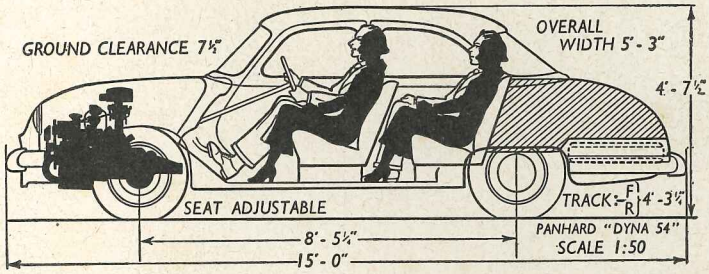
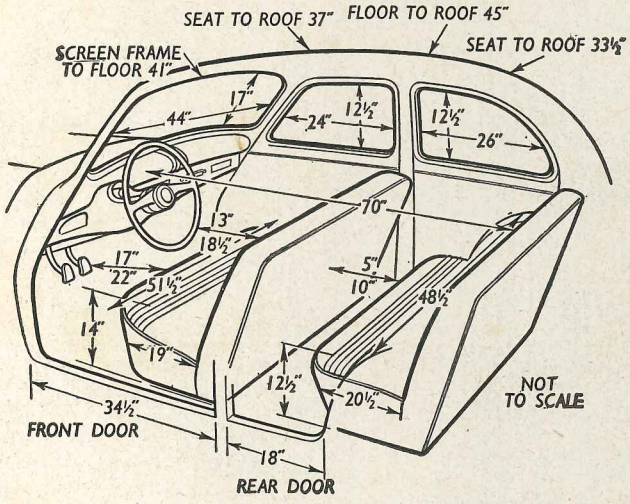
The Motor Road Test No. 5/54 (Continental)

Make: Panhard **Type:** Dyna 54

Makers: S. A. Panhard & Levassor, 19 Avenue d'Ivry, Paris, France





Test Data

CONDITIONS: *Weather: Very cold, light wind. Surface: Dry concrete (Montlhery track) and smooth tar macadam. Fuel: French premium grade.*

INSTRUMENTS

Speedometer at 30 m.p.h.	10% fast
Speedometer at 60 m.p.h.	6% fast
Distance Recorder	Accurate

MAXIMUM SPEEDS

Flying lap of Montlhéry track	75.7 m.p.h.

Speed in Gears

Max. speed in 3rd gear	67 m.p.h.
Max. speed in 2nd gear	46 m.p.h.

FUEL CONSUMPTION

55.0 m.p.g. at constant 20 m.p.h.	
52.5 m.p.g. at constant 30 m.p.h.	
49.0 m.p.g. at constant 40 m.p.h.	
45.5 m.p.g. at constant 50 m.p.h.	
39.0 m.p.g. at constant 60 m.p.h.	
31.5 m.p.g. at constant 70 m.p.h.	

Overall consumption for 89.5 miles, 2.2 gallons, =40.7 m.p.g.
Fuel tank capacity, 8.8 gallons.

ACCELERATION TIMES Through Gears

0-30 m.p.h.	6.9 sec.
0-40 m.p.h.	10.2 sec.
0-50 m.p.h.	17.2 sec.
0-60 m.p.h.	26.8 sec.
0-70 m.p.h.	45.4 sec.
Standing Quarter Mile	23.4 sec.

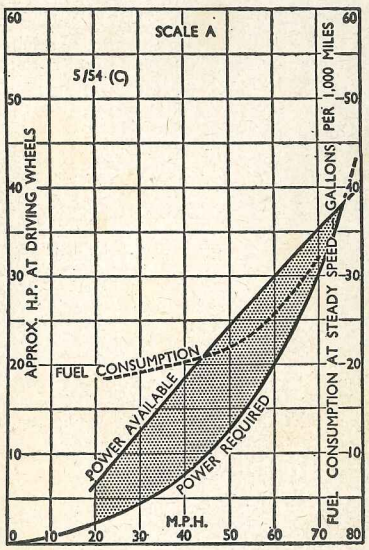
ACCELERATION TIMES on Two Upper Ratios

	Indirect Top	Direct 3rd
20-40 m.p.h.	20.2 sec.	10.9 sec.
30-50 m.p.h.	20.5 sec.	11.6 sec.
40-60 m.p.h.	24.0 sec.	16.5 sec.
50-70 m.p.h.	37.7 sec.	—

(N.B.—Speedometer inoperative at 10 m.p.h).

