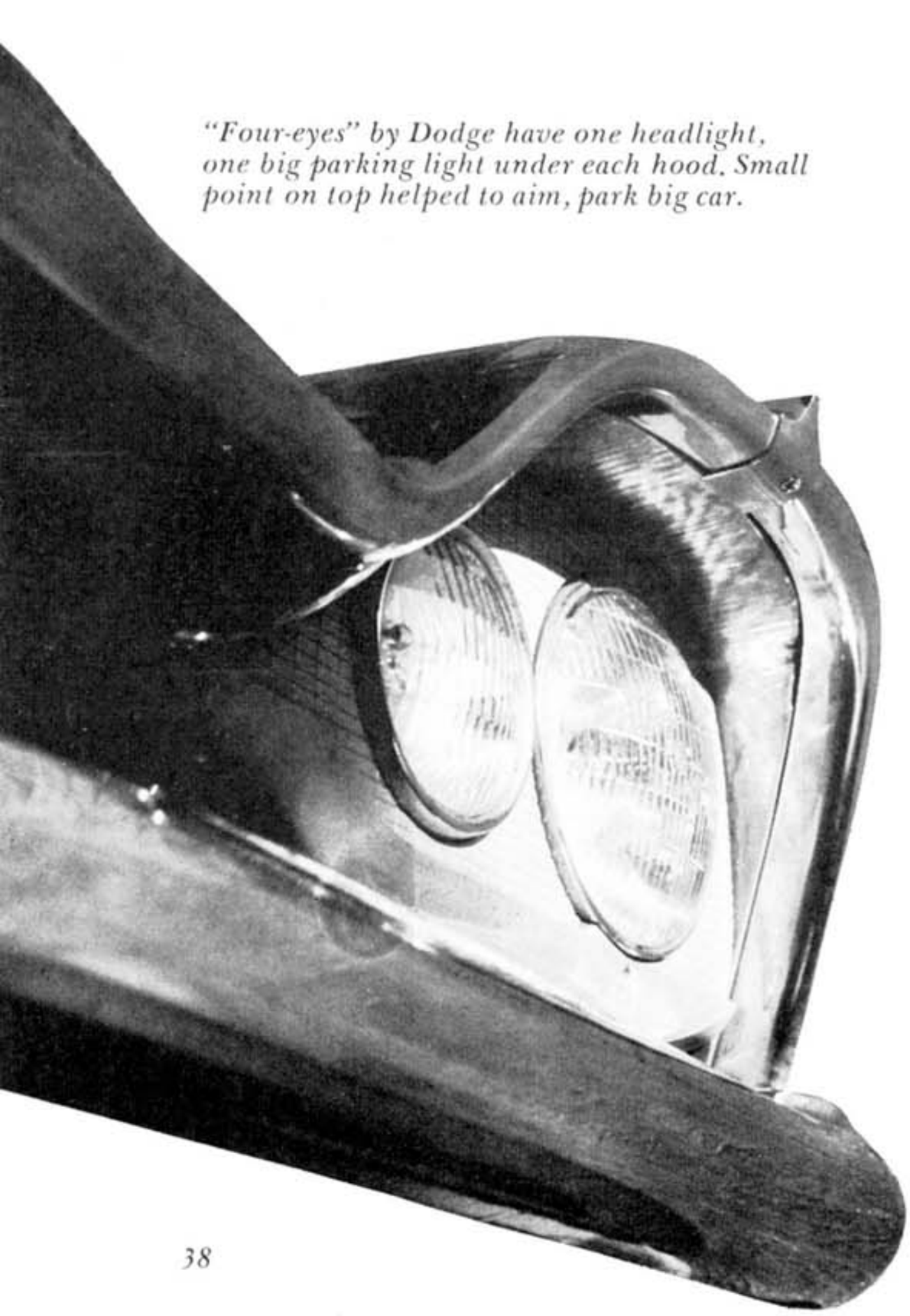
As D500 is braked heavily and cut hard into slow right-hander, left front bumper still stays clear of ground. Road stability was of very high order for two-ton car, and fins gained credit for straight running in crosswinds.

SCI

ROAD TEST: THE DODGE



"Four-eyes" by Dodge have one headlight, one big parking light under each hood. Small point on top helped to aim, park big car.

IN case any of you fell into a coma sometime around '49, when the Great American Car was likened equally to juke boxes and the Queen Mary, gather 'round, and we will bring you up to date. At a feeble glance you can tell that more than a few changes have taken place in Chrysler products—the styling alone shows that. Exner and his crew used the rawest, boldest possible shapes to connote motion. It's far from subtle, but it works, and that's what counts in this business. Dodge is one of the most commercial in the line, with its bluntly aggressive front end and jagged tail light silhouette, and whether you approve or not you have to admit that it *looks* fast. Fortunately the D500 has the muscle to back this up.

