

A CAR WHICH IS DIFFERENT

The Rear-engined 12 h.p. Four-cylinder Mercedes-Benz, an Individual Design With Suspension, Overtop Transmission, and

CARS as a whole are steadily improving year by year; they become easier to drive and more convenient in points of detail. But from the evidence so far supplied manufacturers in this country are not breaking away from the conventional style of car we have known for years, with an engine in the front, clutch and gear box behind the engine, a frame consisting of channel or box-section side-members joined by cross-members of various types, and a propeller-shaft passing to a rear axle housing containing bevels to drive the rear wheels.

On the Continent the position is different. Several unorthodox cars have appeared, hailing from France, Germany, Austria, Czechoslovakia, in which the long-accepted sequence of the components has been reversed, or at least very materially revised. Precisely what advantages are gained in a country such as ours by these changes, and, still more, the reaction of the ordinary car user to them, remain to be proved.

A case in point is the small rear-engined Mercedes-Benz, known as the Type 130, which first appeared earlier in the year. Here is a car entirely different in its whole construction and layout from any machine, big or little, which we produce. Obviously, it has not been made simply to create a passing sensation, for its builders are among the very oldest in the automobile industry, renowned for fast cars and for cars of quality.

It is an attempt to meet the conditions obtaining in its own country, where many people require a car that shall be economical, yet will not be content with one that involves tedious travel over long distances, or disproportionate sacrifice of comfort compared with a large car.

Instead of scaling down their bigger models, the Mercedes-Benz engineers decided to design on fresh lines. They swept away the ordinary frame and utilised a tubular "backbone," with no ordinary side-members, an idea which has already been used on at least two other makes of Central European origin. Going farther, they place the engine and gear box at the rear of the frame, so making easy the provision of a compact streamline shape of closed body with good accommodation, and an interior unimpeded by transmission units, and, most important, seating the occupants within the wheelbase. To secure

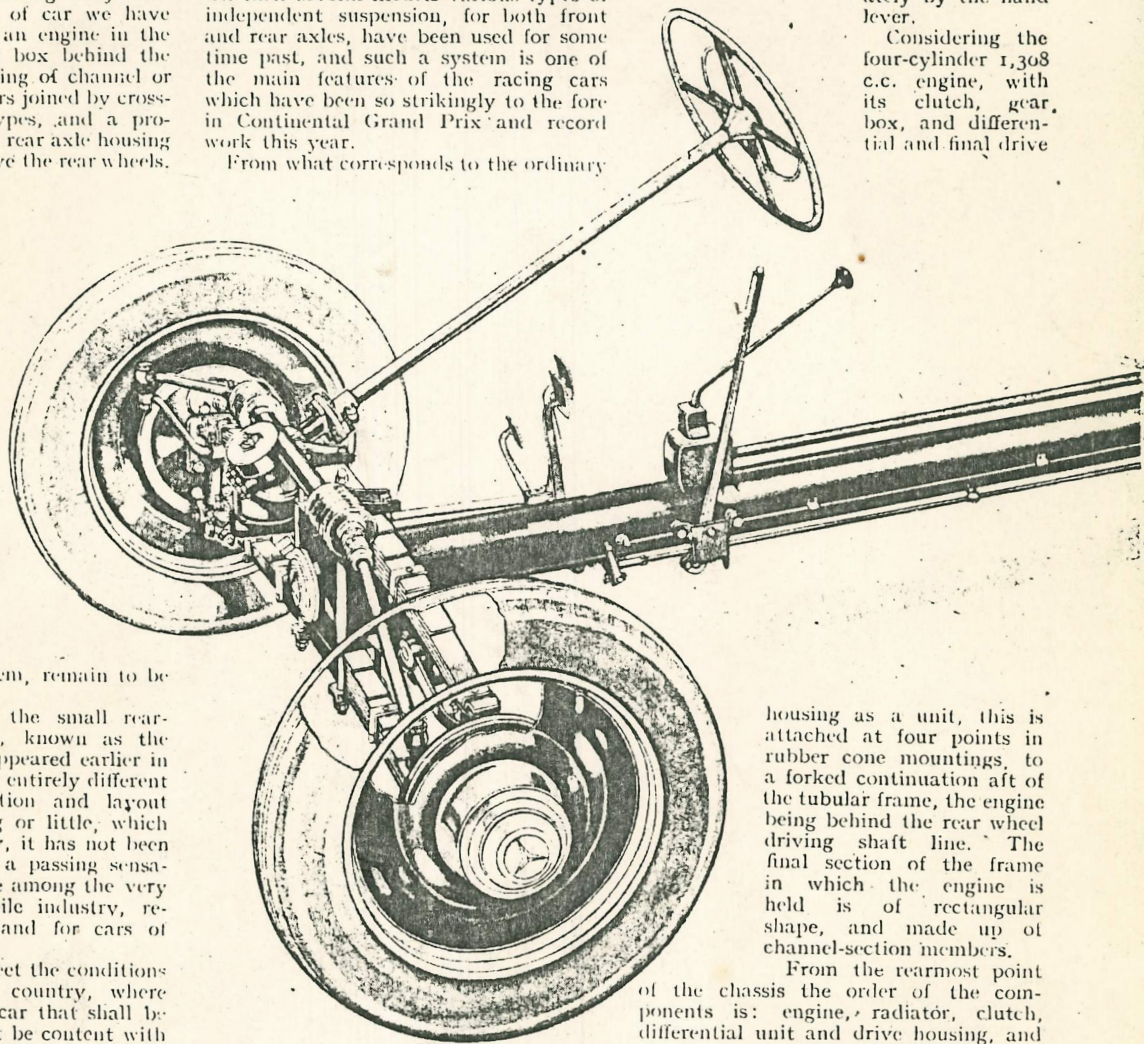
the necessary comfort which was one of the original ideals, all four wheels were independently sprung.