WEIGHT

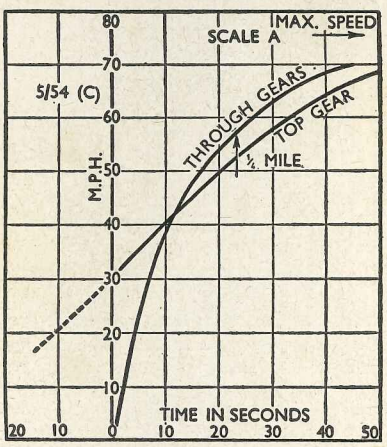
Unladen kerb weight	14 cwt.
Front/rear weight distribution	60/40
Weight laden as tested	17½ cwt.



HILL CLIMBING (At steady speeds)

Max. top gear speed on 1 in 20	35 m.p.h.
Max. gradient on top gear	1 in 19.5 (Tapley 115 lb./ton)
Max. gradient on 3rd. gear	1 in 11.1 (Tapley 200 lb./ton)
Max. gradient on 2nd. gear	1 in 7.0 (Tapley 315 lb./ton)

BRAKES at 30 m.p.h.
0.99 g retardation (= 30½ ft. stopping distance) with 50 lb. pedal pressure.
0.55 g retardation (= 55 ft. stopping distance) with 25 lb. pedal pressure.



Drag at 10 m.p.h.	31 lb.
Drag at 60 m.p.h.	123 lb.

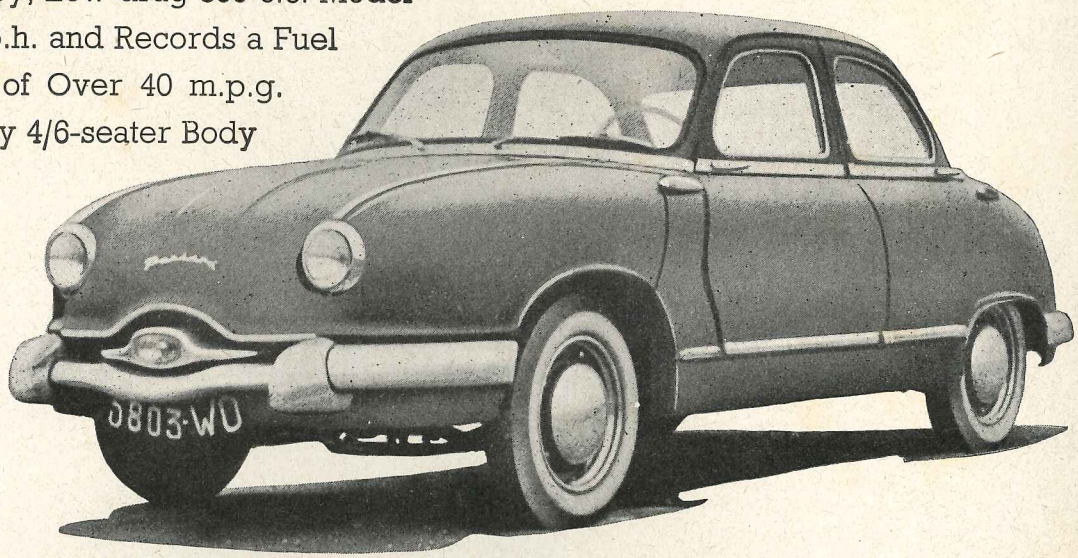
Specific Fuel Consumption when cruising at 80% of maximum speed (i.e., 60.6 m.p.h.) on level road, based on power delivered to front wheels .. 0.62 pints/b.h.p./hr.

Maintenance

Sump: 4½ pints, S.A.E. 50 summer, 40 winter. **Gearbox and differential:** 1½ pints, S.A.E. 90. **Radiator:** None (air cooled). **Chassis lubrication:** By grease gun every 3,000 miles to 20 points. **Spark plug gap:** 0.024 in. **Contact breaker gap:** 0.016 in. **Valve timing:** Inlet opens 13-14° B.T.D.C. and closes 60-70° A.B.D.C.; Exhaust opens 56-57° B.B.D.C. and closes 18-22° A.T.D.C. **Tappet clearances:** (Cold): Inlet 0.004 in., exhaust 0.004 in. **Front wheel toe-out:** 0.138 in. **Camber angle:** Nil. **Castor angle:** 1½°. **Tyre pressures:** Front 18/19 lb., rear 18/19 lb. **Brake fluid:** Lockheed. **Battery:** 12-volts, 45 amp./hr.