Under the extroverted shell of these machines (Chrysler chasses being virtually identical through all five lines) there's a very nice job of engineering. We feel, in fact, that this is probably the most advanced and best all-around conventional chassis in the world today. In other words, you can't go much farther without resorting to air springs, independent rear suspension, etc. We don't, of course, mean that the D500 will corner with a Healey on an absolute basis, but we do mean that this geometry does an astonishing job of handling a 4000 pound car.

Parallel wishbones are still used at the front end, but instead of varying greatly in length they're now nearly equal. This alone gives much better control of traction in roll, as well as a higher roll center. The pressed upper arm is angled to give an anti-dive reaction on braking, while the lower arm is actually a pressed lever stabilized by a brace forward. A longitudinal torsion bar is driven by each lever. Torsion bars were used mainly to allow more compact linkage so the engine, and then the whole car, could be lowered, but they now allow a ready means of altering weight distribution. Hint to Plymouth owners: Use Dodge bars; they're heavier.

In SCI's fastest test bend, D500's speed and controllability compared favorably with general run of production sports cars. Leaning only moderately at 75 mph, front wheel outward camber is not excessive.

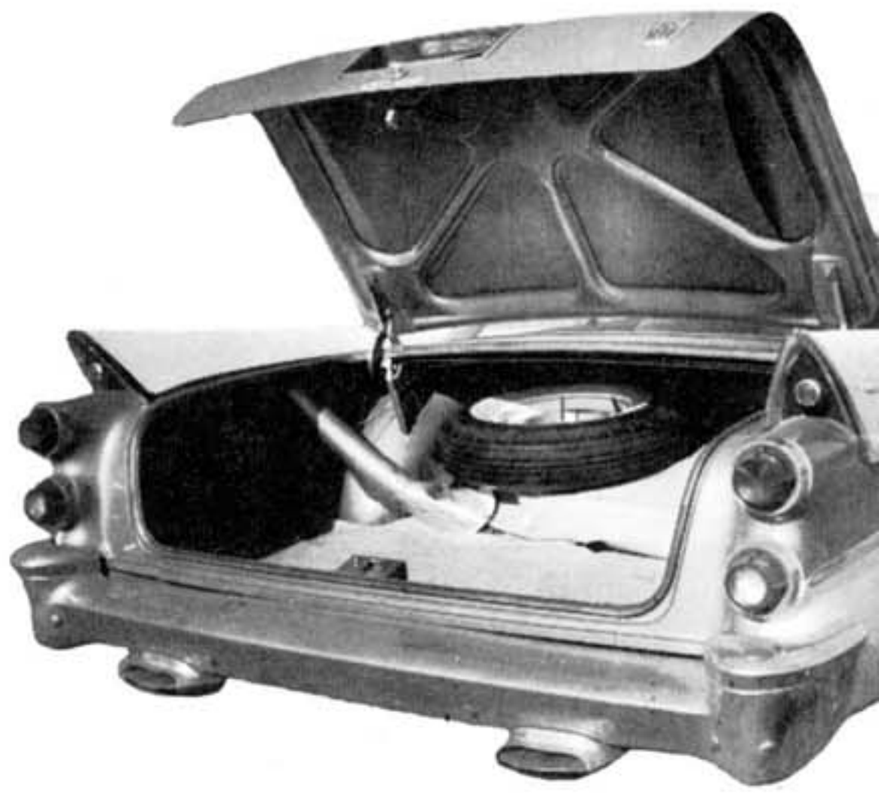
D500

These changes plus ball joints have cut the number of grease fittings from 23 to 8, but the rubber bushes for the bottom-arm brace should also be specially silicone-lubed at infrequent intervals. The rear leaf springs are outboard-mounted, and are so proportioned that the bulk of the leaves are in the short section between the axle mount and the front spring eye. This is only about 1/3 the total spring length, and acts very effectively as an axle locator during acceleration and braking. The back 2/3 is quite slim and does most of the actual springing.

