



OLDS W-31

Eccentric Old Dr. Oldsmobile Does His Thing with a Cutlass (Any Mad Scientist Who Turns Out Cars Like the W-31 Can't Be All Bad).

SKEPTICS DOUBT the existence of Dr. Oldsmobile, that, er, noticeable scientist who with two equally unusual helpers stars in an ad campaign building Oldsmobile performance cars in a laboratory unequalled since Hollywood lost interest in science.

The skeptics are wrong. You could station men outside every dungeon in Michigan and never capture the mad scientist or his minions, but that wouldn't prove anything. They are spirits, symbols of the enthusiastic engineers and product planners working

deep within Oldsmobile, creating cars for enthusiast drivers.

And more power to them. Their latest project, code named W-31, is a cold-air kit on a high-performance 350-cid V-8, installed in an F-85 Cutlass, clamped over a 4-4-2 suspension. It's made in a factory by mortals, but don't hold that against it. The W-31 is quite a car.

The engine gets the full treatment. Higher compression, new cylinder heads with big valves, streamlined exhaust manifolds, a big four-barrel carburetor fed by scoops under the bump-

ers, and a wild camshaft. The good doctor is an honest man. The factory rates the engine at 325 bhp, and the CAR LIFE guesswork kit (Dec. 1968), shows it produces 325 bhp.

Behind this is a secret ingredient, without which no invention should be. General Motors has developed a new, smaller Turbo Hydra-Matic, for the new mid-range V-8s. When the W-31 was first announced, the only transmission choice was three- or four-speed manual. The automatics have their fans, too, so the engineers built a version matched to the W-31 engine.

The engine is small, but it's all heart. The radical camshaft moved the power and torque peaks up the rev range, but there's enough power left at low speed to make driving easy. Better, the 350 never quits. Peak power comes at 5400 rpm, but the 350 goes right on past. The curve starts back down at about 6200, our shift point for the acceleration tests, but the engine even goes past that. The engine uses hydraulic lifters. As a rule, they're quiet, but liable to pump up at high speed. The 350's lifters didn't. The W-31 is one of the few cars geared for acceleration that isn't limited by its lifters to a ridiculously low top speed. The engine turned 6600 rpm, 128 mph, in top gear. Such speed isn't useful, but it's nice to know that the engine will wind that high if called on.

The transmission is a performer. That's its strength, and its problem. Just like show business, the revamped automatic is on stage, all the time. At full power, when the driver wants entertainment, the little Hydra-Matic comes on strong. Shifts are clean, quick and hard, what vaudeville might call the old hard shoe.

But it doesn't know when to quit. In traffic, at part-throttle, when the driver wants to relax, the transmission keeps right on shifting clean, quick and hard, right on booting the occupants in the back. Brings to mind another mad scientist who did some transplanting that didn't work out the way he'd planned. How much the driver cares will vary with how keen he is for high-performance automatics.

The torque converter has a more basic peculiarity. The stall speed has been raised, and the converter slips at low engine rpm. The engine picks up speed without load for a fraction of a second before the power gets through to the rear wheels. Push down harder, and all is forgiven; the transmission nips smartly into the next lower gear, and the W-31 scoots away.

The radical valve timing shows up, of all places, in the W-31's braking system. The timing is designed to work best at high revs, which takes away power and vacuum at low revs. There isn't much vacuum available. Not enough, that is, to energize a brake booster.

This put Oldsmobile's engineers in a quandry. At this writing, the cold-air engines, W-31 or the 400-cid W-30, are produced only with drum brakes front and rear. The test W-31 had discs, without boost. Not exactly experimental: The brakes themselves are available as options on cars with the standard engines. But they aren't, at this writing, offered with the cold-air camshaft.

The brakes work very well. Work-

ing them is something else. Foot pressure is heavy like straight down is steep. The engineers say about 90 lb. of force is needed for a quick stop from highway speeds. Under extreme conditions, the brakes are acceptable. The effort required may be even a help. Applying the brakes takes about all the strength the driver can muster, so there isn't much left over, and it's easy to avoid locking the wheels.