The PANHARD Dyna 54

New Light-alloy, Low-drag 850 c.c. Model Attains 75 m.p.h. and Records a Fuel Consumption of Over 40 m.p.g. Despite Roomy 4/6-seater Body



FEW PROJECTIONS break the smooth lines of the body, a single fog-lamp being recessed neatly into the intake slot for engine cooling air.

In Brief

Price, in France: Fr. 760,000 with full equipment. Equivalent at £1 = Fr. 980, £775 10s.	
Capacity	850 c.c.
Unladen kerb weight ...	14 cwt.
Fuel consumption... ...	40.7 m.p.g.
Maximum speed	75.7 m.p.h.
Maximum top gear speed on 1 in 20 gradient ...	35 m.p.h.
Maximum top gear gradient	1 in 19½
Acceleration	
10-30 m.p.h. in top	Not recorded
0-50 m.p.h. through gears	17.2 sec.
Gearing: 15 m.p.h. in top at 1,000 r.p.m.; 76.2 m.p.h. at 2,500 ft. per min. piston speed.	

THE new Dyna 54 model which is just going into quantity production at the old-established factory of Panhard and Levassor in Paris is a very remarkable car. Its design alone warrants that description, but what is of more importance here is the fact that the bold theories of its makers are entirely borne out by its behaviour under test. Performance, fuel economy and passenger accommodation are found in this light-alloy car in a combination which is at present unique.

Even a quick glance at the performance figures and seating diagrams on the opposite page is sufficient to substantiate this statement. In what other four/six-seater car can a maximum speed in excess of 75 m.p.h. be found in conjunction with constant-speed fuel consumption figures ranging from 55 m.p.g. at 20 m.p.h. to 31½ m.p.g. at 70 m.p.h. and a rest-to-50 m.p.h. acceleration time of 17.2 sec.?

That these results are achieved with an engine of only 850 c.c. makes them even more striking, although that automatically brings in a fourth factor—price. Owing to the very nature of its design, this Panhard is not a cheap car to build and must, in fact, be regarded as relatively expensive if grouped with others of substantially under one-litre engine capacity. If, however, price comparisons are made on the basis of accommodation, and the Dyna 54 is compared with other cars offering potential accommodation for six and a large quantity of luggage, then the price factor shows up in a much more favourable light.

Technical descriptions of the models under review form no part of road test reports, but where the car concerned embodies entirely unconventional design features, it is necessary to include a brief outline of the specification. For a full description of the Dyna 54, readers are referred to *The Motor* of June 24, 1953.

The essential feature of the Dyna 54 is, of course, its light-metal construction, aluminium alloy being used almost exclusively throughout.

Basically, the car consists of three units. In the centre is a reinforced sheet-aluminium platform, the fabricated side and cross members of which provide sufficient stiffness for the platform to carry the whole of the useful load. To the front of the central platform is bolted a large-diameter flanged steel tubular cross member, and to this are welded a box-section extension and a pair of steel tubes which, between them, carry the whole of the engine, front suspension and transmission unit. Attachment of this unit to the central platform is by means of six bolts only, so that, after disconnecting the controls, the whole engine-transmission-suspension unit can be detached complete.

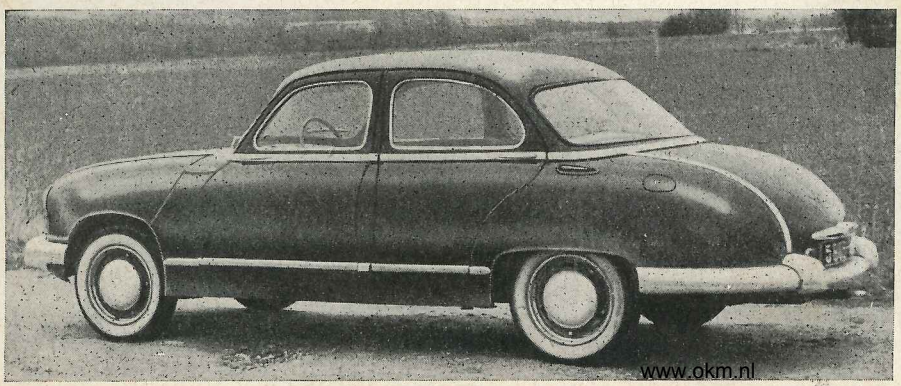
At the rear a tubular cross member is also used, but, in this case, it is of light alloy and forms part of the central platform. To it are welded brackets carrying an outer pair of suspension arms and a central pivot for the special V-shaped rear axle. Rear suspension is by means of triple torsion bars and, on each side, a large soft rubber ball, which is interposed between a point near the extremity of the V-shaped axle and a fixed abutment, acts both as a stop and an auxiliary form of suspension for heavy loads.

