

ROAD TESTS OF NEW MODELS

494 c.c. B.M.W. R50

Vibrationless Flat Twin with Shaft Drive : Exceptional Comfort, Quietness and Cleanliness : Outstanding Braking, Steering and Roadholding

FOR more than 30 years B.M.W.s have pinned their faith to the flat-twin engine with its almost perfect balance and its excellent cooling when transversely mounted. During that period the famous German marque has also earned renown for allegiance to shaft transmission, cleanliness of power units and high quality of workmanship. On a number of occasions B.M.W.s have been among the pioneers of new trends in design. Specific instances include the adoption of welded frame construction and hydraulically damped, telescopic front forks. The latest R50, a high-performance touring five-hundred, introduced at the 1955 Brussels Show, abundantly maintains the makers' reputation for up-to-date design, first-class engineering and outstanding all-round performance.

The new model features pivoted-fork springing at front and rear, and the transmission shaft is enclosed in the right-hand member of the rear fork. Road behaviour of the R50 is extremely gentlemanly. Indeed, it is difficult to visualize a machine of conventional conception being more smooth, quiet, comfortable and clean to ride. Except during inclement weather, the machine could be ridden in ordinary walking clothes without any fear of their becoming soiled.

At all speeds from normal tickover to valve float the engine was turbine-smooth in operation. Only when the unit was idling extremely slowly was there a trace of lateral judder. Flywheel inertia is high and contributes to the exceptional sweetness of the transmission. On its low bottom-gear ratio of 16.95 to 1, the R50 would trickle along at moderate walking speed with the clutch fully engaged and would accelerate smoothly from that speed merely as the result of the twistgrip being opened.

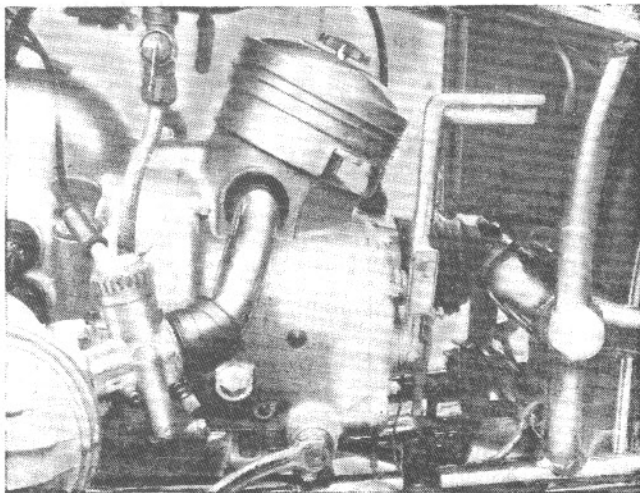
An ingenious twistgrip design gives a graduated rate of opening of the two throttles. A bevel gear on the twistgrip sleeve actuates a similar gear which operates both throttle wires through a cam device. As a result, twistgrip action is slow in the lower ranges of throttle opening and becomes progressively more rapid as the degree of opening is increased. The delicacy of throttle control thus afforded enhanced the smooth operation of engine and transmission and removed much of the irritation from negotiation of heavy traffic.

Engine starting was effortless and certain. Preliminary requirements were merely to close the strangler, momentarily depress each float tickler and switch on the ignition. With the twistgrip set for a fast tickover, the engine invariably came to life at the