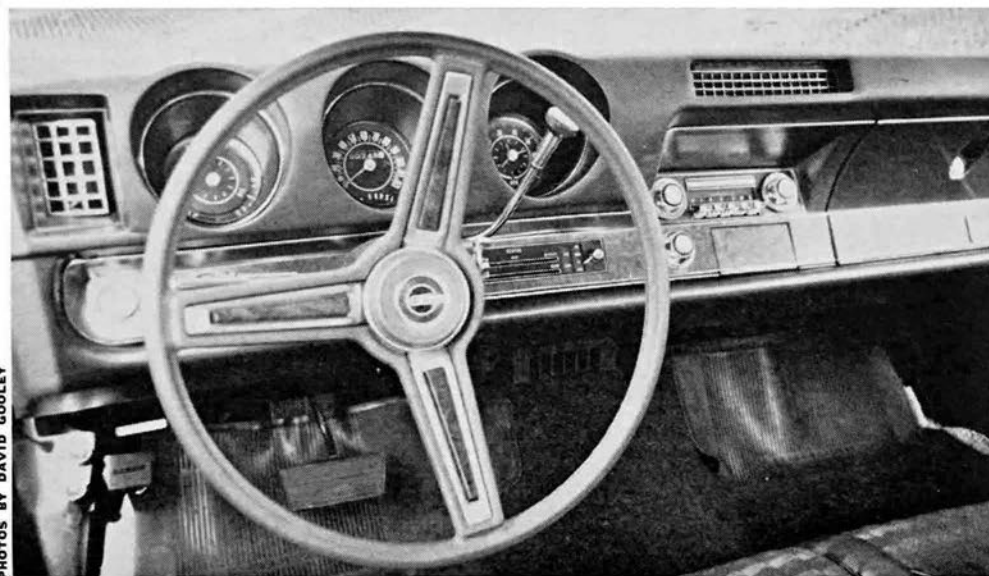
Traffic is more annoying. A heavy foot must be used all the time. At a stop light, with the engine idling and the car in gear, the driver must keep his foot well down or the W-31 lopes ahead and into trouble.

The degree of bother varies with the driver. The staff old-car fan, who has three cars with small drum brakes and no boost, wasn't upset. All his cars, he

said, have high pressure requirements. Even with that, they don't stop well. The W-31 stops. The normal driver, accustomed to light powered drums or moderate discs, will notice the heavy pedal, and he won't like it. The Oldsmobile engineers know this. They also know that a car with a 135-mph potential needs disc brakes. At last report, they had a booster in the works that dropped foot requirements to 60 lb. They didn't know if the system will be put into production, or if the non-boost discs will be made available. Heavy or not, they're better than drums.

The transmission and brakes put the W-31 over the edge, from family car to enthusiast's car. The W-31 suspension, though, is what every family car should be, could be, but isn't. As men-

CORNERING attitude varies with power. Coasting, left, produces understeer. Acceleration through a turn, below, puts the tail out, and front wheels hard over.



PHOTOS BY DAVID GOOLEY

VIEW of instruments could be better. Setting the steering wheel at the right height for the testers meant the rim hid the optional tachometer.

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continued

tioned, the W-31 has the stiffer spring and shock absorbers, plus front and rear anti-roll bars, from the 4-4-2. It is a good system, not just because it improves handling, but because it doesn't impair the comfortable ride.

The standard-suspended intermediates tested on page 44 were at the Orange County Raceway road course at the same time the W-31 was being tested there. In ordinary driving, one type couldn't be told from the other. They all clonked over pot-holes. They all glided over smooth roads. Over bumps, the W-31 moved a little more sharply, while traveling a shorter distance, up, down or sideways. Tie score.

On the fast turns, the standard cars heeled over and plowed ahead. The W-31 crouched closer to the ground. When the weight of the front end has shifted to the outside wheel, the rear anti-roll bar helps the car maintain balance. All four wheels do their share. Some understeer remains, but the W-31 is closer to neutral than the others.



SPACE in trunk is limited, by the body design and the tire location. It should be adequate for most uses, though, and the tire is easily unloaded if needed.

Good news for the enthusiast driver: The W-31 can be driven faster, with better control. That's not all. At the end of Orange County's back straight, the course kinks. There's a sharp left, a jog about one lane wide, and a sharp right. The W-31 could be pitched into the first half at speed,

whipped to the left, and then the right. Each time, the front tires bit, and the car responded.