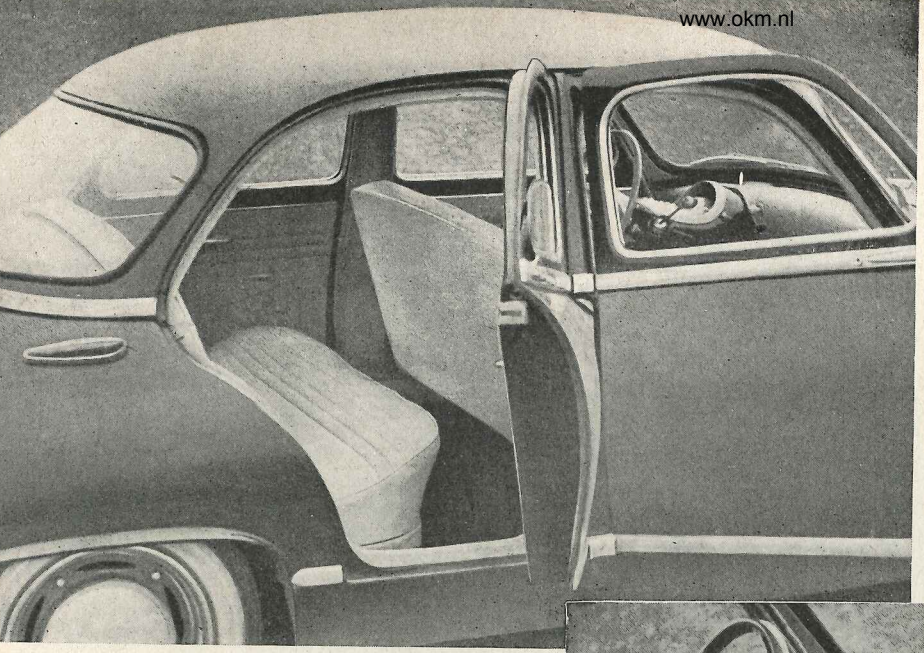
At the back of the car, the body structure is extended to embrace the rear wheels and to provide both a mounting for the tank and a large luggage boot whilst, at the front, a single top-hinged pressing serves as both bonnet and front wings. When it is raised, access to the horizontally-opposed engine and transmission unit is particularly easy. The very efficient air-cooled engine, which develops 42 b.h.p., is notable for the use of aluminium-alloy cylinders with integral heads and for the employment of torsion-bar return springs for the push-rod operated overhead valves; it differs, however, only in detail from the well-tried unit employed on the former Dyna model.

The body contours, it is worth mentioning, have been carefully developed on aerodynamic principles as a result of both wind-tunnel tests with models and full-scale road experiments.

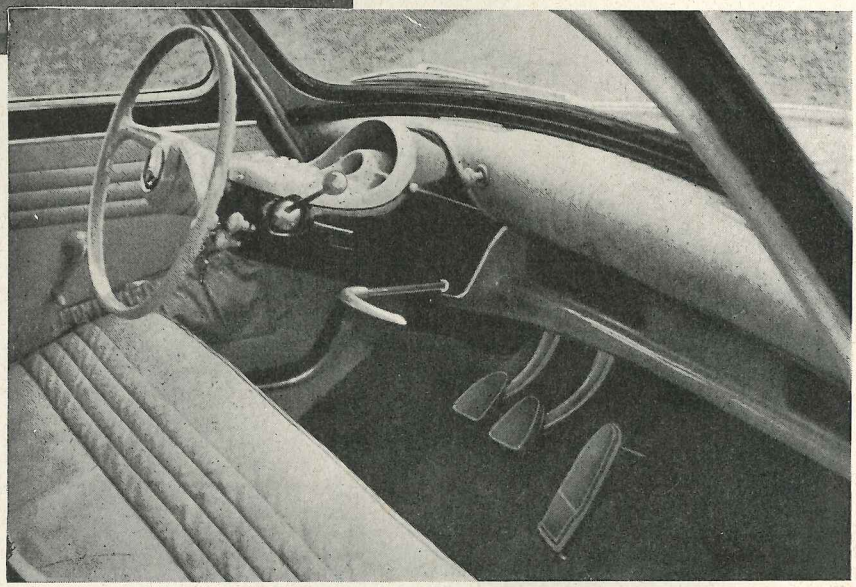
Just how effective the combination of low drag, light weight and relatively high