In this type of suspension the Mercedes firm have almost unrivalled experience. On their several models various types of independent suspension, for both front and rear axles, have been used for some time past, and such a system is one of the main features of the racing cars which have been so strikingly to the fore in Continental Grand Prix and record work this year.

From what corresponds to the ordinary

The brakes are hydraulically operated, and the pedal arm extends directly into the master operating cylinder. The rear wheel shoes are controlled separately by the hand lever.

Considering the four-cylinder 1,308 c.c. engine, with its clutch, gear box, and differential and final drive



housing as a unit, this is attached at four points in rubber cone mountings, to a forked continuation aft of the tubular frame, the engine being behind the rear wheel driving shaft line. The final section of the frame in which the engine is held is of rectangular shape, and made up of channel-section members.

From the rearmost point of the chassis the order of the components is: engine, radiator, clutch, differential unit and drive housing, and the gear box. The final drive reduction is through a worm and worm wheel, and short universally jointed shafts to the rear wheels are contained in half-axle casings pivoted from the differential unit.

The rear wheels are sprung by a large diameter coil spring at either side, and both the front transverse leaf springs and the rear coil springs are damped by hydraulic shock absorbers. The absence of radius arms for either front or rear axles is a noticeable point, and one of the special features of the design.

So much for the general layout. The engine is a simple side-valve type, with a detachable cylinder head in which the sparking plugs are set vertically, and above it projects the Bosch distributor for the ignition. It is stated that it de-

front axle, back to the gear box, there is no frame in the usual sense except the stout central tube or "spine." Attached transversely to the front of this is a drilled channel member, to the top and bottom of which is secured a leaf spring, set across the car. Passing vertically through eyes in the extremities of these springs are the steering swivels. The steering gear itself consists of a reduction box mounted on the transverse chassis member, imparting movement individually to a horizontal arm at each side which passes to the steering knuckle. The use of rubber "concertina" sleeves for protecting various joints, in the steering as well as in the transmission, is particularly noticeable on the chassis

FERENT

Four-wheel Independent Tubular Frame

velops 26 b.h.p. at 3,400 r.p.m., with a compression ratio of 6 to 1. An up-draught Solex carburetter feeds to a manifold which is heated by contact with the exhaust, which itself is led down at the very rear. A large air cleaner and

as 9½ cwt., and of the complete car as 16 cwt. There is interest in the control mechanism, which, as far as the carburetter, clutch, and gears are concerned, has to pass, of course, to the rear of the chassis. The actuating links are held in steady brackets attached to the central tube, and the gear control is taken along the top of the tube. There is nothing in driving the car to indicate that the controls lead rearwards and are considerably more remote than is usual.

