B. Longstaffe

wheels

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Road test of

THE AMAZING CITROEN DS19

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LIFETIME TYRES ARE COMING!

"WHEELS"

ROAD TEST AND

ANALYSIS OF

CITROEN'S

Driving this comfortable and economical saloon is a matter of sitting back and letting the hydraulics do the work.

WE found that getting back to the DS-19 after we parked it the most nerve-wracking part of this interesting road test. There was always a jostling crowd of lookers, questions shot at us, and anxious moments trying not to make fools of ourselves before the crowd when starting up.

So much attention did this remarkable car attract in the sleepy towns around Canberra, A.C.T., that we could understand what the representative of the French Embassy meant when he said that using the car in Sydney was nearly impossible.

But this show of public interest proves one thing: That motoring-minded Australians are prepared to welcome the DS-19. And this runs against a longtime conservative outlook because the DS-19 is the most revolutionary car in the world in large-scale production.

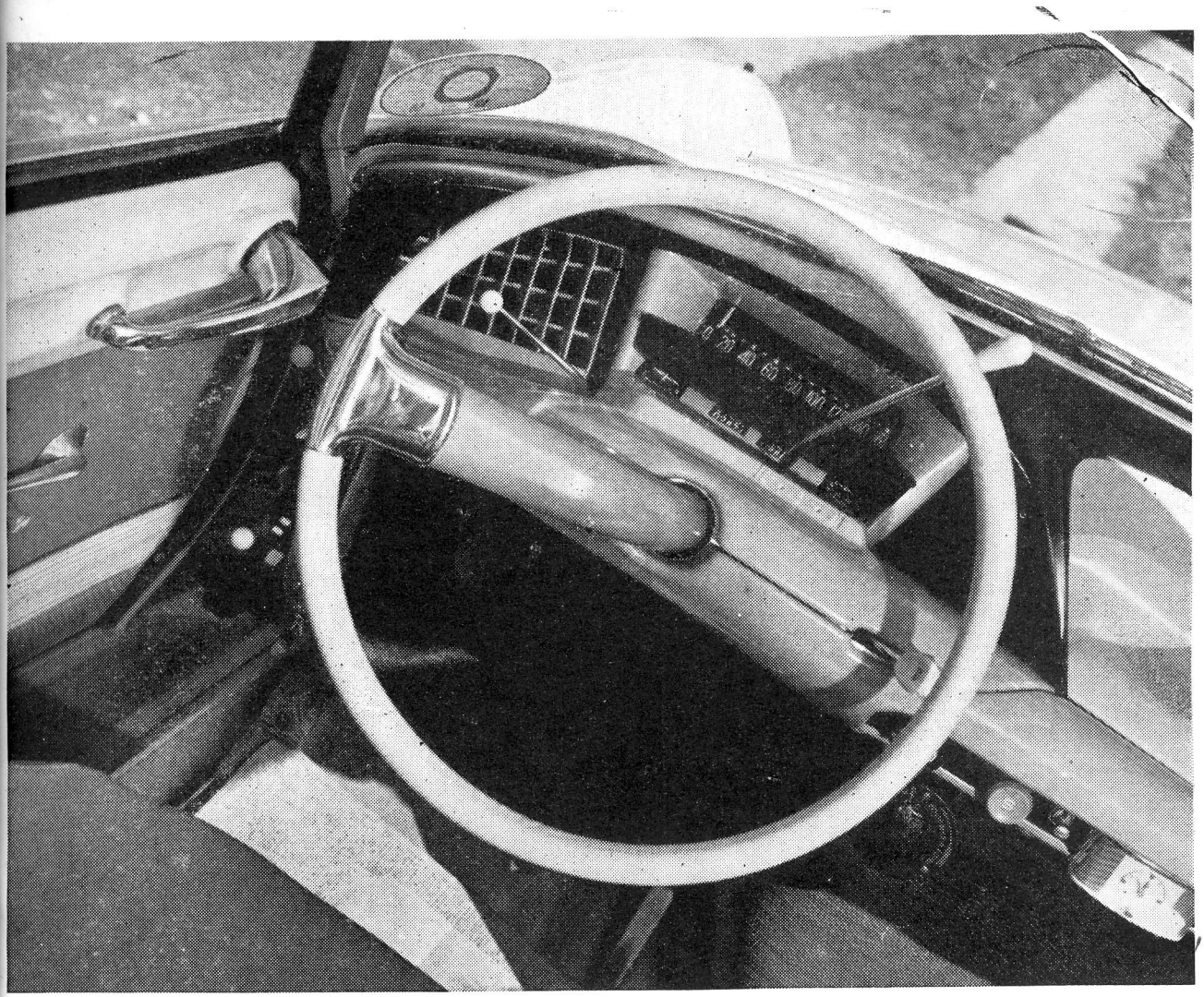
Most readers are by now familiar with the car's major features: The all independent pneumatic suspension; the hydraulically - operated transmission; the first disc brakes on a production car; the power-operated steering.