CURVED GLASS is used for a large rear window which merges neatly into the body lines. Lightweight wheels have removable rims attached to the fixed hub spiders by five bolts.





RECESSED well below the level of the door sills, the floor is completely flat thanks to the absence of a propeller shaft. Set ahead of the wheel arches, the rear seat is 48½ inches wide, and like the front seat can accommodate three people when necessary. Ahead of the driver, the instruments are mounted in a nacelle, with hoods to eliminate reflections in the windscreen.



power output is in practice becomes apparent the moment one takes the wheel on the open road. Unfortunately first acquaintance with the car came in Paris traffic after dark, when a number of annoying minor faults—of the type which assume their most obtrusive proportions in such conditions—tended to obscure balanced judgment. None of these faults was fundamental, several are already receiving attention and others will doubtless be dealt with as production gets fully under way, it being worth noting that the car tried out was only No. 25 of the production series.

One such fault, which reared its head at the very outset, was a starter knob which required a two-handed effort to operate—an already-known fault which, we were informed, is to be eliminated by moving the knob to a point providing a more direct pull. By way of contrast, the quick warming up of the air-cooled engine and its quite surprising mechanical quietness did much to offset the initial bad impression, which was further reduced by the discovery that the Dyna 54 has an ideal third gear for traffic work—and Paris traffic work at that.

In this matter of gearing, Panhard and Levassor, in common with most French manufacturers, have worked on the theory that their products will be driven hard most of the time and must be "unburstable." In consequence, the over-square engine (itself designed for the heavy-footed) is allied to a fourth-speed ratio which might be considered too high in England but which is not intended to make the Dyna in any way a top-gear car.

Instead, top gear is indirect and provided basically for fast driving on straight main roads on which it is capable of dealing with 1 in 20 gradients but nothing appreciably steeper; the car is not really happy at much under 20 m.p.h. in this gear.

Third, on the other hand, is direct and offers a range from about 10 m.p.h. to 67 m.p.h. so that neither main road hills nor traffic leave the user without an entirely adequate—even exhilarating—ratio. Third, of course, is completely silent, but the standard of quietness on the other gears is also above average.

On the open road, one can cruise at 60-65 m.p.h. without a qualm despite the small engine, which, in fact, remained entirely unperturbed by several laps of Montlhery at maximum speed. On the best of these (all above 75 m.p.h.), a lap speed of 75.7 m.p.h. was recorded, and it is noteworthy that this was regarded as disappointing by the manufacturers when the car was returned! Subsequently (and after a tappet adjustment) the lap time was improved to 77.0 m.p.h. on unchanged carburetter settings, but as it was not possible at that stage to repeat accelerations and consumption readings, the former figure is quoted in the data.

One question which inevitably assumes importance where a two-cylinder engine is concerned is that of smoothness. In this, the Dyna does not reach such a high standard as in the matter of silence, and there is some vibration throughout the range. At very low r.p.m. on full throttle the horizontally-opposed engine produces some transverse shake but this does not occur if proper use is made of the gears. At other speeds, one remains conscious of the engine, but it is noteworthy that the faster it runs the smoother it becomes. This fact, allied to low wind and road noise, makes fast cruising very effortless.

The front-drive arrangements deserve high praise, there being no trace of either heavy steering or reaction through the wheel when the engine is pulling hard with the front wheels locked over.