The gear box is specially interesting, for its Mercedes-Benz feature of an over-top ratio. There is a geared-up indirect gear, appreciably higher in ratio than the direct drive, or third speed; its object is to allow quite high speeds on the open road at lower engine revs than apply to an average top gear. A similar type of gear box is used on the larger Mercedes models.

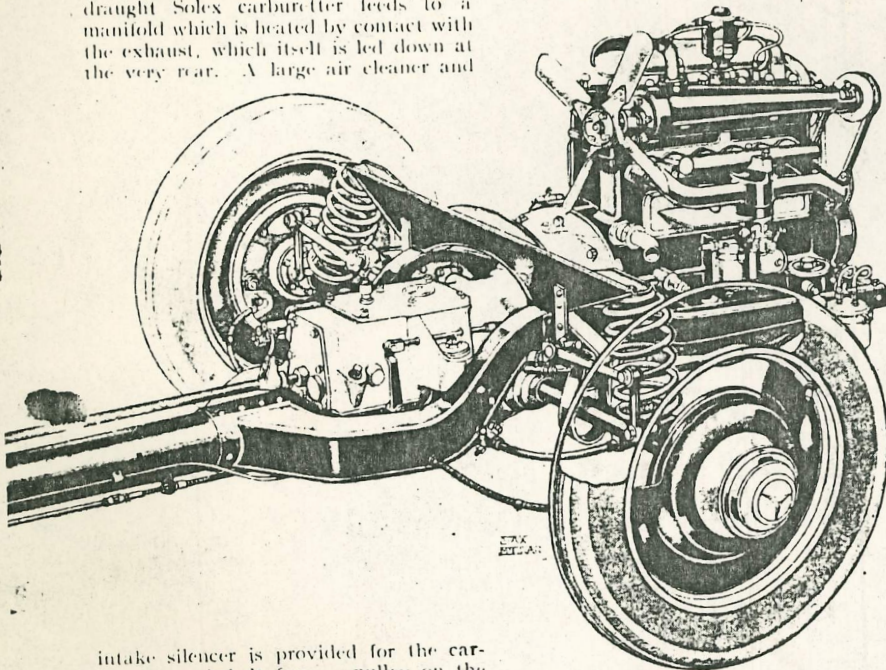
As to the complete car, a metal bulk-head shuts off the engine and radiator from the streamline body, which is either of cabriolet type, with a head that can be opened, or of similar appearance but with the fixed head of a saloon. Air is led into the engine compartment through louvres at each side of the body, towards the rear, and its exit is provided for in the tail. To gain access to the engine two threaded thumbscrews are loosened, the bonnet is lifted, and then the oil filler and dipstick, and the fuel tank and radiator filler caps can be reached. For more extensive attention two side panels can be lifted out.

In front, corresponding to the ordinary bonnet, there is a compartment, also with a hinged lid, for the spare wheel and tool kit, where there is room for a certain amount of luggage as well.

There is one-shot lubrication for the chassis, extending to all the principal bearings, and operated by a pedal in the driving compartment.

Throughout, and especially in examining the beautifully finished Show chassis, an impression of the fitness of things is obtained; nowhere has material been wasted, but clearly nothing has been skimped.

Here, the cars are handled by British Mercedes-Benz, Ltd., 111, Grosvenor Road, London, S.W.1; the price of the 12 h.p. rear-engined model is £425 for the saloon and £415 for the cabriolet. A Road Test of this rear-engined car was given in *The Autocar* of November 16th



intake silencer is provided for the carburetter. A belt from a pulley on the tail of a three-bearing crankshaft drives the dynamo, and also a shaft in a tunnel passing to the front of the engine, at the forward end of which is a vane-type impeller for the water circulation, and a big four-bladed fan.

Warm air from the engine is led into a scoop, and so into the body of the car, under control by a shutter, to give a comfortable temperature in cold weather.

The oil circulating under pressure for engine lubrication is passed through a large-capacity external filter and purifier. The sump, which holds one and a quarter gallons, is of light alloy, and extensively ribbed for cooling purposes. The fuel tank, cylindrical in shape, and holding 7½ gallons, is mounted on the off side, partly forward of the engine.

Two steel "straps" or platforms attached to the tubular frame carry the body. The weight of the chassis is given