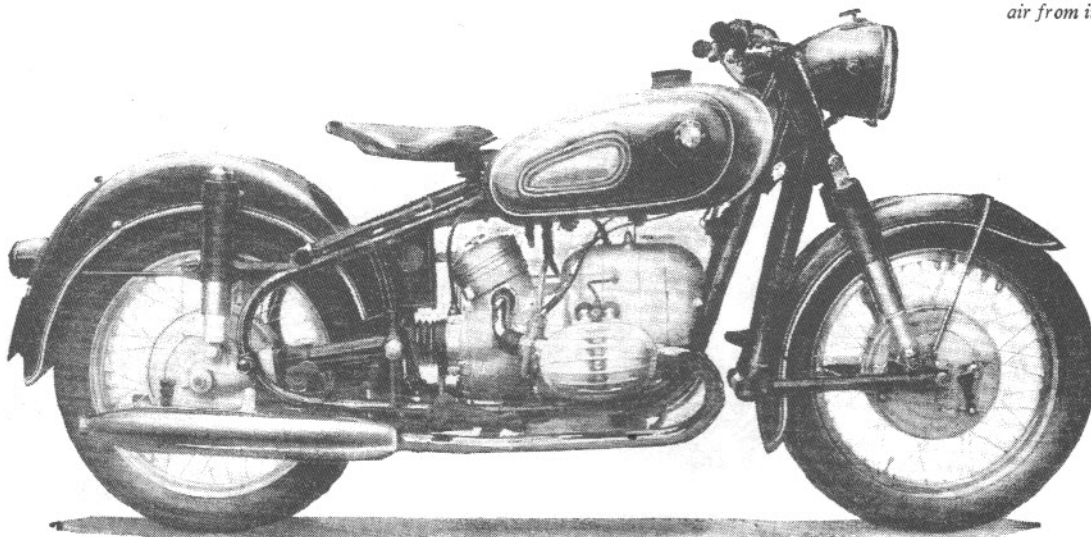
first depression of the kick-starter. The starter pedal moves in a transverse plane and it was a simple matter for the rider to operate it with his right foot while standing on the left of the machine.

When the strangler is closed the carburettors are fed with filtered air from inside the crankcase casting. During the moderately warm weather which prevailed for the test period, the strangler was opened as soon as the engine fired. Idling was slow and reliable whether the engine was hot or cold.

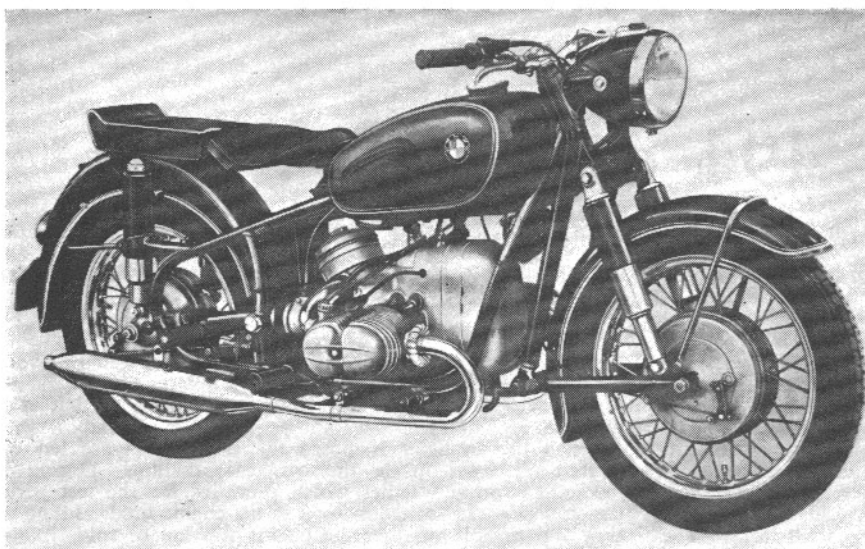
One of the most outstanding characteristics of the power unit was its quietness of operation. The level of mechanical noise was probably as low as that of any air-cooled, poppet-valve engine. There was never more than the subdued rustle of well-oiled machinery. The pleasant hum from the interconnected exhausts reflected the fact that exhaust noise is controlled by legislation in Germany. Indicative of the unusually high standard of mechanical and exhaust quietness achieved by the B.M.W. engineers is that the noise which was most perceptible to the



When the air strangler is closed, the twin carburetors are fed with filtered air from inside the crankcase casting



Sleek and businesslike, the R50 B.M.W. is finished in black and chromium. The pivoted front fork has provision for adjustment of trail. The front brake is of twin-leading-shoe design



The 600 cc R-69 has new swing-arm suspension all around. The drive shaft passes through one of the suspension arms. 35 hp motor gives a top speed of more than 100 mph.

THE BMW Company always has been famous for their sound approach to the problem as to how a motorcycle should be designed and built.

Shaft-drive and telescopic suspension were the trademark of BMW mo-

tors. Suspension travel at the rear has been increased from 3 in. (on the older models) to almost 4 in. in the latest design.

With an eye to sidecar operation, special efforts have been made to make the BMW frame as sturdy as possible

mands reduced caster).

For the 1955 models, the fuel tank is slightly narrower but a little higher, giving the same fuel capacity (4.5 gallons). The toolbox is now located at the left side of the tank.