The big question is: How does the DS-19 perform in an owner's hands? The answer is very well indeed in its mechanical aspects, but not so well in a few practical points of body styling.

The faults we noted could be

Doors are wide and low, have no window framing. Glass makes seal on weather-strip around door recess.

Revolutionary DS-19



Facia's modernity would make a Detroit stylist scream with envy, but it's all functional. Most striking item is spokeless steering wheel.

expected because the car tested had a low serial number (in the thirties) and was almost in the prototype stage. These were wind noise at speed, rattling windows, and a boot that leaked a considerable amount of dust.

The N.S.W. Citroen distributors, Buckle Motors (Trading Co.) Pty. Ltd., report that these have been eliminated on the British assembled, right-hand-drive models that are being imported to Australia.

The British assembled car also incorporates several small styling changes. The clock, mounted on the ashtray of the French model, is mounted on the facia. The tail lamps have been changed to the Lucas circular types, one each for rear light, flashing trafficator, and reflector. And the cloth upholstery has become genuine leather.

From here on all the features are good. We could not fault the suspension, handling, and all-around comfort of the car. In these respects the DS-19 is among the best cars we have ever tested.

The suspension is uncanny. Although not capable of the story that a glass full of champagne will remain unspilled if placed on the floor, the suspension's qualities are far and away ahead of conventional springing.

The car's ride appears little different from most, but it is soon realised that there are none of the usual harsh side effects nor unkind responses to trying road conditions. The Citroen system of pneumatic springing has at one stroke freed cars from wheel hop, float, bounce, and chancy handling.

The wheels are supported by hydraulic struts that are pressurised from a master system. (This system also supplies pressure to the brakes, steering, and the transmission). The suspension struts have two parts, and inert gas and the hydraulic fluid. These are separated by a flexible diaphram. The gas is

compressed on wheel deflection, and the rate of compression is controlled by the pressure of the hydraulic fluid.

The resistance to wheel deflection increases at a high enough rate to make bottoming nearly impossible, yet there is none of the tremendous energy stored up as when a conventional spring is compressed. Rebound in the DS-19 is low enough to be almost non-existent.

Normal variations of road surface appear to have no effect whatever on the Citroen's handling. The car shows a pleasant amount of understeer regardless of loose gravel, minor corrugations, or even potholes. Too fast an entry to a loosely surfaced corner will of course cause a slide, but there seems no limit to tenacity on good bitumen. The DS-19 often refused to budge under these conditions no matter how fast we were travelling.

One point which is well worth emphasising is the variable ground clearance. At the touch of a button this increases from 6" to 11", as the car rises on its hydraulic struts. Additionally, no matter how much weight is put on the car, or how it is distributed, the suspension is automatically levelling.

Driving the car with the suspension in the high or low position seemed to make no difference to handling.

Yet the suspension is tough enough to stand up to really hard treatment on bad surfaces. This showed on a fast round trip between Canberra and Cooma. The road, which is mainly fair to poor condition, allowed speeds between 70-and-80 m.p.h.

It must be remembered that regardless of the DS-19's fast, forward look it is not really meant for these speeds or such a treatment. The factory classes it as an "economical family saloon".

