The Motor Road Test No. 19/60

Make: Goggomobil **Type:** Royal T.700 Saloon

Makers: Hans Glas G.m.b.H., Isaria-Maschinenfabrik, Dingolfing/Bayern, Germany

Concessionnaires: Goggomobil, Ltd., 93-95, Old Brompton Road, London, S.W.7

Test Data

CONDITIONS: *Weather: Dry, wind 5—15 m.p.h. (Temperature 45°—54° F., Barometer 30 in. Hg.) Surface: Dry tarmacadam. Fuel: Mixture grade pump petrol (approx. 90 Research Method Octane Rating).*

INSTRUMENTS

Speedometer at 30 m.p.h.	12% fast
Speedometer at 60 m.p.h.	13% fast
Distance recorder	2½% fast

WEIGHT

Kerb weight (unladen, but with oil, coolant and fuel for approx. 50 miles)	12 cwt.
Front/rear distribution of kerb weight	61/39
Weight laden as tested	15¾ cwt.

MAXIMUM SPEEDS

Mean lap speed around banked circuit	66.0 m.p.h.
Best one-way quarter-mile on straight	69.2 m.p.h.
"Maximile" speed. (Timed quarter-mile after one mile accelerating from rest.)	
Mean of opposite runs	64.6 m.p.h.
Best one-way time equals	66.2 m.p.h.

Speed in gears.

Max. speed in 3rd	58 m.p.h.
Max. speed in 2nd	36 m.p.h.
Max. speed in 1st	18 m.p.h.

FUEL CONSUMPTION

55.0 m.p.g. at constant 30 m.p.h. on level.
49.5 m.p.g. at constant 40 m.p.h. on level.
45.0 m.p.g. at constant 50 m.p.h. on level.
34.0 m.p.g. at constant 60 m.p.h. on level.

Overall Fuel Consumption for 881 miles, 24.5 gallons equals 36.0 m.p.g. (7.85 litres/100 km.).

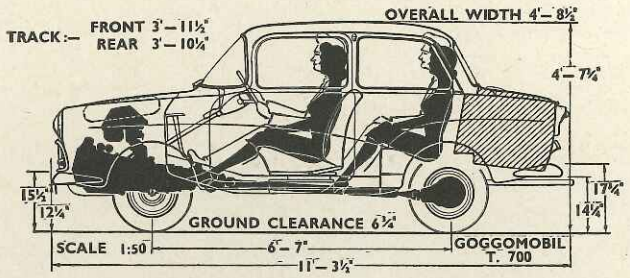
Touring Fuel Consumption (m.p.g. at steady speed midway between 30 m.p.h. and maximum, less 5% allowance for acceleration) 43.8 m.p.g.
Fuel tank capacity (maker's figure) 8.8 gallons.

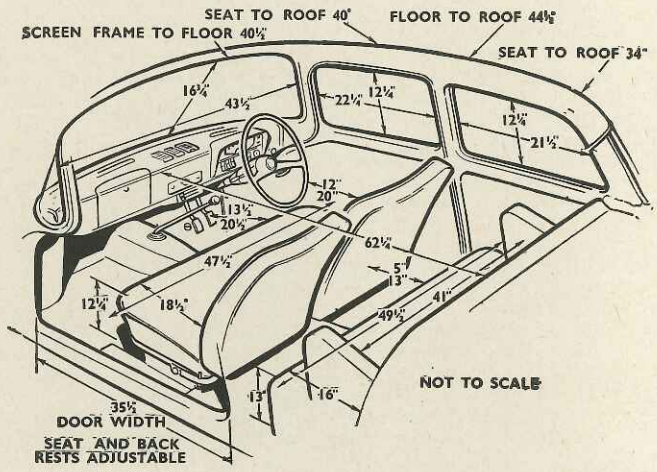
STEERING

Turning circle between kerbs:	
Left	26 ft.
Right	28 ft.
Turns of steering wheel from lock to lock	2¾

BRAKES from 30 m.p.h.