Handlebars measure 25.5 in. in width and are adjustable to accommodate build of riders as well as a variety of riding positions.

Throttle action on the new models is quick and provides precision adjustment.

Large alloy finned brake drums are fitted and the Duplex brakes on both the R-50 and F-69 have increased braking area.

Wheelsize has been reduced from 19 in. to 18 in. Standard models are normally equipped with a rubber saddle, but a dual seat is available as optional equipment.

The proven 500 cc and 600 cc engines are of the same construction as previously, but the power output of the BMW R-50 has been increased from 24 to 26 hp. Carburetors are repositioned for more foot room.

The new four-speed transmission with three shafts has been developed from the design of the R-25-3 models. The final-drive-shaft is now completely enclosed in the right swing arm mem-

New BMW Features Include New Suspension Front and Rear

torscycles in the days when most motorcycles were fitted with girder forks and rigid frames.

In 1952-53, the BMW racing models and record machines were equipped with full swing-arm-suspension for both the solo and sidecar machines, and the 1955 BMW Twins, the new 500 cc Sport R-50 and the fast regular production motorcycle, the 600 cc R-69 Super Sport are equipped with a similar design front and rear. These models have been designed for the connoisseur for whom its performance, sound and purposeful design should have a strong appeal. The R-69 has a top speed of more than 100 mph.

For 1955, the BMW front and rear suspension arms are pivoted in tapered roller bearings. This system eliminates bearing play and adjustment is easy.

The suspension has been designed for long spring-travel and the initial deflection movement is soft to enable the suspension to absorb the slightest road irregularities, while the correct progressiveness of the spring rate prevents bottoming on rough surfaces.

The length of the front swing-arm has been determined after exhaustive research and road testing to minimize "dive" when the brakes are applied and "rise" when accelerating.

The new front suspension has a travel of 4.3 in. (1.8 in. in the upper range with 2.5 in. in the opposite direction) as compared to 2.3 in. on the previous

to prevent flexing. Many valuable lessons were learned from the factory's competition experience (Last year BMW captured the world championship in the sidecar class).

Provision is made to stiffen the suspension on the new machines for pillow riding, simply by turning a lever on the swing arm.

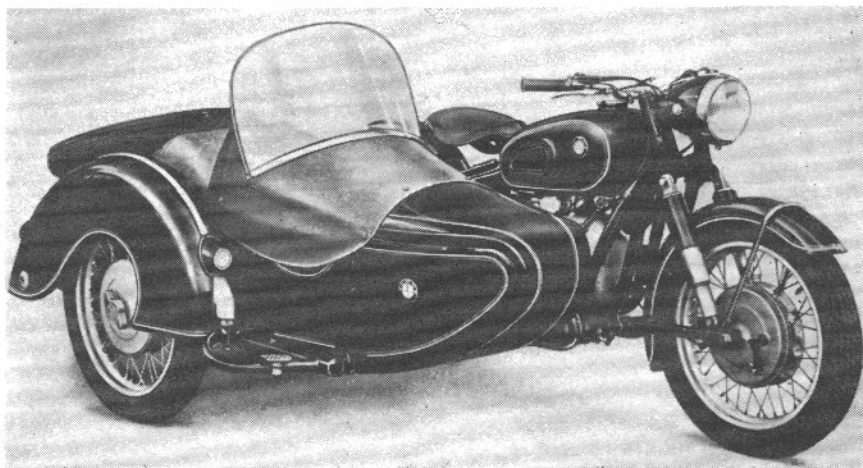
The new models, despite the number of improvements, still are within the weight limit of the older models. An interesting feature is that front wheel caster is easily adjustable for either solo or side car use (side car use de-

ber. Clutch operation is made easier by the use of a new design disc-like springs.