Some criticisms, however, can justifiably be levelled at the gearbox. The steering-column lever is handily placed and is distinctly more positive than the former Dyna arrangement, but the synchromesh is far from unbeatable, and if one pauses sufficiently on upward changes for it to do its work, the change becomes distinctly slow. Against that, it must be admitted that the gearbox responds particularly happily to brutality in the shape of snatch changes from first to second and third to top. Efforts in this direction between second and third are somewhat hampered by an

ELASTIC provides a simple and effective fastening for the spare wheel, which is accommodated on a separate shelf beneath the roomy luggage locker.

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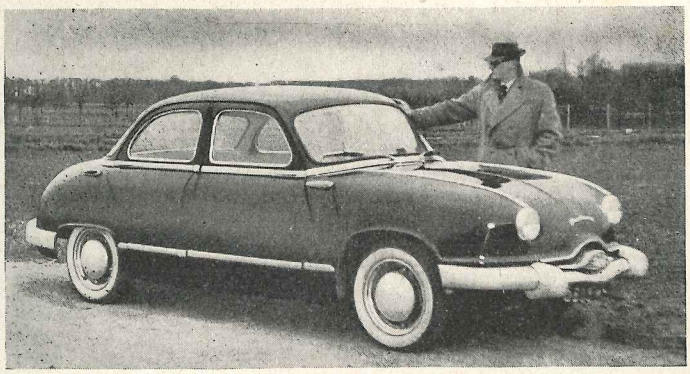


FULL SIZED in most respects, the latest Panhard provides roominess and performance in excess of what would normally be expected from an 850 c.c. model.

unduly long lever travel through neutral.

Handling of the Dyna 54—as might be expected from its racing background—is excellent. The steering is extremely accurate, the suspension is flexible enough to deal adequately with pave but sufficiently damped to eliminate pitch or float, and the car is not faulted by rapid changes from one lock to another. Its cornering, in fact, can be rated highly and although really drastic methods will induce roll, the car still remains controllable.

High-speed Economy

Braking is very powerful but calls for unusually low pedal pressures. The pull-out hand brake is conveniently placed on the right of the steering column and the arrangement by which a half turn of the walking-stick hand grip releases the ratchet is simple and effective. Equally simple but not so effective is the use of a rubber grommet as a bearing for the rod where it passes through the facia; this pulled out, leaving a further rattle to supplement several more in the same vicinity.

Other sources of minor annoyance included a series of small tumbler switches on the instrument nacelle which required much more than finger-tip pressure to work, a speedometer unit which came loose in its housing, and a combined Continental-style control lever on the steering column for horn, lights and direction indicators which was first-rate in conception but confusingly far from satisfactory in application.

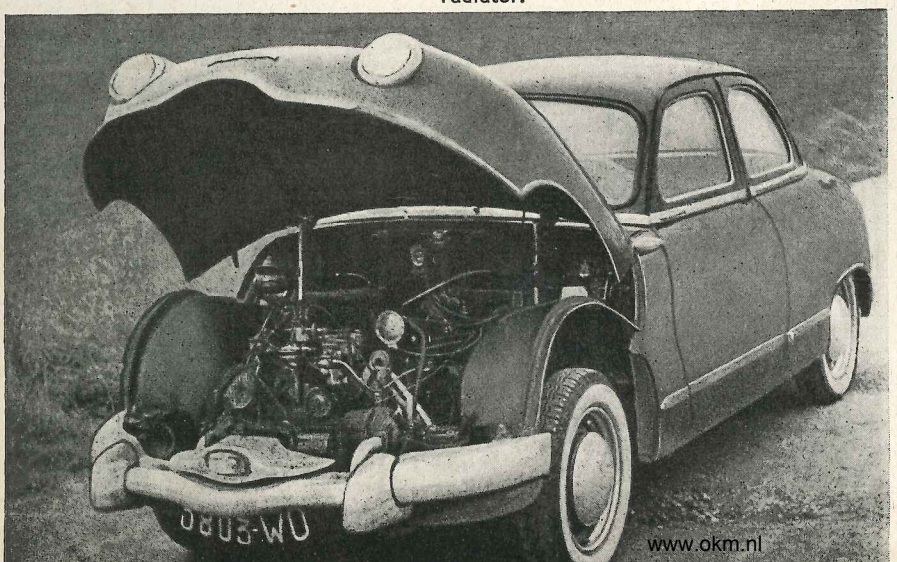
So far, little has been said about fuel consumption. The tabulated figures speak for themselves and the fact that, even at 70 m.p.h., consumption is above 30 m.p.g. is a clear indication of how successfully aerodynamic principles have been applied to the body. The overall figure of 40.7 m.p.g. included 57.3 miles of main-road running at an average of 42.5 m.p.h. and some miles of brisk Paris traffic work —a tribute to the low weight as well as the external body contours.