0.73 g retardation (equivalent to 41 ft. stopping distance) with 65 lb. pedal pressure.
0.57 g retardation (equivalent to 52½ ft. stopping distance) with 50 lb. pedal pressure.
0.35 g retardation (equivalent to 86 ft. stopping distance) with 25 lb. pedal pressure.





ACCELERATION TIMES from standstill

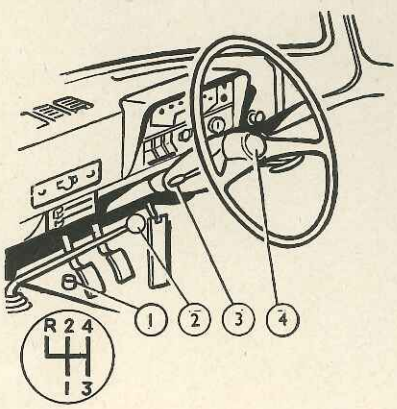
0-30 m.p.h.	8.3 sec.
0-40 m.p.h.	14.5 sec.
0-50 m.p.h.	28.5 sec.
0-60 m.p.h.	44.4 sec.
Standing quarter mile	23.9 sec.

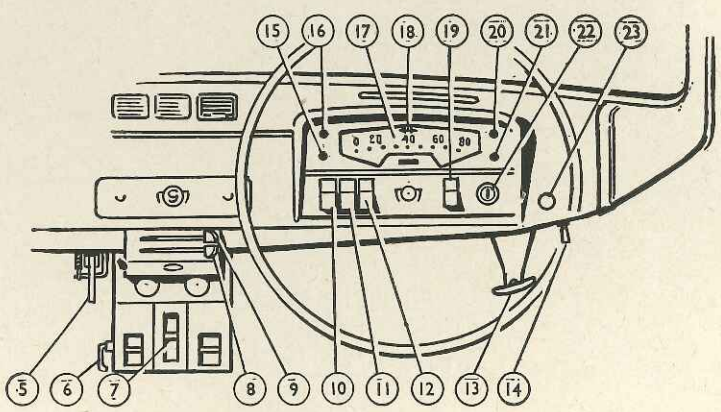
ACCELERATION TIMES on Upper Ratios

	Top gear	3rd gear
10-30 m.p.h.	15.0 sec.	9.6 sec.
20-40 m.p.h.	15.6 sec.	10.7 sec.
30-50 m.p.h.	20.9 sec.	20.7 sec.
40-60 m.p.h.	30.8 sec.	—

HILL CLIMBING at sustained steady speeds

Max. gradient on top gear	1 in 13.1 (Tapley 170 lb./ton)
Max. gradient on 3rd gear	1 in 8.2 (Tapley 270 lb./ton)
Max. gradient on 2nd gear	1 in 5.0 (Tapley 440 lb./ton)