It's close to the classic avoidance situation in highway driving. A sudden obstacle and the driver must change lanes, as quickly as he can move his hands on the wheel. The W-31 will

1969 W-31 OLDSMOBILE CUTLASS



DIMENSIONS

Wheelbase, in.....	112
Track, f/r, in.....	5 / 59
Overall length, in.....	201.9
width.....	76.2
height.....	52.8
Front seat hip room, in.....	54
shoulder room.....	58
head room.....	38
pedal-seatback, max.....	41
Rear seat hip room, in.....	53
shoulder room.....	57
leg room.....	33
head room.....	36
Door opening width, in.....	42
Trunk liftover height, in.....	30

PRICES

List, FOB factory.....	\$2838
Equipped as tested.....	\$4212
Options included: W-31 engine and suspension package, \$205; automatic transmission, \$105; Polyglas tires, AM radio, power steering, disc front brakes.	

CAPACITIES

No. of passengers.....	6
Luggage space, cu. ft.....	17
Fuel tank, gal.....	20
Crankcase, qt.....	4
Transmission/dif., pt.....	6/3.69
Radiator coolant, qt.....	15

CHASSIS/SUSPENSION

Frame type: Perimeter.	
Front suspension type: Independent by s.l.a. coil springs, telescopic shock absorbers, anti-roll bar.	
ride rate at wheel, lb./in.....	158
antiroll bar dia., in.....	0.937
Rear suspension type: Live axle, two trailing arms, coil springs, telescopic shock absorbers, anti-roll bar.	
ride rate at wheel, lb./in.....	150
anti-roll bar dia., in.....	0.875
Steering system: Integral assist recirculating ball gear, parallelogram linkage behind front wheels.	
overall ratio.....	20.7:1
turns, lock to lock.....	4.3
turning circle, ft. curb-curb.....	40
Curb weight, lb.....	3640
Test weight.....	3935
Distribution (driver), % f/r.....	57.6/42.4

BRAKES

Type: Unassisted disc front, drum rear.	
Front drum/rotor, dia. x width, in.....	10.88 x 1.9
Rear drum, dia. x width.....	9.5 x 2
total swept area, sq. in.....	335.56

WHEELS/TIRES

Wheel rim size.....	14 x 5J
optional size.....	14 x 6JK
bolt no./circle dia. in.....	5/4.75
Tires: Goodyear Polyglas.	
size.....	F70-14
normal inflation, psi f/r.....	24/24

ENGINE

Type, no. of cyl.....	V-8
Bore x stroke, in.....	4.06 x 3.39
D:sp:acement, cu. in.....	350
Compression ratio.....	10.5:1
Fuel required.....	premium
Rated bhp @ rpm.....	325 @ 5400
equivalent mph.....	104
Rated torque @ rpm.....	360 @ 3600
equivalent mph.....	69.6
Carburetion: Rochester QuadraJet 1x4	
throttle dia., pri./sec.....	1.38/2.25
Valve train: Hydraulic lifters, pushrods and overhead rocker arms.	
cam timing	
dez., int./exh.....	40-88/86-42
duration, int./exh.....	308/308
Exhaust system: Dual with muffler and separate resonator.	
pipe dia., exh./tail.....	2/2
Normal oil press. @ rpm. 30-45 @ 1500	
Electrical supply, V./amp.....	12/37
Battery, plates/amp. hr.....	66/61

DRIVE TRAIN

Transmission type: Three-speed torque converter, 350 Turbo-Hydro.	
Gear ratio 3rd (1.0:1) overall.....	3.91:1
2nd (1.52:1).....	5.94:1
1st (2.52:1).....	9.85:1
1st x t. c. stall (5.54:1).....	21.65:1
Shift lever location: Steering column.	
D:fferential type: Hypoid with limited slip.	
axle ratio.....	3.91:1



SUDDEN CHANGES of direction were the W-31's meat. Strong suspension allowed the test drivers to put the car through a sharp left, then a sharp right, at high speed, without loss of control. Most family cars, and some Supercars, won't do it.