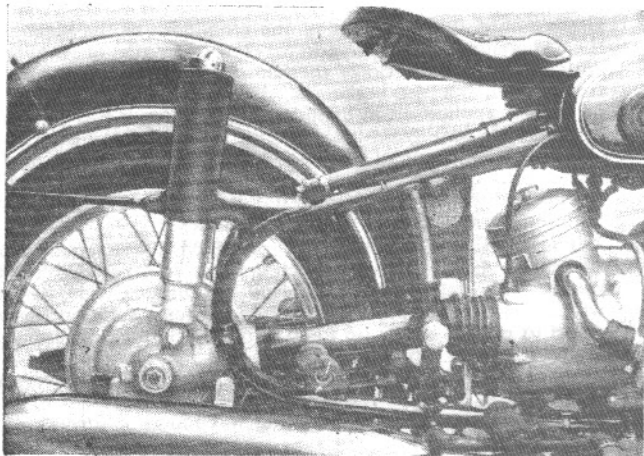
The R-67-3, the robust 600 cc touring model is again being manufactured, retaining the telescopic front and rear suspension.

The R-25/3, the 250 cc single cylinder model remains unchanged and will continue to be produced with telescopic front and rear suspension.

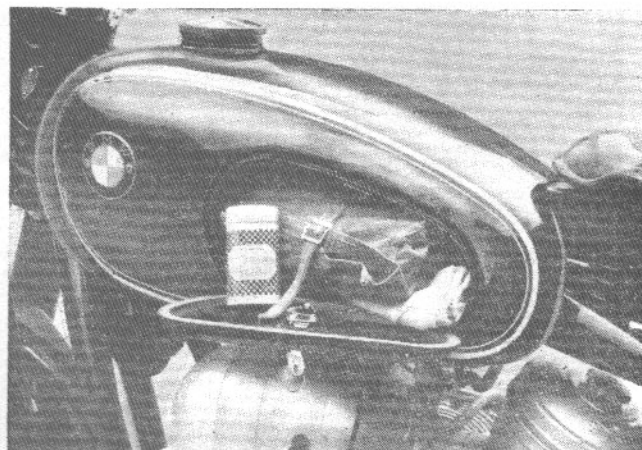
BMW export statistics show that the majority of BMW export machines to countries all over the world, are BMW R-25's.



A fast combination. The 50 cc R-50 with the BMW "Special" side car. The R-50 engine develops 26 hp.



The driving shaft is enclosed in the right-hand pivoted-rear-fork member. Shock-absorber top mounting is unorthodox



Fitted with a lock, the left-side kneegrip hinges down to reveal a capacious tool box let into the tank

rider at a level-road speed of 40 m.p.h. in top gear was that made by the front tyre on the road.

Acceleration was zestful without being tigerish, but was chiefly notable for its sweetness whether the engine speed was high or low. When ridden in built-up areas, the R50 provided silky, unobtrusive travel at 30 m.p.h. in top gear. On the open road there was no mechanical consideration such as engine vibration, noise or lack of riding comfort to influence the rider's choice of cruising speed. With the rider normally seated, any indicated speed from 11 to 90 m.p.h. was equally pleasant and comfortable, except that there was an almost-imperceptible "hardness" in power delivery at about 57 m.p.h. in top gear.

The transverse disposition of the engine results in most efficient air cooling of the cylinders and cylinder heads, and sustained cruising at about 80 m.p.h. failed to evoke the slightest sign of distress from the power unit. When checked for accuracy, the speedometer proved to read fast by approximately 10 per cent at all speeds.

Wide spacing of the gear ratios and a relatively heavy engine-speed clutch combined to make clean gear changes difficult. For upward changes the technique which was most effective in mini-

mizing clashing of the dogs was to apply firm upward pressure to the gear pedal before the clutch and throttle controls were operated, so that the gears were shifted as soon as the clutch was slipped and the twistgrip eased. Because of high flywheel inertia it was necessary to re-engage the clutch gently if a slight lurch of the machine was to be avoided. Downward changes were best effected with a firm, quick pedal movement and an appreciable increase in engine speed.

Engagement of bottom gear with the engine idling slowly was usually quiet and neutral was easily located from bottom or second gears. A green light in the headlamp shell indicates that neutral is selected. Take-up of the drive was confined to a relatively small range of movement of the clutch lever but it was by no means difficult to ensure a smooth getaway.

Slightly heavy at ultra-low speeds, the steering was otherwise superb. Though the steering damper was never brought into play, straight-ahead steering was rock steady. For test purposes the rider's hands were removed from the handlebar at maximum speed with complete confidence. Bend swinging and cornering were equally delightful. The machine could be heeled over stylishly on slow or fast curves in the sure knowledge that it

Information Panel—494 c.c. R50 B.M.W.