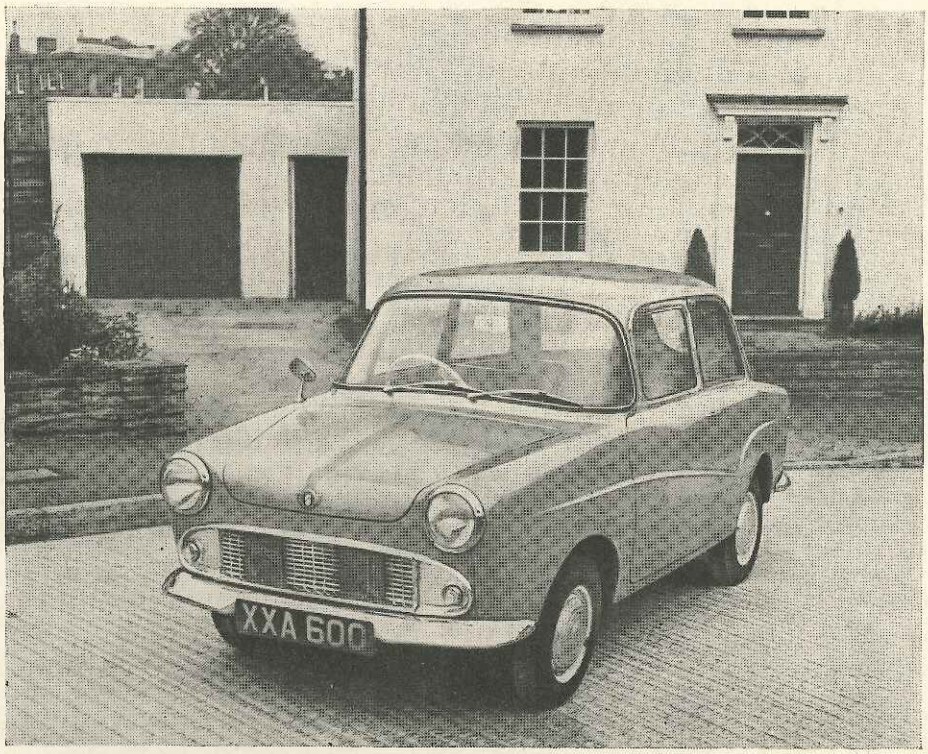




1. Headlamp dipswitch. 2. Gear lever. 3. Headlamp main beam flasher and direction indicator switch. 4. Horn button. 5. Bonnet catch release. 6. Heater shutter control. 7. Air distribution control. 8. Fresh air control. 9. Heater selector controls. 10. Sidelamps switch. 11. Headlamps switch. 12. Panel light switch. 13. Handbrake. 14. Parking lamp switch. 15. Petrol low-level warning lamp. 16. Headlamp main beam indicator. 17. Speedometer and distance recorder. 18. Direction indicator warning lamp. 19. Windscreen wipers switch. 20. Oil pressure warning lamp. 21. Dynamo charge warning lamp. 22. Ignition and starter switch. 23. Choke control.

The Goggomobil Royal T.700

A Well-equipped German Economy Car with Air-cooled Engine



The excellent visibility afforded by large areas of glass and thin pillars is clearly shown in this view. The air-intake muff is adjustable for different seasons.

IN the past, the Goggomobil factory has specialized in very small vehicles with rear-mounted two-stroke engines and independent suspension all round. This range is now supplemented by the Royal T.700, made in saloon and estate car versions, which shows an interesting tendency, with increasing size, to revert to a more orthodox specification for a car of more conventional size and performance.

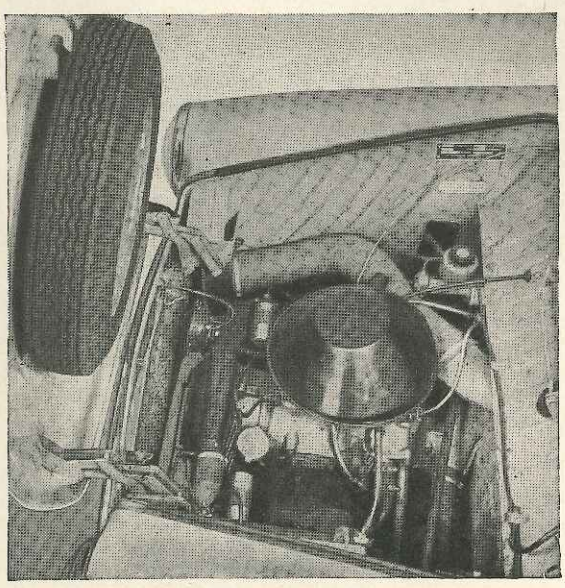
The 700 c.c. engine is rather smaller than those used in corresponding British cars, which may well be accounted for by the German system of taxation on capacity. Good design, however, has kept the overall weight of a compact four-seater down to the very low figure of 12 cwt. with a combined body and chassis construction which feels extremely rigid and sturdy. With an engine giving good torque in the middle speed ranges, the acceleration is fully up to the standard expected from this class of car.