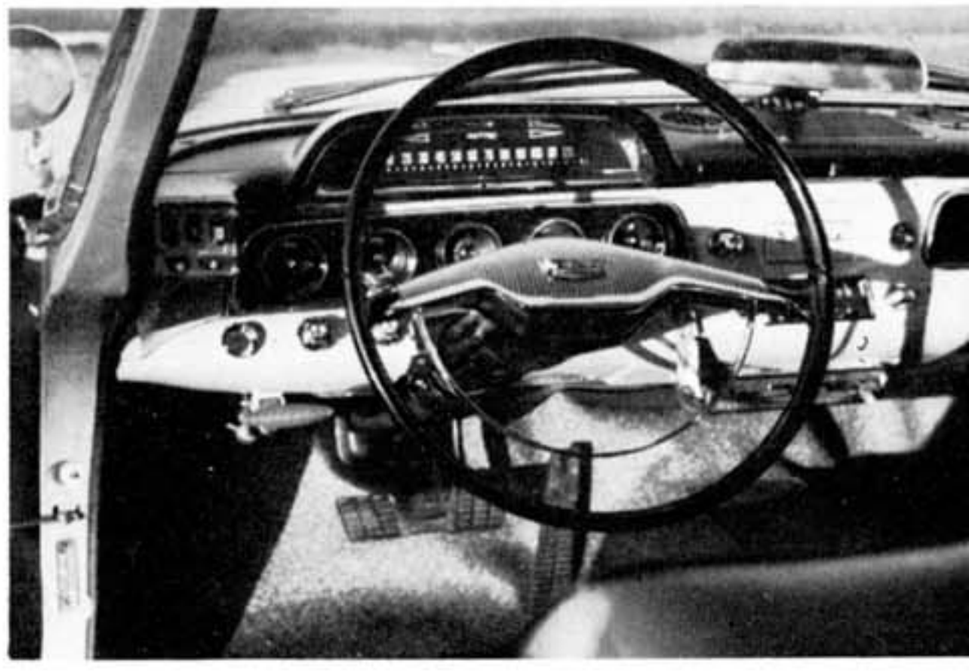
This is just a rough rundown, but it shows some of the technical reasons why the D500 attracted us before we took the wheel. We'd heard a lot about it from those who had already driven '57 Chrysler products, and it transpired that the D500, in contrast to last year, uses perfectly stock Dodge running gear, and in fact is an engine power option available in any model for a mere $113.65. Not bad for the genuine twin-rocker-shaft hemispherical heads and a single Carter four-barrel, giving 285 horses. We were able to obtain this package in the most compact Dodge model, the Coronet Lancer hardtop, equipped with the new "TorqueFlite" automatic three-speed box. Thanks are due here to Izzy Shochat, at Mann Auto Sales in Rockaway Park, N.Y., and to Morty Nadler, their service manager, who did a top job of preparing our test car.

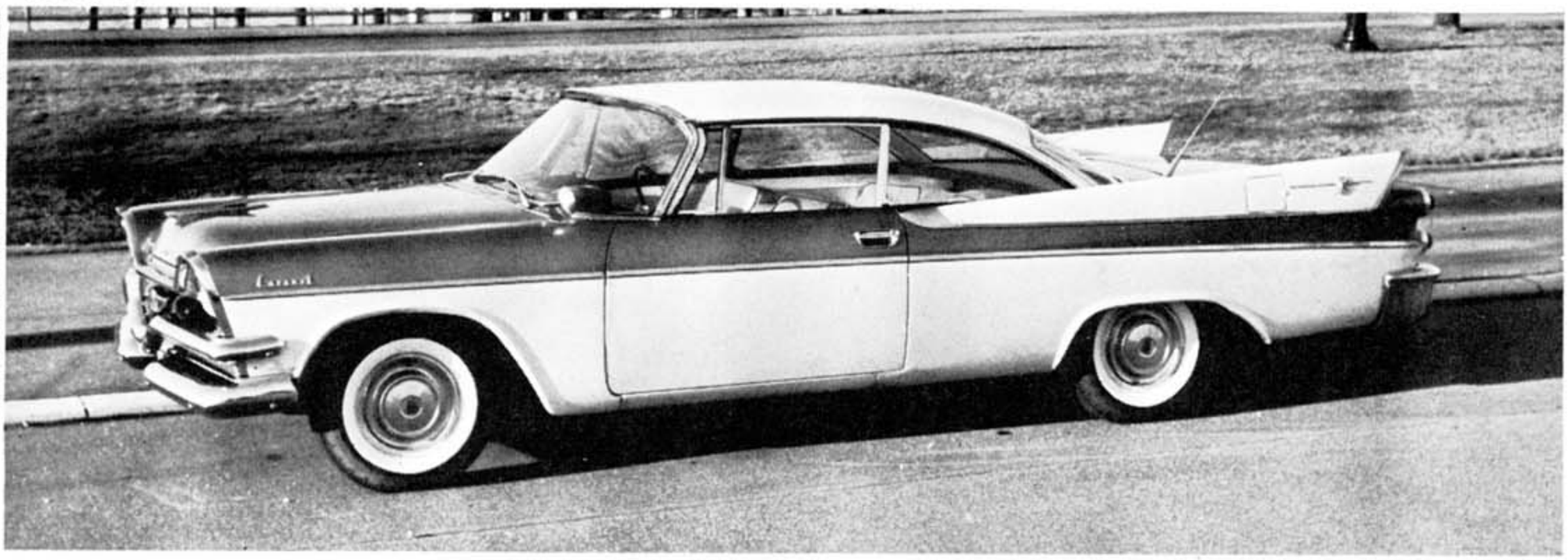
But enough talk. Frankly, we got quite a few kicks from tooling this carriage around, and here are the reasons why —plus a few sore spots.

Our test machine had power brakes and power steering, and to get the most out of such a car you just have to forget your prejudices and adapt to a new driving situation. Power steering, particularly on Chrysler products, is very much a mixed blessing. On the one hand, control is utterly effortless at all times, and devoid of road shock, with a very moderate caster action. Hydraulic assist allows a good



AT RIGHT: Trunk was incredibly huge, lid well counterbalanced. When tightened, spare holds jack, tools, wheel check securely. BELOW: Finished in white, flat black, dash was readable, neat. Controls logical, well placed.