SPECIFICATION

ENGINE: 494 c.c. (68 x 68mm) overhead-valve, horizontally opposed twin. Fully enclosed valve gear, magneto and dynamo. Aluminium-alloy cylinder heads. Crankshaft supported in ball bearings. Roller big-end bearings. Compression ratio, 6.8 to 1. Semi-dry-sump lubrication; oil capacity, 4 pints.

CARBURETTORS: Bing, with twistgrip throttle control. Air filter incorporating strangler.

IGNITION and LIGHTING: Noris magneto with auto-advance. Separate Noris 60/90-watt dynamo with automatic voltage control. Varta 6-volt, 8-ampere-hour battery. Bosch 6½in-diameter headlamp with pre-focus light unit and 35/35-watt main bulb.

TRANSMISSION: B.M.W. four-speed gear box in unit with engine; positive-stop foot control. Gear ratios: bottom, 16.95 to 1; second, 9.6 to 1; third, 6.49 to 1; top, 4.9 to 1. Single-plate dry clutch incorporated in engine flywheel; fabric friction linings. Final drive by enclosed shaft and helical bevel gears. Engine r.p.m. at 30 m.p.h. in top gear, 1,965.

FUEL CAPACITY: 3½ gallons.

TYRES: Firestone Phoenix, 3.50 x 18in front and rear.

BRAKES: 8in diameter; twin-leading-shoe front and single-leading-shoe rear; finger adjusters.

SUSPENSION: B.M.W. pivoted-fork front and rear springing employing multi-rate coil springs and hydraulic damping. Two-position adjustment for load on rear shock-absorbers. Two-position trail adjustment at front fork pivot.

WHEELBASE: 56in unladen. Ground clearance, 6½in unladen.

SADDLE: Cantilever type, pivoted at nose; rubber top. Unladen height, 30½in.

WEIGHT: 413 lb fully equipped and with full oil sump and one gallon of petrol.

PRICE: £305. With purchase tax (in Great Britain only), £366.

ROAD TAX: £3 15s a year; £1 0s 8d a quarter.

MAKERS: Bayerische Motoren Werke A.G., Munich, Germany.

BRITISH CONCESSIONAIRES: A.F.N., Ltd., Falcon Works, London Road, Isleworth, Middlesex.

PERFORMANCE DATA

MEAN MAXIMUM SPEED: Bottom: * 29 m.p.h.
Second: * 52 m.p.h.
Third: * 76 m.p.h.
Top: 90 m.p.h.
* Valve float occurring.

HIGHEST ONE-WAY SPEED: 94 m.p.h. (conditions: moderate tail wind and rain; rider wearing two-piece riding suit and overboots).

MEAN ACCELERATION: 10-30 m.p.h. 20-40 m.p.h. 30-50 m.p.h.
Second ... 3.6 sec 3.4 sec 3.3 sec
Third ... 5 sec 5 sec 5 sec
Top ... 8 sec 7.8 sec

Mean speed at end of quarter-mile from rest: 76 m.p.h.
Mean time to cover standing quarter-mile: 16.8 sec.

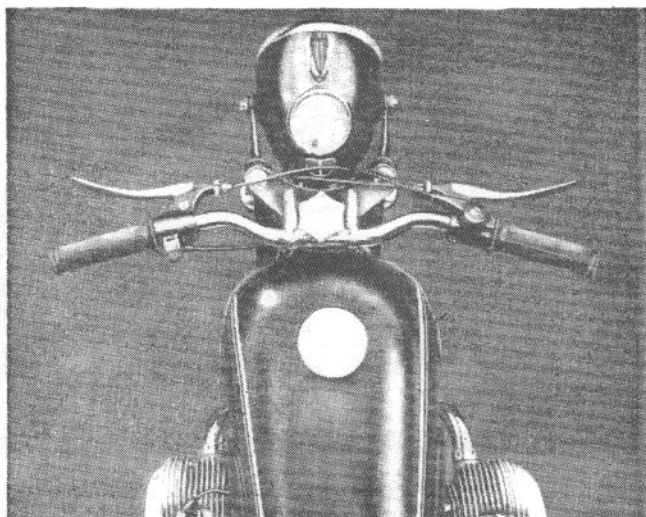
PETROL CONSUMPTION: At 30 m.p.h., 95 m.p.g. At 40 m.p.h. 80 m.p.g. At 50 m.p.h., 65 m.p.g. At 60 m.p.h., 60 m.p.g.