The maximum speed in favourable conditions approaches 70 m.p.h., and the ability to cruise fast without undue effort is complemented by a fuel tank holding nearly 9 gallons which avoids the irritation of frequent stops.

Much of the T.700's slightly unusual character derives from the air-cooled, flat-twin engine which is mounted at the front of the car in unit with a four-speed gearbox, and which drives the conventional back axle through an open propeller shaft. Energized by an almost silent dynamotor, the engine is an instant starter from cold, but will cut almost immediately through over-richness unless the choke control, which will stay in any position, is at once pushed partly home. The interconnection between choke and throttle is such that the idling speed is then annoyingly high; the engine warms up very rapidly and if it were not for a tendency to stall at junctions, the choke could be pushed in right away.

Above 40 m.p.h. the engine is surprisingly smooth for a two-cylinder unit, but naturally lacks the ability to pull from low speeds in top gear that would be expected with more cylinders, and any attempt to do so leads to a certain amount of noise and chatter from the transmission. At an engine speed corresponding to about 35 m.p.h. in top gear, there is a vibration period which is probably associated with the flexible engine mountings and which is magnified by body resonances. The fitting of a rather light flywheel confirms the impression that the designers intended the excellent gearbox to be used to the full.

Unusual in that all four forward gears are fitted with Porsche-type synchromesh, and also in the use of inverted gear positions, the gear-change has the outstandingly smooth efficiency that is associated with this design of synchronizing mechanism. The intermediate ratios are quiet and well-chosen, and familiarity with the unusual positions brings the reflection that the movements involved in crossing the gate are perhaps more natural than with the orthodox layout, whilst the most commonly needed downward change, top to third, becomes just the quickest of



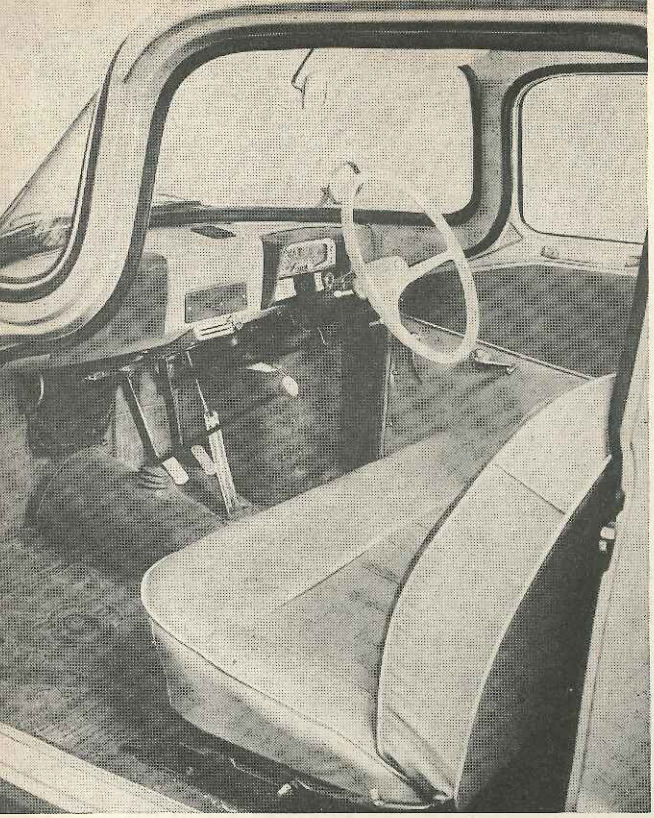
No distributor is needed for the fan-cooled flat-twin engine which has a coil to each cylinder with contact breakers driven from the front of the crankshaft. The spare wheel is mounted on the underside of the bonnet lid, and the air cleaner is easily detachable for access to the carburetter.