Most massive-looking of 1957 Chrysler line, Dodge is keyed to high medium-price sales. Window area great, top light-looking, very low. Wide door allows easy entry, however, and rear wheels aren't hidden by pants.

steering ratio, for American iron, giving 3¾ turns between locks. You can actually get around fairly tight bends without taking your hands off the wheel.

On the other hand, there are a couple of inches of play at the center position, and there is absolutely no "feel" to tell you how heavily those front tires are being loaded. Some drivers also complain that power steering allows the car to wander more on a straight, but this is usually pilot error and can be eliminated by using a light touch on the wheel. We tend to feel that the very lightness of the steering is a big help in cornering a car of this size, and we question the assumed fact that any standard American steering actually tells you any more about front wheel conditions. Even with this fairly good ratio, initial steering movements and subsequent corrections are made by taking pretty healthy cuts at the wheel: there are few fine points in practice. Power steering just makes this easier to do.

In judging how big a cut to take, though, you must depend entirely on information received through the windshield and through the seat of the pants. Most driving is actually done this way anyway, so we didn't find it a serious handicap. The Dodge seating position is very good, the seat back being at a nice angle and the smallish wheel placed well forward. Seats themselves are on the firm side, and though they look divided, the smooth material and lack of shaping allow you to slide around on turns. Belts, as usual, would have been a big help. Without them, the seat-of-pants indications are good but not forceful.

The same isn't the case with vision, since the broad and high windshield gives a virtually unobstructed forward view. There was some distortion in the sharp wrap-around sections, which don't come back so far as to knock your knees when getting in. Hard-top design has removed all other blind spots, though cutting down the pillar sizes hasn't boosted the strength of the roof structure. Contrary to popular belief, the fins are no major handicap to rearward vision, though at a quick glance they can fool you into thinking that some maniac in another car is about to nerf you into the bushes.

During the top speed runs, by the way, we had one of the heaviest crosswinds ever to occur on the test stretch, and the D500 trundled on as if in a vacuum. We do give the fins some credit, since they actually should shift the center of wind pressure rearward nearer the car's center of gravity.

You can see where you're going, and you can feel most of the car under you, and around fast bends it feels surprisingly four-square and stable. Weight is shifted toward the nose, but not to excess, with the happy result that there's a marked degree of understeer without the total loss of responsiveness that sometimes accompanies this. When the wheel's turned the front tires take a good bite, and the Dodge bends around very neatly. Relative front/rear spring stiffness and roll resistances are such that the rear end is extremely difficult to break loose, in sharp contrast to most American iron. In fact the only way we could break traction was to stab it hard in the middle of a tight right angle. Then it went, but fast. Steering speed and lightness allowed control to be kept. We understand that if those rear tires come loose at higher speeds, there's little chance to get the Dodge back in line again, but our car showed absolutely no desire to do so, and we sure tried to force the issue. Tire pressures used, by the way, were 36 pounds front and 32 rear.

In brief, the new Chrysler chassis layout is designed to cope with the bulk of the modern American car under faster-than-normal cornering conditions, and it does an eye-opening job of it. The Dodge is just too darn big to feel good on tight right angles, but even there neither end wants to wash out and you can keep control. It rolls, taking

(Continued on page 62)

AT LEFT: Belting through hard left, D500's tail stuck well but could be broken by stab at loud pedal. Power steering helped make rapid corrections. AT RIGHT: Door handle is innovation, must be pulled up and out. Move is natural, if no packages are carried.

1957 DODGE CORONET D500

TEST CONDITIONS:

Number aboard ..... Two, 355 lbs. with equipment
Temperature ..... 30° F, Wind 10-15 mph, dry concrete at sea level, 954 miles on car

PERFORMANCE

TOP SPEED:

Two-way average ..... 109.2 mph
Fastest one-way run ..... 112.5 mph

ACCELERATION:

From zero to
30 mph 2.9
40 mph 4.8
50 mph 6.5
60 mph 8.5
70 mph 11.0
80 mph 15.3
90 mph 20.6
100 mph 28.3
Standing ¼ mile 16.6
Speed at end of quarter ..... 83 mph

SPEED RANGES IN GEARS:

I ..... 0 to 39 mph
II ..... 0 to 72 mph
III ..... 0 to top

SPEEDOMETER CORRECTION:

Indicated	Actual
30	29
40	39
50	48
60	57
70	67
80	76
90	86
100	95

FUEL CONSUMPTION:

Hard driving ..... 11.6 mpg
Average driving (under 60 mph) . 16.7 mpg

BRAKING EFFICIENCY:

(10 successive emergency stops from 60 mph, just short of locking wheels)

1st stop 58
2nd stop 50
3rd stop 50
4th stop 47
5th stop 53
6th stop 45
7th stop 45
8th stop 45
9th stop 44
10th stop 43

SPECIFICATIONS

POWER UNIT:

Type V-8
Valve arrangement ..... Overhead inclined, pushrods
Bore & Stroke (Engl. & Met.) .. 3.69 x 3.80 ins. (93.5 x 96.5 mm)
Stroke/Bore Ratio 1.03/1
Displacement (Engl. & Met.) ... 325 cu. ins. (5320 cc)
Compression Ratio 9.25/1
Carburetion by ..... 4-barrel Carter
Max. bhp @ rpm ..... 285 @ 4800
Max. torque, lb.-ft. @ rpm .... 345 @ 2800
Idle Speed ..... 525 rpm

DRIVE TRAIN:

Transmission ratios
Rev 2.20
I 2.45
II 1.45
III 1.00
Torque converter @ stall ..... 2.70 @ 1870 rpm
Final drive ratio (test car) 3.36
Other available final drive ratio . 3.54, 3.73, 3.91
Axle torque taken by ..... Front sections of rear leaf springs

CHASSIS:

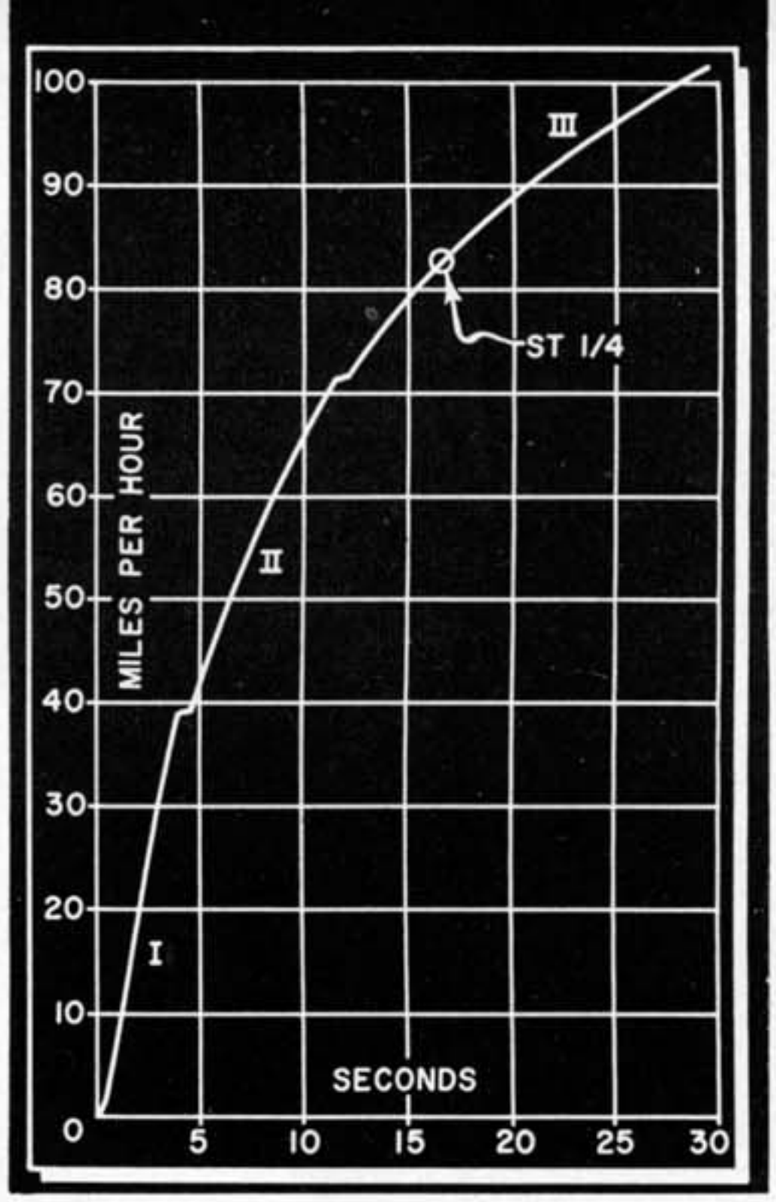
Wheelbase ..... 122 ins.
Front Tread ..... 60.9 ins.
Rear Tread ..... 59.7 ins.
Suspension, front ..... Parallel wishbones, torsion bars
Suspension, rear ..... Semi-elliptic leaf springs
Shock absorbers ..... Oriflow tubular
Steering type ..... Coaxial power
Steering wheel turns L to L ... 3¾
Turning diameter ..... 43 ft.
Brake type ..... 11 in. center-plane, vacuum servo
Brake lining area ..... 207 sq. ins.
Wheel studs, circle diam. ..... 4½ ins.
Tire size ..... 7.50 x 14
Rim width 5K

