-40 mph, sec.	3.7
0-50	4.8
0-60	6.0
0-70	7.3
0-80	8.8
0-100	13.0
0-110	16.2
Standing ¼ mile, sec.	14.1
speed at end, mph	104