Rolls-Royce Owners' Club of Australia

THE ROLLS-ROYCE BUMP TEST

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Mr F.H. Royce, the designer and maker of the world-famed Rolls-Royce motor car, has the distinction of being one of very few men honoured with a public statue while still living. The bronze statue of Mr Royce at Derby, England, is a standing memorial of a great motor engineer whose work includes the Rolls-Royce car and the aeroplane engine which was employed in the Great War to a greater extent than that of any other design. Aeroplanes fitted with these engines also made the first flight across the Atlantic and to Australia. Mr Royce was almost entirely self-educated. He sold newspapers when a boy. He served his apprenticeship to engineering at the northern locomotive shops at Peterborough. He entered into business in a small way as a maker of electrical equipment and made a success of it. He was among the first to purchase a car (a De Dion single cylinder) in 1898. He set out to design a car which could be relied upon to run uninterruptedly between his workshop and his home, a distance of 15 miles. The first model was a two-cylinder car of 10-horsepower, and it was a complete success. The Rolls-Royce Company was started in 1905 with a capital of one hundred and sixty thousand pounds, and production was soon afterwards commenced on a six-cylinder car, a type up till then unknown.

One means by which the Rolls-Royce car was brought to its high standard of perfection was the "Bump Test". After a preliminary tryout for a while over a test stretch filled with bumps, Mr Rolls (sic) constructed a stationary testing machine, known among Rolls-Royce employees as the "bump-test". This was designed to ferret out faults which no ordinary test could develop and has been described as follows:- Royce took two great drums, or wheels, each eight feet high, and armed with cams, mounted them on an axle, with the top of the drums level with the floor, designed a special building for the apparatus, including a motor to rotate the drums, and all facilities for executing the destructive tests and recording them. Posts were embedded in concrete, and the chassis rolled into position. With the set of wheels resting on the set of drums, the chassis itself was chained to the posts and rotation of the drums started. Even Rolls-Royce workmen shook their heads as the test developed. Obviously nothing could stand up under the terrific onslaught of a machine which packed ten years of road punishment into a single day. Part after part developed flaws, the radiator leaked, springs, steering levers and axle pivots broke. Even the frame broke.

But Royce had no intention of accepting the machine's verdict as final. Using the new fund of information as to impact stresses which constantly accumulated as a result of these tests, all broken parts were redesigned and re-tested until they no longer broke. It was an invaluable inquisitor for Rolls-Royce, this "bump tester". For one thing, Royce learned that rivets could not be used to secure parts of the chassis frame. Taper bolts of nickel steel are employed instead of just a few large bolts.

How sound a chassis was constructed by this new method was demonstrated in the World War. A number of Rolls-Royce cars, which had been running five to ten years in London, were commandeered by the British Army, stripped of their bodies, each chassis loaded with four tons of armoured body and equipment, and the entire lot sent to the Sahara or to Mesopotamia to engage the enemy.

After the war, all save one of the original fourteen cars (the one was a direct shell-hit) were taken down again, the armour laid aside, and the original bodies remounted, and the cars returned to their owners. They are still running in the streets of London.