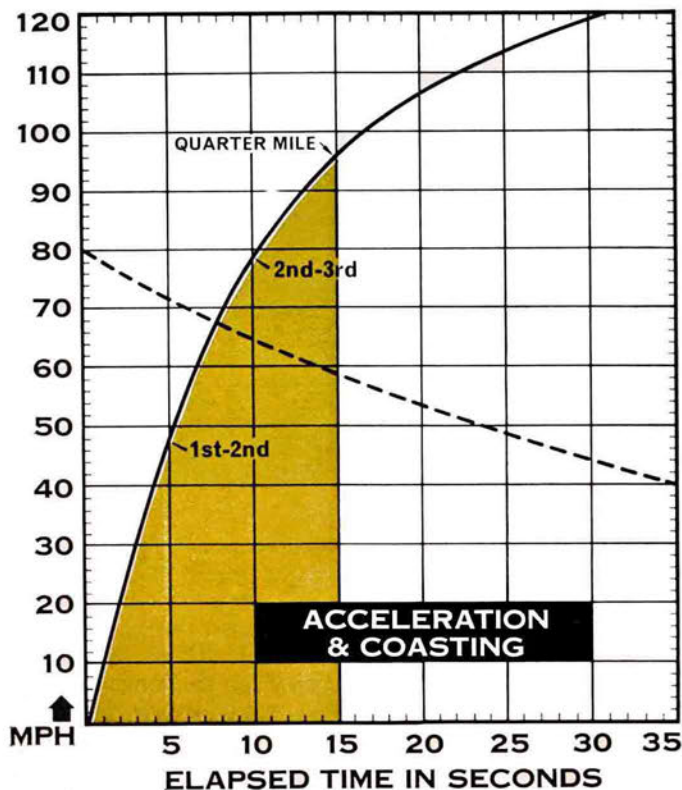
do it. At the same speed, the family cars won't. They might make the first half, but the sudden transition from sharp left to sharp right would be more than the driver could handle, and the car would be all over the race course parking lot, going several directions at once.

The handling isn't perfect. At high speed, weight shifts too quickly for the rear bar to have any effect. The rear bar lessens understeer. It can't, and doesn't, help front-end adhesion. The steering has road feel, but at four turns lock-to-lock, it's slow. If the driver doesn't move fast, he stands a

good chance of becoming a passenger.

Interior of the test W-31 was production Cutlass, equivalent to Deluxe in the low-price field. Bench seats, front and rear, covered with cloth. Possibly because of the material, the seats felt softer than the vinyl seats in the family cars. Drivers sink into

CAR LIFE ROAD TEST



CALCULATED DATA

Lb./bhp (test weight)	12.1
Cu. ft./ton mile	160.0
Mph/1000 rpm (high gear)	19.3
Engine revs/mile (60 mph)	3100
Piston travel, ft./mile	2100
CAR LIFE wear index	65.2
Frontal area, sq. ft.	22.37

SPEEDOMETER ERROR

Indicated	Actual
30 mph	30.6
40 mph	40.2
50 mph	50.0
60 mph	59.6
70 mph	69.0
80 mph	78.5
90 mph	88.0

MAINTENANCE

Engine oil, miles/days	6000/120
oil filter, miles/days	12,000/240
Chassis lubrication, miles	12,000
Antismog servicing, type/miles	engine tuneup and replace PCV valve/12,000
Air cleaner, m.les.	replace/24,000
Spark plugs: AC-44S	
gap, (in.)	0.030
Basic timing, deg./rpm. 12 BTDC/1000	
max. cent. adv., deg./rpm. 24/4000	
max. vac. adv., deg./in. Hg. 21.5/23	
Ignition point gap, in.	0.016
cam dwell angle, deg.	29-31
arm tension, oz.	19-32
Tappet clearance, int./exh.	0/0
Fuel pressure at idle, psi.	6
Radiator cap relief press., psi	15

PERFORMANCE

Top speed (6600), mph	128
Test shift points (rpm) @ mph	
2nd to 3rd (6200)	79.0
1st to 2nd (6200)	47.3

ACCELERATION

0-30 mph, sec.	3.0
0-40 mph	4.1
0-50 mph	5.2
0-60 mph	6.6
0-70 mph	8.1
0-80 mph	10.2
0-90 mph	12.8
0-100 mph	16.5
Standing 1/4-mile, sec.	14.9
speed at end, mph	96.0
Passing, 30-70 mph, sec.	5.1