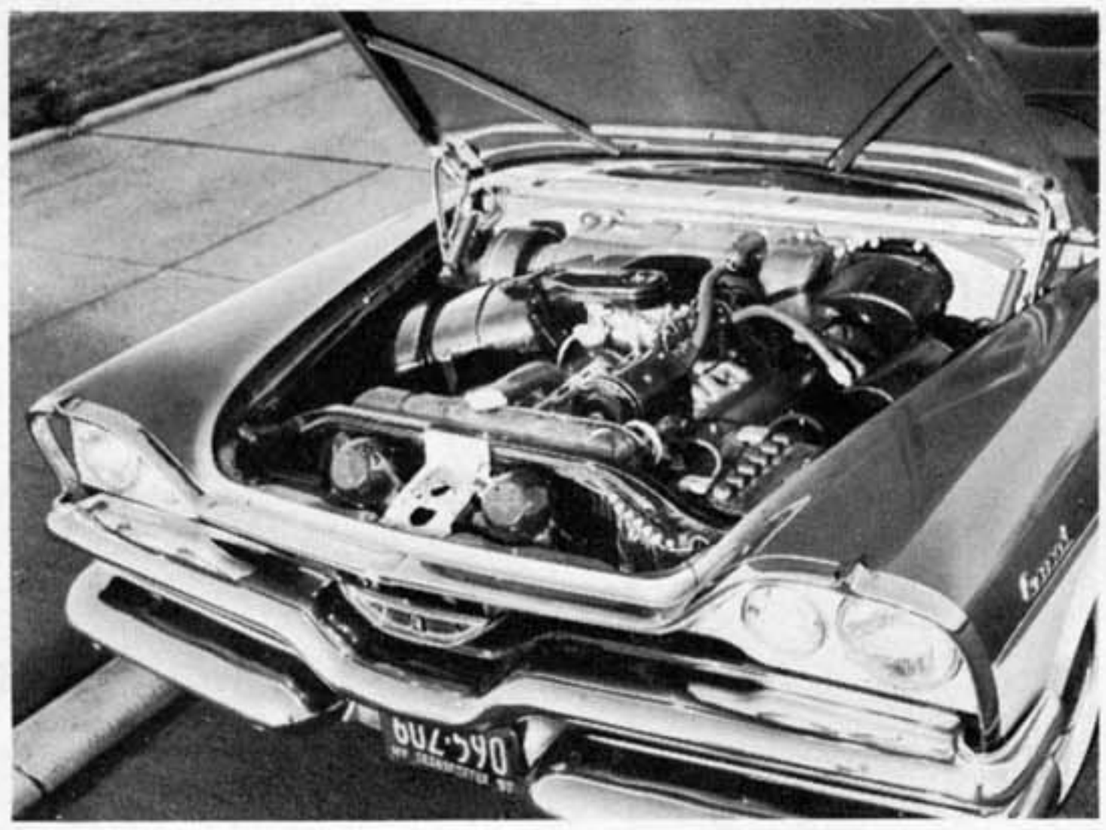
GENERAL:

Length ..... 212.2 ins.
Width ..... 77.9 ins.
Height ..... 54.1 ins.
Weight, test car ..... 3920 lbs.
Weight distribution, F/R 59.2/40.8
Weight distribution, F/R, with driver 58/42
Fuel capacity—U.S. gallons 20

RATING FACTORS:

Bhp per cu. in. 0.877
Bhp per sq. in. piston area 3.33
Torque (lb.-ft.) per cu. in. 1.06
Pounds per bhp—test car 13.7
Piston speed @ 60 mph ..... 1480 fpm
Piston speed @ max bhp ..... 3040 fpm
Brake lining area per ton (test car) ..... 106 sq. ins.





Counterbalanced hood opens wide, reveals fully-packed engine room. Heater and blower bulkhead-mounted in fiber case, left of bellows for brake servo.

Like many '57's, Dodge uses paper air cleaner for easy service and low hood. Element is blown out at 6000 miles and thrown away at 12,000. Other access good.

continued from preceding page

and cable reinforcement for strength. Average belt life is said to be over 30,000 miles, and horsepower capacity (without excessive slip) seems to be good (Belts can be a problem with the McCulloch).

APPLIED ENGINEERING

The story wouldn't be complete without a word or two about Mr. Latham's clever solution to the complex problem of building a practical axial-flow compressor, with its hundreds of parts, in quantity at a reasonable cost. Until he came along nobody thought it could be done. As it is, even if his supercharger venture should go sour, his patents might very well put him in a comfortable position when the mass-produced automotive gas turbine arrives on the scene! His compressor is an extremely clever design.

For one thing, all the blades, both rotor and stator — 363 of them — are of one style, stamped out of sheet metal like so much popcorn. The method of *retaining* the blades, always a tough problem with turbine engineers, is the meat of the design. The blades fit down into curved milled slots on the inner or outer edge of a ring, depending on whether it's the rotor or stator. The slots are curved to correspond with the blade curvature. The side edges of the blades and ring are then milled off part way through the ring, leaving a substantial lip on both ring and blade at the base section of the ring. Then these blade rings are assembled with a series of spacer rings having corresponding lips milled on them that overlap the lips on the blades and blade rings, and securely *lock the blades in place*. Rubber gaskets between rings seal the assembly. The whole is tied together by four long tie bolts. The same general layout is used for both rotor and stator sections but the stators have the blades pointing inward from external rings, while the rotors have blades pointing outwards, rotating between the rows of stator blades. There are castings at both ends with annular (circular) chambers to handle the inlet and outlet air flow. All parts except the blades and bearings—including the tie bolts—are constructed of aircraft duralumin alloy to control weight. This has been held to 31 pounds, very close to the McCulloch's 24.