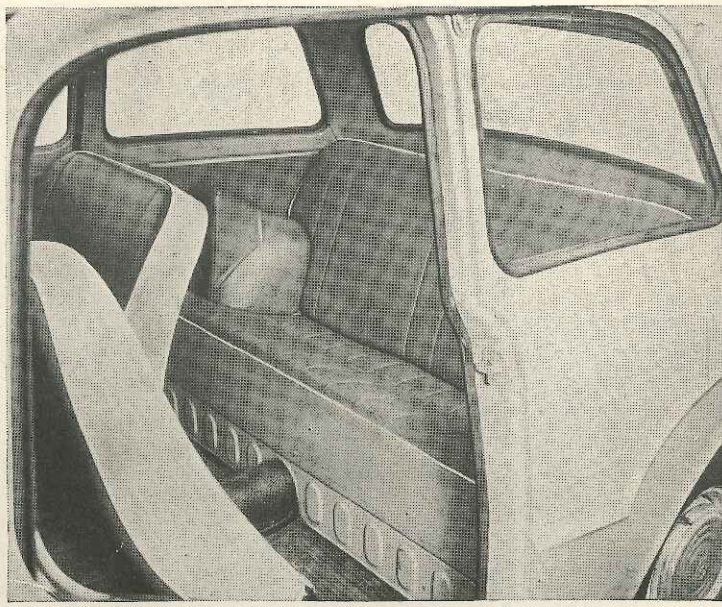
In Brief

Price (as tested) £473 plus purchase tax £198 4s. 2d. equals £671 4s. 2d.

Capacity	688 c.c.
Unladen kerb weight ...	12 cwt.
Acceleration:	
20-40 m.p.h. in top gear ...	15.6 sec.
0-50 m.p.h. through gears	28.5 sec.
Maximum top gear gradient	1 in 13.1
Maximum speed	66.0 m.p.h.
"Maximile" speed	64.6 m.p.h.
Touring fuel consumption ...	43.8 m.p.g.

Gearing: 12.0 m.p.h. in top gear at 1,000 r.p.m.; 25.1 m.p.h. at 1,000 ft./min. piston speed.





The very wide doors extend forward to make front seat access particularly easy. Both front and rear compartments have moulded rubber floor coverings. The front seat backs are adjustable for rake, and the armrests in the rear, which cover the wheel arches, are detachable.

The Goggomobil T.700

pull-back movements. A rather shorter travel would avoid the necessity to stretch for top gear.

Although the engine will run up to very high r.p.m. in the gears, the fall off in torque is such that better acceleration results from an upward change at a rather lower speed. Thus it comes about that the engine speed range which is normally and naturally used in everyday driving is remarkably close to that which gives optimum performance through the gears; in conjunction with the lightning gear change, this results in the driver extracting from the car a remarkably large percentage of its full potential performance without consciously trying. Cruising speeds up to a true 60 m.p.h. are sustained quite happily and without apparent effort; above this speed the noise level rises.

Comfortable Accommodation

The bench front seat is provided with separate back rests which hinge forward to provide access to the back seat; they are independently adjustable for rake by means of threaded abutments. The seats are of generous size and most drivers find them comfortable for quite long distances, whilst the small-diameter steering wheel is ideally placed for those who prefer the extended arm driving position. Unlike many small cars, the T.700 has enough seat adjustment to satisfy the tall driver, although knee room and headroom in the back seats are then only just sufficient for two smallish adults or for one larger person sitting slightly sideways.

The intrusions of the gearbox housing and wheel arches leave little width for the pedals. There is nowhere for the left foot to rest except underneath the clutch pedal, in which position the dip-switch is located, but although the clutch and brake pedals are close enough to cause occasional difficulty to a large-footed stranger, the accelerator is separated from them by a safe distance. Both clutch and throttle operating mechanisms are rather sticky and insensitive, and the clutch is heavy for prolonged traffic driving.