We found that while the DS-19 was capable of high speeds and continuous fast driving, it lacked the reserves of power now available in larger family saloons.

Roads through the mountainous Southern Alps called for considerable use of 3rd-gear to sustain speeds above 50 m.p.h. Top was almost high enough geared to be called an overdrive. Excellent for returning a very low petrol consumption.

Nevertheless, quite high speeds are attainable on all gears and engine r.p.m. stay low enough to prevent alarm when the car is punched along. It is a matter of course regularly to use 45 m.p.h. on 2nd-gear, and 60 m.p.h. on 3rd-gear. Acceleration to these speeds is more than enough for all normal overtaking and climbing.

Excellent brakes back up the safety margin gained from handling and road performance. These are firm and powerful, show absolutely no sign of fade.

The main brakes have no pedal, but a foot button that resembles a dip-switch. This button is a valve that supplies pressure from the car's master hydraulic system to the braking system.

Travel is small and foot pressures light, and this method of braking soon becomes very pleasant. Killing a fast approach before a dead-stop corner is merely a matter of brushing the button lightly with a casual foot. Panic stops from high speed are almost as sudden as stamping on a normal car's brakes at 10 m.p.h.

Car carries no name tag, only Citroen's chevrons. Sloping back hides huge boot. Lights on turret top are trafficators.

The emergency brake, usually a handbrake in a conventional car, is a foot brake on the DS-19. It serves two purposes: it can be used by the left foot as a clutch when backing and filling against the assisted transmission; and it is also a parking brake that can be adjusted to stay on when it is pressed down. It is released by a small catch near the driver's left knee.

Ease of driving, something which the factory has deliberately aimed at, is well up to expectations.

The master hydraulic system is used for almost everything except opening and closing doors.

The assisted steering is extremely light, quick with 2½ turns from lock-to-lock, yet retains a positive road feel.

The assisted transmission, which is really a conventional 4-speed system with the clutch operated automatically, is a delight to use. selection of all gears is effortless.

However, gear shifting is not a fast operation. The throttle must be part closed before making a change, and there is a slight time lag before clutch and gear take-up is achieved. This is the reason for the moderate acceleration times recorded. It will be seen that acceleration *on* each individual gear is good; but acceleration *through* the gears is only moderate.

From the front-wheel-drive (which is not noticed when driving) comes a completely flat rear floor with no tail-shaft tunnel.

The front seats accommodate two, with the engine bulkhead jutting some way between the driver and front passenger. The rear will easily take three. All seats have generous proportions, and there is leg room to spare.

Fitments are extremely styled, the eye catching piece being the facia. This is a creation of compound curves, egg-crate ventilators, and smart but legible instruments. However, the real interest is the spokeless steering wheel.

Visability is extremely good, helped by absence of window guides.

Points of design that intrigued us were the totally detachable rear mudguards (for wheel changing); the huge boot (the spare wheel is carried under the bonnet) and the extreme rearwards mounting of the engine.

We felt that the mass of plumbing under the bonnet would deter most owners from fiddling. However, a second look showed everything was accessibly placed. The reserve for the large hydraulic system is seen instantly and has a prominent contents marker.

This is a car which we believe truly represents a trend of things to come. Its good points and mechanical features are numerous enough to warrant book-length space.

Technical Details

Specifications:

MAKE:
Citroen DS-19, 4-door, 4/5 passenger saloon. Our test car from the French Embassy, Canberra, A.C.T.

PRICE AND AVAILABILITY:
£2,314 (N.S.W. distributors, Buckle Motors).

ENGINE:
4-cyl., inclined o.h.v., 78 x 100 m.m., capacity 1,911 c.c., comp. ratio 7.5 to 1, 75 b.h.p. at 4,500 r.p.m., 2.53 b.h.p./sq. in. piston area. Single Weber dual-choke carburettor with dry-maze air-cleaner. *Capacities:* Radiator, 19 pint.; sump, 7 pt.; petrol tank, 14 gal.