And, finally, I can assure you that Mr. Latham is not marking time on the development of this rig. He's working constantly to improve the basic unit as well as to ready additional kits for new car models. A long-time bug of his has been to cut the pressure losses between the outlet volute chamber at the end of the rotor section, and the intake manifold. Our tests at 5000 rpm showed 10.4 lbs. pressure in the volute and *6.3* in the manifold! This four pound loss of pressure is due to the rather restricted air passage area between volute and manifold adaptor.

And, foreign car fans, don't give up hope. Latham is working on kits for some of the more popular foreign sports cars of two liters and over—like Jaguar, Triumph, Austin-Healey, etc.

—Roger Huntington

D-500 R.T.

(Continued from page 11)

the same initial cant on both fast and slow corners. Once set, response to the wheel is very consistent.

As could be expected, the new running gear is good in the ride department too. Small ripples and bumps do get through, but in a way that gives useful information about road conditions. Pitching over bigger dips is at a minimum, though shock absorbing could be stronger, particularly at the front end.

Also new, as mentioned, is the brake anti-dive feature, which really works. Tromping down on the wide, low-set pedal drops the nose only enough to give good traction. The brakes themselves, though, are another story. Last year's D500 had 12-inch Chrysler brakes, which were just adequate for that car. The '57 version is an even hotter performer all the way up the line, yet, thanks to the smaller wheels, is back to 11-inch drums with a punishing vacuum boost rig. They just can't do the job.

Before the engine system is warmed up, the vacuum bellows itself tends to be balky, and even later it's not on the job right away. The low pedal helps, being an easy toe swing from the accelerator. The first test stop was reasonably good, but after that the readings fell off fast as the vacuum assist belabored the linings and then gave up the ghost itself. Stops, such as they were, were all smooth and straight, though there was a tendency for one rear wheel to lock. Recovery, also, took quite some time.

We haven't yet educated our left foot to take care of braking, so it just flopped around in the ample floorboard space. With so much room, it's odd that the dimmer switch should be so close to the left hand wall that it can't be hit quickly. Footroom in front is very good for two people, but a third passenger has his feet high on a big gearbox tunnel, which is also crowded on the top by the heater control unit. The back seat is even tighter, with much less legroom, and is a bore to get into. Headroom is remarkably good, though, for such a low roof line, and we actually had a six foot, four incher in the front seat with no trouble (no hat either).

In a day when knobs and instruments are regarded only as elements in a dashboard pattern, we think Dodge deserves credit for using a little good sense. Very near the driver's line of sight is the horizontal bar-type speedometer, which appears as a red line growing from the left. This is produced by red-painted areas on a drum which turns around a horizontal axis, like the first such Buick speedo, but in contrast it grows in five-mile increments instead of steadily, making accurate reading very tough. For relative readings, though, it's right where you want it.

The next level down holds four engine indication dials (no warning lights), and a clock, if desired. Below these are all the control switches; to avoid confusion they look as if they should be turned, and they

should. To the left of the column are all the light controls, those on the right being for the heater. If you haven't already heard, the heating and defrosting system is one of the best available, with windshield cleaning nozzles that direct hot air right at the vision areas.

Just a quick motion away from the left hand are the five control buttons for Dodge's new Torque-Flite gearbox, which is basically a simple three element torque convertor plus two planetary gear sets to give three forward speeds and one reverse. Chrysler has picked this route, instead of complicating the torque converter itself to get additional torque multiplication. The button panel provides a control for each gear, plus reverse and neutral, and as an excellent safety feature the engine is started by pressing the latter button in all the way.

The big Red Ram mill fired up quickly, both cold and warm, and was set to idle at 525 rpm. This was high enough for fairly smooth running, but it did cause creep when stopped, and under these circumstances there was some vibration. Otherwise the V-8 was dead smooth and silent at all speeds and loads, at least from inside the car. When taking action photos we realized that the twin pipes really talk when backing off at high revs, though not enough to arouse the law.

This is a well-balanced engine—not so big that it won't rev, and not so small that it lacks torque. As a result it delivers plenty of usable horsepower all the way up the line, in spite of power accessory drives. Throttle response is good, but thanks in part to the Dodge's high cornering power the carb will cut the engine out on prolonged turns.

All the whirling oil under the floor was no deterrent to good times, we found, due to its very good control system. The throttle position alone can select shift points all the way from crawling speeds to 75, and you can't do much better by "holding" with the buttons. Pressing "1" will hold it in first as long as you like, but over 40 it doesn't help much, and the upshift is slower. Button "2" keeps it in the very useful second range, around town or on twisty roads, but it will force-shift into high at 72 mph. Conversely, if you leave it in "2" it'll downshift automatically when you drop down to about 70 again—very professional! In "D" as usual the Brain selects the shift points, and a downshift is available when needed to either second or first, depending on speed. On the whole this is a very versatile, smoothly running unit, which responds instantly to button selection.