The steering is light and positive, with a trace of stiffness which does not detract in any way from the accuracy of control and which probably contributes to the freedom from kickback on bad surfaces, on which the car remains directionally very stable. With a light load the Goggomobil corners well with a mild understeer characteristic and very little roll and tyre squeal, although very bad surfaces cause a slight tendency to run wide which appears to derive from the front rather than the rear suspension. The live back axle is mounted on semi-elliptic springs with almost vertical telescopic dampers, and there is nothing obvious in its conventional design to account for its unusually good behaviour; with an unladen weight of only 12 cwt., of which less than 40% is on the back wheels, this axle shows little of the tendency to hop and tramp which is so common on small cars without independent rear suspension. Nevertheless, light loads and slippery surfaces allow wheelspin to be promoted very easily.

With a car of this size, some deterioration in handling qualities may be expected on full load, but although the amount of roll is increased, the car remains quite safe and pleasant to drive if the rear tyre pressures are considerably increased as recommended for these conditions. Retention of these pressures after the extra load has been jettisoned, however, results in a degree of understeer that can be embarrassing for fast cornering.

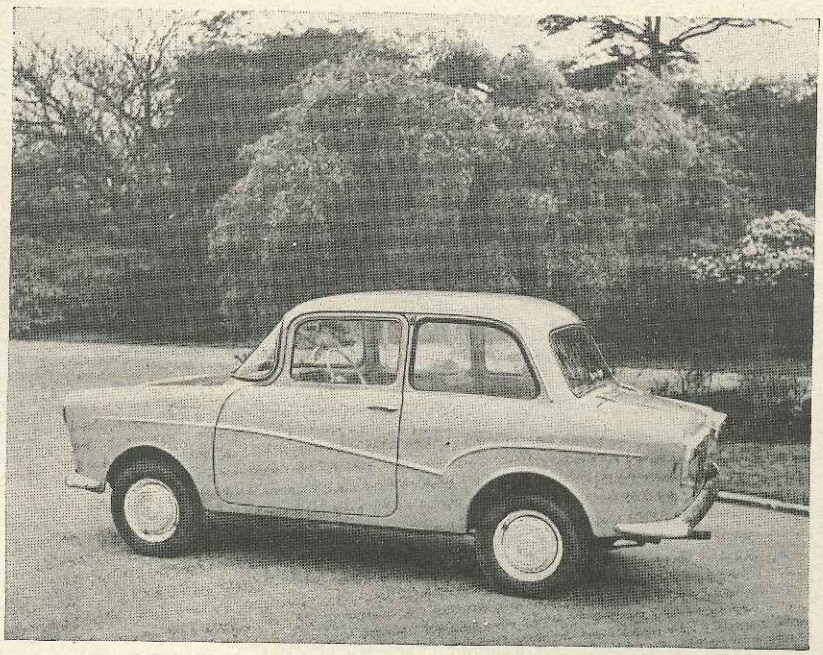
The suspension provides a ride which is comfortable and well damped on average roads, but which is rather less satisfactory over indifferent surfaces which generate sharp vertical motions, although without much pitching. It may be that this change of characteristic is due to the hollow rubber cushions that are used to supplement the main springs for large deflections.

The brakes are of unusually large diameter and have generous lining area relative to the weight and performance of the car. They display more than average sensitivity to speed; light and rather fierce at low speeds, with a tendency to pull to one side when cold, they require fairly heavy pressure for hard braking from high speeds, and occasionally display some roughness and vibration. Maximum deceleration is limited by rear-wheel locking to a value which is on the low side by modern standards. The pull-out handbrake, on the other hand, is extremely powerful and anchored the car with ease on a 1 in 3 test hill. With similar ease, surprising for a small-engined vehicle, the Goggomobil moved away from rest on this hill without excessive revs and with no tendency to clutch slip.