What is worth strong emphasis is that the very advantageous shape has in no way interfered with passenger comfort and amenities. The doors all provide easy access, the visibility generally is very good, the seats are comfortable, with more than ample room for two abreast and just enough space for three on occasion, and the luggage space is notably generous.

Equipment, as will be seen from the tabulated data, is very comprehensive, notable points being the excellent spread, as well as range, of the headlamps, the sensibly bright roof lights, the provision of battery-saving parking lights and the use of a heater and demister which is unusual but effective; in the absence of water cooling, the idea of using exhaust heat has been eschewed in favour of a catalytic type of heater which consumes petrol, combustion, owing to the presence of the catalyst, taking place at a temperature too low to introduce a fire risk.

In all, this Dyna 54 model is a car of which very much more will be heard. In some details, it still calls for better development and finish. In fundamentals, its virtues are quite outstanding, especially in the stringent economy of present-day Europe.

FORWARD MOUNTING of the flat twin engine facilitates access to the mechanism of the Dyna 54, direct air cooling of the cylinders eliminating the need for any radiator.



Mechanical Specification

Engine

Cylinders	2
Bore	85 mm.
Stroke	75 mm.
Cubic capacity	850 c.c.
Piston area	17.6 sq. in.
Valves	Overhead (push rods and torsion-bar springs)
Compression ratio	7.2/1
Max. power	42 b.h.p.
at	5,300 r.p.m.
Piston speed at max. b.h.p.	2,610 ft. per min.
Carburetter	Solex downdraught 30 PAAI
Ignition	12-volt S.E.V. coil
Sparking plugs	Marchal 34-5
Fuel pump	Mechanical
Oil filter	Fram

Transmission

Clutch	s.d.p.
Top gear (s/m)	4.71
3rd gear (s/m)	6.15
2nd gear (s/m)	9.2
1st gear	16.18
Propeller shaft	Nil (front drive)
Final drive	Spiral bevel
Top gear speed at 1,000 r.p.m.	15.0 m.p.h.
Top gear speed at 1,000 ft./min. piston speed	30.4 m.p.h.

Chassis

Brakes	Lockheed-Bendix hydraulic
Brake drum diameter	Front, 9.84 in. Rear, 8.86 in.
Friction lining area	102.8 sq. in.
Suspension:	
Front	Independent (double transverse leaf)
Rear	Torsion bars and axle beam
Shock absorbers	Houdaille hydraulic
Tyres	145 x 400 Michelin

Steering

Steering gear	Rack and pinion
Turning circle	31 feet
Turns of steering wheel, lock to lock	2

Performance factors (at laden weight as tested):

Piston area, sq. in. per ton	20.1
Brake lining area, sq. in. per ton	118
Specific displacement, litres per ton mile	1,950

Fully described in *The Motor*, June 24, 1953

Coachwork and Equipment

Bumper height with car unladen: Front (max.) 21 in., (min.) 14½ in. Rear (max.) 20½ in., (min.) 13½ in.

Starting handle	No
Battery mounting	On front of scuttle
Jack	Screw type
Standard tool kit: Wheelbrace, screwdriver, 1 box spanner, 1 adjustable spanner, combination pliers, lamp tool.	
Exterior lights: Two combined head and side lamps, fog lamp, 2 front direction indicator/parking lamps, 2 tail/indicator/parking lamps, rear number plate lamp, reversing lamp (non-automatic), 2 stop lamps.	
Direction indicators	Flashing type
Windscreen wipers	Twin, self-parking
Sun visors	Two universally-mounted (with vanity mirror for passenger)
Instruments	Speedometer, ammeter and fuel gauge
Warning lights	Ignition
Locks:	
With ignition key	Ignition only
With other keys	Front doors (both) and fuel cap. (Boot unlocked by catch inside body.)
Glove lockers	3 small
Map pockets	4 (in doors)
Parcel shelves	1 behind rear squab
Ashtrays	None
Cigar lighters	None
Interior lights	2
Interior heater	Avialex petrol-burning, fresh-air type
Car radio	No
Upholstery material	Plastic
Floor covering	Surfaced felt
Alternative body styles	None