TRANSMISSION:
Single dry-plate clutch with automatic hydraulic control; 4-speed all synchromesh gearbox operated by steering column shift lever via hydraulic control; front-wheel-drive; spiral bevel front end, ratio 3.89 to 1. *Overall ratios (by calculation)*: 3.89, 4.63, 6.77, 13.66. *Top gear m.p.h.*s 19.35 *at* 1,000 r.p.m.; 73.8 at 2,500 ft./min. piston speed.

CHASSIS AND BODY:
All-steel unitary construction with integral platform frame. Plastic understressed turret top. Dry weight, 22 cwt.

SUSPENSION:
I.f.s. by wishbones and pneumatic springs incorporating height corrector and anti-roll bar; i.r.s. by trailing arms and pneumatic springs incorporating a height corrector and anti-roll bar.

BRAKES:
4-wheel hydraulic brakes with inboard discs at front operated by foot valve; mechanical linkage to front wheels by foot operated lever. *Friction lining area:* 80.6 sq. in. *Ratio per laden ton:* 63.2 sq. in.

STEERING:
Power assisted rack-and-pinion; 2½ turns from lock to lock; turning circle, 36 ft.

ELECTRICAL EQUIPMENT:
12-volt ignition; 57 amp. hour battery; 35/35-watt headlamps; courtesy light; automatic flashing light trafficators.

WHEELS AND TYRES:
Pressed-steel discs with 5-stud attachment; 165 x 400 m.m. tyres.

OVERALL DIMENSIONS:
Wheelbase, 10' 3"; track, front, 4' 11", rear, 4' 3¾"; length, 15' 9"; width, 5' 10½"; height, 4' 10"; clearance 6"/11".

Performance:

MAXIMUM SPEED:
Average of test runs .... 83.5 m.p.h.
Fastest one way .... 84.3 m.p.h.

MAXIMUM SPEEDS ON GEARS:
At 4,500 r.p.m. (Manufacturer's limit): 1st, 25 m.p.h.; 2nd, 50 m.p.h.; 3rd, 73 m.p.h. *Recommended shift points:* 1st, 15 m.p.h.; 2nd, 30 m.p.h.; 3rd, 45 m.p.h. (Normal driving).

MAXIMUM ENGINE PERFORMANCE:
72.3 b.h.p. at 4,350 r.p.m. (Top-gear equivalent 84.0 m.p.h.); 83.0 lb./ft. torque at 2,460 r.p.m. (Top gear equivalent 47.5 m.p.h.)

ACCELERATION:
Standing ¼-mile: Average of runs, 25.25 sec.; fastest, 25.1 sec. *Acceleration through gears:* 0—10 m.p.h., 1.7 sec.; 0—20 m.p.h., 3.8 sec.; 0—30 m.p.h., 7.8 sec.; 0—40 m.p.h., 11.5 sec.; 0—50 m.p.h., 15.6 sec.; 0—60 m.p.h., 21.9 sec.; 0—70 m.p.h., 28.1 sec.; 0—80 m.p.h., 39.1 sec. *Top gear acceleration:* 10—30 m.p.h., 9.8 sec.; 20—40 m.p.h., 8.1 sec.; 30—50 m.p.h., 7.3 sec.; 40—60 m.p.h., 7.9 sec.; 50—70 m.p.h., 8.5 sec.; 60—80 m.p.h., 21.5 sec.

BEST HILL CLIMBING:
Top gear: 1 in 12.4 at constant 44 m.p.h.
3rd. gear: 1 in 8.8 at constant 35 m.p.h.
2nd gear: 1 in 4.9 at constant 29 m.p.h.
1st gear: 1 in 3.6 at constant 23 m.p.h.

BRAKING:
Footbrake at 30 m.p.h. in neutral, 34.4 ft.
Handbrake at 30 m.p.h. in neutral, 58.0 ft.
Fade, nil.

SPEEDOMETER CALIBRATION:
Test car's speedometer was in kilometres. Conversion readings approximately correct at 30 m.p.h., 50 m.p.h., and 70 m.p.h.

TEST WEIGHT:
Driver, assistant, full tank, and test equipment, 26½ cwt.

PETROL CONSUMPTION:
Normal highway cruising, 29.3 m.p.g.; hard driving, 26.3 m.p.g. Premium grade fuel used.