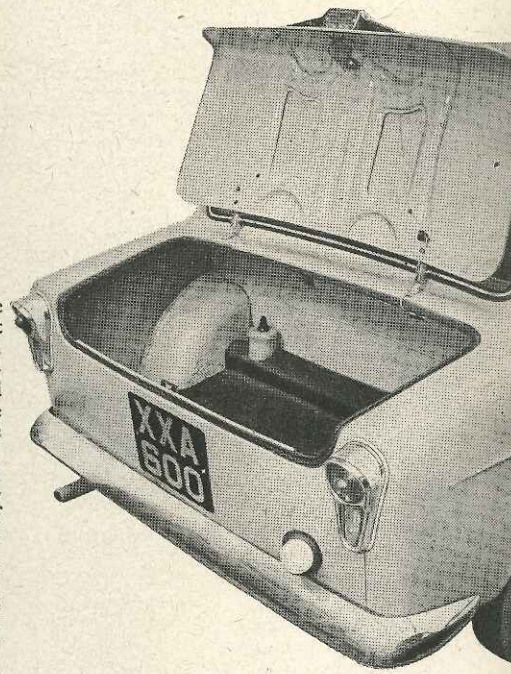
Exhaust Heated

A built-in heater is part of the standard equipment; it is of unusual design in that the exhaust is the source of heat. Fresh air is tapped from the high-pressure side of the engine cooling fan and heated by passage through muffs surrounding the exhaust pipes. A separate cold-air intake from the front of the car is led to the heater unit which has controls for mixing hot and cold fresh air in any proportion, and for diverting the bulk of the flow on to the feet of the occupants or through the windscreen de-mister slots. The system appears to be most effective for ventilation, but in the fairly mild weather prevailing it was difficult to assess the maximum heat output. Hot air was available more quickly after starting than with conventional heaters, but it seemed doubtful whether the quantity would be adequate for really cold weather. No quarter lights are fitted, but the side windows can be lowered an inch or two to provide extra ventilation with very little draught and with negligible wind noise.

The exterior finish appeared to be good although the chromium plate was showing some signs of pitting on the test car. The upholstery looked serviceable and hard-wearing, but the overall effect of interior



The clean appearance of the body, with its wrap-round windscreen, is helped by the absence of quarter lights. The parking lamps are a standard fitting. The absence of the spare wheel leaves a boot which is larger than would appear from outside, and of an unusually practical shape. The only intrusions are the small wheel arches and the tops of the telescopic damper mountings.



decor and the leathercloth trim did not appeal to all those who examined it. The equipment included two items, apart from the heater, which are not yet commonly fitted as standard. These were the parking lamps, one each side of the body, and the headlamp flashing switch which is combined with the direction indicator lever projecting from the left-hand side of the steering column. The headlamp beams are quite adequate for the performance of the car, whilst in the dipped position the driver was not worried by the very sharp cut-off which is a characteristic of many Continental lamps with hooded filament bulbs.

The doors are very light and require a good slam to shut them. For a small car, the boot is unusually large and well shaped; much of the credit for this must be attributed to the banishment of the spare wheel to the engine compartment, where it is fixed to the underside of the bonnet lid. Whilst this solution might not be practicable with many cars, both the wheel and the bonnet lid are small and light on the Goggomobil and the arrangement seems both sensible and notably accessible.

The Goggomobil offers an unusual combination of qualities. It has what may be a nationally developed characteristic of being rather more at home on the open road than operating in heavy town traffic. It is fully equipped and has many practical features which contribute to the comfort and convenience of the occupants, and its economy is enhanced by the increasingly rare ability to run on regular grade fuel with only a little mild pinking at the lower end of the speed range.

Specification

Engine

Cylinders	2
Bore	78 mm.
Stroke	72 mm.
Cubic capacity	688 c.c.
Piston area	14.8 sq. in.
Valves	Overhead (push-rod)
Compression ratio	7.2/1
Carburetter	Solex 32 PCI downdraught
Fuel pump	Solex mechanical
Ignition timing control	Centrifugal
Oil filter	Knecht full-flow
Max. power (gross)	33.9 b.h.p. at 4,900 r.p.m.
Piston speed at max. b.h.p.	2,335 ft./min.