BRAKING

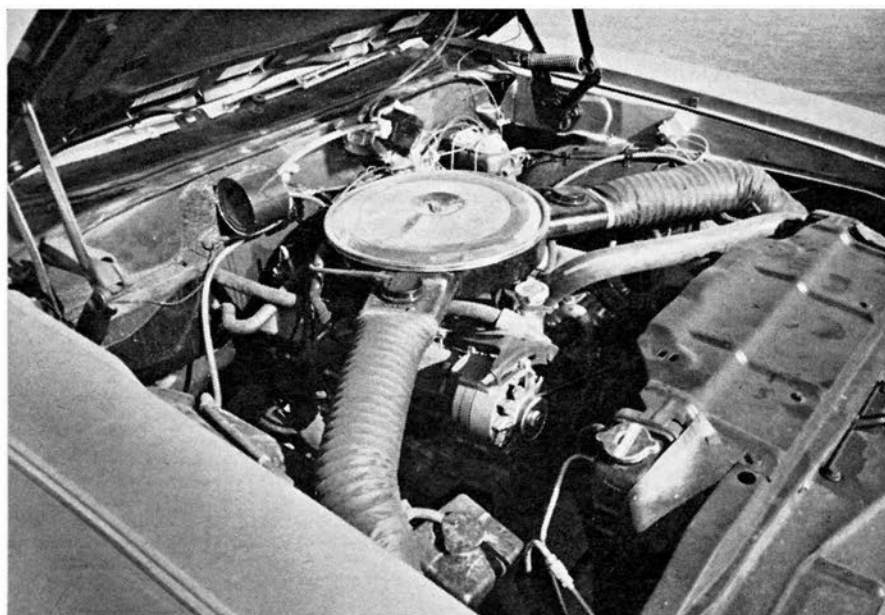
Max. deceleration rate from 80 mph ft./sec./sec.	30
No. of stops from 80 mph (60-sec. intervals) before 20% loss in deceleration rate	8-no loss
Control loss? Moderate.	
Overall brake performance	very good

FUEL CONSUMPTION

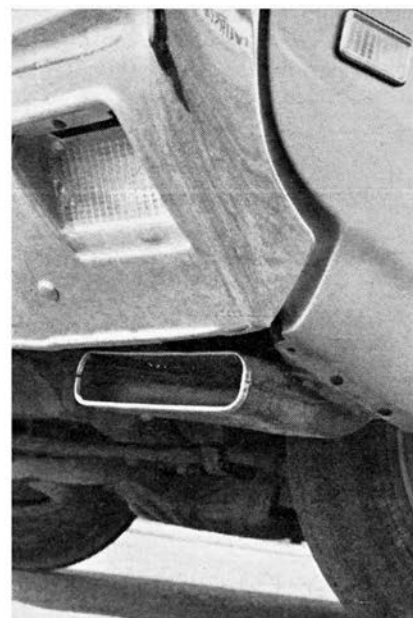
Test conditions, mpg	8.2
Normal cond., mpg	10-13
Cruising range, miles	200-260



RAKED ROOFLINE put the rear window as close to the rear-seat passenger as it could be. As a personal judgement, the testers didn't feel that the optional (and expensive) vinyl roof covering blended with or improved the lines of the body.



COLD-AIR package is W-31's main distinction. Valves between air cleaner and ducts block cold air until engine is warmed, to control exhaust emissions.



SCOOPS are in a good place to pick up air, and get flattened by curbs.

OLDS W-31

continued

them, for added comfort, and support during hard cornering. Interior body dimensions are identical to the other A-body cars from GM. The family that fits in one will fit in the others.

Our only inside gripe with the W-31 was the optional tachometer. The factory mounts it in a bucket to the right of the speedometer. The test car had the optional tilting steering wheel, which we like. With the wheel low-

ered to suit the testers, the wheel rim blocked the view of the tach. A tachometer from the aftermarket, mounted where it can be seen, would be our way out.

Dr. Oldsmobile may be a person. Consider: Somebody has taken a heavy car, with a mid-range engine, and made it perform with Supercars. Handling is improved, with no sacrifice in ride. Price is competitive with the Sal-

vation-Army-interior budget Supercars, while the plush lining of the standard Cutlass remains.

At the same time, while avoiding the big engine and its excess weight, somebody managed to give the small engine W-31 more of a weight imbalance than we found in last year's big-engine 4-4-2.

No committee ever built a car like that. ■