BRAKING: From 30 m.p.h. to rest, 27ft (surface, dry concrete).

TURNING CIRCLE: 16ft.

MINIMUM NON-SNATCH SPEED: 11 m.p.h. in top gear.

WEIGHT PER C.C.: 0.83 lb.



Incorporated in the headlamp shell are the combined lighting and ignition switch, speedometer and ignition-warning and neutral-indicator lights

would follow the chosen line faithfully. No components fouled the road however steeply the R50 was banked. The centre-stand extension—on many machines an offender in this connection—is neatly recessed into the underside of the left-hand silencer. For all practical purposes the effects of torque reaction (during acceleration and deceleration) arising from the transverse mounting of the engine were unnoticeable.

With a comparatively rearward footrest setting, the riding position is such as to render long periods of high-speed riding untiring to the rider. The slight forward crouch involved did not prove to be uncomfortable for low-speed work in town. To match the offset of the cylinders, the B.M.W.'s footrests are staggered slightly, but the effect ceased to be noticeable after the first few moments spent in the saddle. Though the gear pedal is not adjustable for position and the handlebar grips, complete with their built-in control clusters, can be rotated only on the bar, the siting of every control was just about perfect.

Front and rear pivoted-fork springing combined to furnish leech-like roadholding at all speeds and a high degree of insulation from bumps. The action of the front fork was rather firm at low speeds but was ideally suited to fast riding. Pivoted at its nose, the pan-type saddle further enhanced the rider's comfort.

High road performance necessitates good brakes. Those fitted to the R50 (both are of 8in diameter and the front has two leading shoes) were not only uncommonly powerful but they

also matched the behaviour of the remainder of the machine in their smoothness of operation. The strength of the return springs in the front-brake mechanism made initial operation a trifle heavy, but the brake was delightfully controllable except on its first application in humid weather, when it had a tendency to grab. Because front-brake torque is transmitted through the fork arm, application of the brake raises the front of the machine and stiffens the fork action. The efficiency of both brakes was unimpaired by hours of rain and no brake adjustments were required during a test of nearly 1,000 miles.

The electrical equipment of the B.M.W. functioned most efficiently. The horn was clearly audible to other drivers at all speeds. The rubber-mounted headlamp threw a wide, flat beam which illuminated both sides of the road for a sufficient distance ahead to permit speeds up to 80 m.p.h. to be used on unlit main roads in perfect safety after dark.

Not a smear of oil appeared on the outside of the power unit although the R50 was ridden hard for many hundreds of miles. In filthy weather, the mudguarding was found to furnish above-average protection.

Maintenance requirements have been reduced to a minimum on the R50; those which remain can be carried out with great ease. Valve-clearance adjustments are extremely accessible after removal of the rocker covers, each of which is retained by three nuts. Two captive nuts secure the cast-aluminium front cover to the crankcase. Removal of the cover exposes the contact breaker and dynamo brush gear.

From stem to stern, the R50 is endowed with features which indicate that it was designed by knowledgeable motor cyclists for connoisseurs. Both wheels are quickly detachable and both have polished, light-alloy rims, straight spokes, full-width hubs and chromium-plated balance weights attached to appropriate spoke nipples. Front-fork trail and shock-absorber mountings are readily adjustable for sidecar work. Two-position preloading of the rear shock-absorber springs for pillion work is effected by hand.

The key which operates the steering lock fits the tool box which is concealed behind the left kneegrip. A quick-release rubber strap secures the battery on its platform, while rubber grommets prevent the ingress of water to the carburettors at the points of entry of the throttle cables. Firmly mounted in a reasonably clean position, the tyre pump is fitted with a rubber cap to exclude grit. In the modern continental trend, knurled clutch and front-brake cable adjusters are incorporated in the handlebar pivot lugs.

Finish of the R50 is in serviceable black and white enamel, with a generous use of chromium plating and many light-alloy parts highly polished. In short, the latest R50 is one of the most outstanding contemporary models, combining to an admirable degree high performance, silky running, quietness, comfort, cleanliness and ease of maintenance. Its high engineering quality gives real pleasure to the knowledgeable and should add appreciably to pride of ownership.

By contemporary standards the rear frame is of unusual design, but permits an extremely rigid sidecar mounting