Transmission

Clutch	Single dry plate
Top gear (s/m)	5.0
3rd gear (s/m)	6.67
2nd gear (s/m)	11.3
1st gear (s/m)	22.4
Reverse	20.6
Propeller shaft	Hans Glas open
Final drive	Hypoid
Top gear m.p.h. at 1,000 r.p.m.	12.0
Top gear m.p.h. at 1,000 ft./min. piston speed	25.1

Chassis

Brakes	Hydraulic
Brake drum internal diameters, front and rear	9.05 in.
Friction areas	76.2 sq. in.
Suspension:	
Front: Transverse lower and longitudinal upper wishbones with coil springs and hollow rubber cushions.	
Rear: Semi-elliptic springs and hollow rubber cushions.	
Shock absorbers:	
Front and rear	Telescopic
Steering gear	Worm and sector
Tyres	4.80—12 with tubes

Coachwork and Equipment

Starting handle: No

Battery mounting: In engine compartment above nearside wheel.

Jack: Screwed pedestal type for plug-in socket

Jacking points: One each side

Standard tool kit: Combined plug and wheel nut spanner, jack, 2 d.e. spanners, pliers, 2 screwdrivers, punch, tin of touch-up paint (two if dual colour).

Exterior lights: 2 headlamps with pilot bulbs, 2 front turn-indicator lights, 2 stop/tail/turn-indicator lamps, number plate lamp, 2 parking lights.

Number of electrical fuses: 8

Direction indicators: Self-cancelling flashers

Windscreen wipers: Self-parking dual electric

Windscreen washers: None

Sun visors: One

Instruments: Speedometer with total mileage recorder.

Warning lights: Oil pressure, headlamp main beam, ignition, direction indicators, petrol reserve.

Locks, with ignition key: Offside door and boot

Glove lockers: One in facia

Map pockets: One in each door

Parcel shelves: Behind rear seat

Ashtrays: One above facia

Cigar lighters: None

Interior lights: One, with manual switch and courtesy switch on driver's door.

Interior heater: Built-in, exhaust heated, with demisters and controllable fresh air inlet.

Car radio: Optional extra

Extras available: Chrome body strips, radio, windscreen washers, roof rack.

Upholstery material: Vynide

Floor covering: Rubber

Exterior colours standardized: 7 single, or dual colours at extra cost.

Alternative body styles: Sunroof Saloon, Esquire Estate Car.

Maintenance

Sump: 4 pints, S.A.E. 10 W/30 or 20 W/30

Gearbox: 2¼ pints, S.A.E. 30 engine oil or S.A.E. 80 gear oil.

Rear axle: 1½ pints, S.A.E. 90 E.P.

Steering gear lubricant: S.A.E. 30 engine oil

Cooling system capacity: Air cooled

Chassis lubrication: By grease gun every 1,500 miles to 10 points.

Ignition timing: 8° b.t.d.c.

Contact-breaker gap: 0.016 in.

Sparking plug type: Bosch W 225 T.I.

Sparking plug gap: 0.028 in.

Valve timing: Inlet opens 32° b.t.d.c. and closes 72° a.b.d.c.; exhaust opens 72° b.b.d.c. and closes 32° a.t.d.c.

Tappet clearances (cold):

Inlet	0.002 in.
Exhaust	0.002 in.

Front wheel toe-in: 0.12-0.20 in. (with 2 cwt. load).

Camber angle	3° 30′
Castor angle	4°
Steering swivel pin inclination	2°

Tyre pressures:

Front	21 lb. (2 up); 24 lb. (4 up)
Rear	15 lb. (2 up); 22 lb. (4 up)

Brake fluid: Ate Blue

Battery type and capacity: 12 v., 32 amp.hr