The engine is hot (though somewhat undercarbureted at the top end), the transmission is very good for its type, and the rear suspension is one of the best we have here. Put together, these items haul the D500 off the mark in one very big hurry. Acceleration times are better than last year's version throughout the range, and particularly at the bottom end, thanks to the new low gear. This machine has a real hurtling feel as it unwinds up and up, and the boost stays there until well into the eighties. After 90 it levels off

(Continued on page 64)

Colin Chapman

(Continued from page 51)

thing. "If Colin were ever to build a mousetrap," said one driver, "I'd certainly hate to be a mouse!"

This utter devotion that Chapman can inspire is a vital part of his organization. Many of his most valued co-workers are people whose main jobs are on somebody else's payroll. The aerodynamic body for the Mark VIII, for example, was subjected to exhaustive tests, including wind-tunnel routines, and special rigs using the facilities of an internationally famous aircraft firm. Unfortunately the firm can't be named, for this information would come as a surprise to them. Chapman just happened to have a friend on the staff. When Chapman noticed that the Coventry Climax engine used in a fire pump would make an ideal lightweight power plant for a sports car, it required a lot of fast talkink to get the company to bother making the necessary modifications on such a small number of engines as he could order. In the course of his campaign he completely won over Wally Hassan and Harry Munday, designers of the Fire Pump. Now Munday is his principal consultant on engines.

No matter how many volunteer helpers and well-wishers Chapman has, practically nothing about his future plans ever leaks out—for the simple reason that Chapman is a fanatic about keeping technical information under his hat. The Jelly Joint on the Mark II was hidden from view by a special aluminum plate, and he never loosened or tightened the bolts when there was a chance anyone could see. It took the 750 Club an entire season—during which Chapman cleaned up on trophies—before they wised up to the de-siamesed inlet ports on his Mark III. Coming more up-to-date, the first anybody at Lotus Cars Ltd. knew about the projected F2 was when the welders delivered a new frame one morning. Of course they had an idea that there was something new cooking: Chapman hadn't been putting in as much time as usual at the plant. This means del velopments, for he does designing at home.

When he departs from his usual secrecy, he always has a good reason. Associates were shocked, not long ago, when Chapman shipped two Mark VI kits to Maserati —for cash. "Next year Maserati will be producing Lotuses," they forecast.

"Nonsense," said Chapman. "First of all, they'll put Maserati engines in the Mark VI frames, and the frames will break. Our engines weigh 200 pounds; the Maseratis close to 400. So they'll stiffen frames in the conventional way, and they'll be useless."

This is pretty much what happened. Chapman ended up with the profit on two kits, and Maserati ended up not much wiser than they were before. Until, that is, the following season, when Lotuses began appearing powered by engines of essentially the same rating as the Maseratis, but weighing only the same 200 pounds the frame had been designed to take. Maserati had just tackled the wrong end of the problem; instead of stiffening the frame, they should have lightened the engine. Or, as they say in Kentucky: "Don't raise the levee, just lower the river!"

Chapman the driver is a good deal like Toscanini the singer: adequate but bloodcurdling. Nobody is very surprised that he's prematurely grey, for the concensus is that if he had any nerves at all he'd frighten himself into general paralysis every time he came up to the starting line. Described as a "press on regardless' driver, it is a rare event for him to lift his foot during a race. Only his highly developed mechanical sympathy keeps him from blowing up engines right and left, and only a benign providence keeps him safe and sound to collect the winner's garland. As an engineer he maintains that any driver who spins off ought to be shot. As a driver he is constantly spinning off. But he hasn't shot himself yet.

His friends explain this very simply: there's no *money* in shooting yourself!

—Merwin Dembling

D-500 R.T.

continued from preceding page

slightly, to a moderate but easily-reached top speed.

Only a moderately clumsy foot is needed to break traction on the line, even with two aboard and plenty of gas in the tank, but rubber-burning is clean and controllable. There's none of the wild thrashing experienced with less clever Hotchkiss drives. Out in the clear, the D500 will loaf along at 80 or 90, and it just yearns to be urged up there. When doing so, though, we thought twice, since the brakes just aren't up to it.

Factory base price of the Coronet Lancer Hardtop is $2679, FOB Detroit. The D500 engine brings this up, as mentioned, and Torque-Flite adds $220.05. With the accessory packages on this car, plus power steering and brakes, the total came to $3367.29 list. We felt that the trim and finish were very good for cars of this class, and found the usual number of creaks and rattles that are standard equipment with convertibles or hardtops. You get a very good buy for your money in the number and size of the parts used, and in the D500, the very original engineering used in their design,

This special Dodge is suspended and powered, but not braked, for fast driving on US highways, and would be a fine fast touring car for a couple and their kids. Performance is excellent, as we expected, and handling is very good, as we had hoped. Try one, if only to bring yourself up to date. We'd hate to be in one of several foreign sedans with a D500 on our tail.

—Karl Ludvigsen