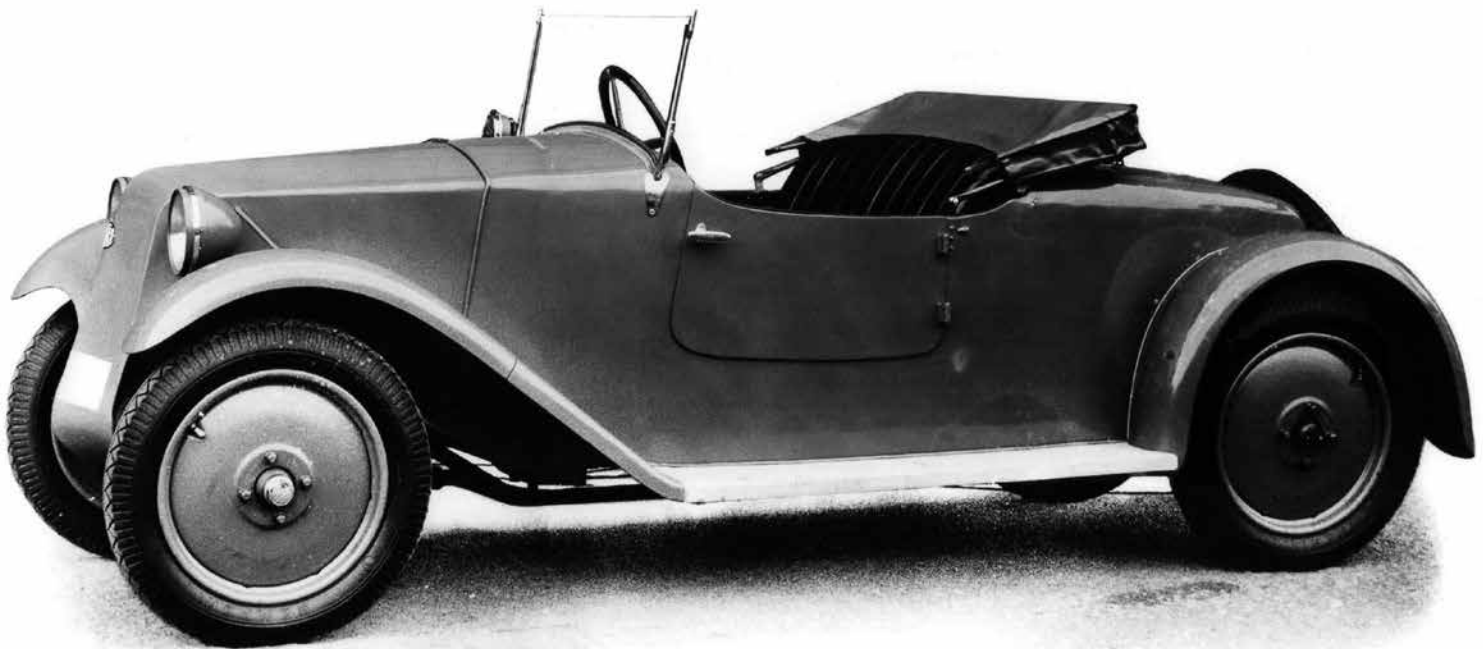

THE BRITISH REACTION



T57 CABRIOLET, 1933. IN BRITAIN
CALLED THE DROPHEAD COUPÉ.
(COURTESY TOM BLIKSLAGER)

over surfaces which bring even the most enormous car, with ordinary springing, down to an absolute crawl. It is very amusing to watch this clever little car negotiating chains of potholes in which you could bury the proverbial dog ... But no, like a big boat negotiating a merely choppy sea, it remains perfectly stable, answers its helm with precise obedience and, what is equally to the point, holds the surface so well that its brakes are always extraordinarily effective. Incidentally, the engine is air-cooled and utterly resists any temptation to get too hot ... Like so many other good things you cannot believe quite how good it is until you try it, and then you wonder why everybody hasn't adopted it."

The Motor magazine of August 1933 again rather enthusiastically comments on what they describe as "the unconventional light car," the T57, by saying, "Tatra, which apart from achieving a considerable sales volume in



T57 SPORTS ROADSTER, 1933.

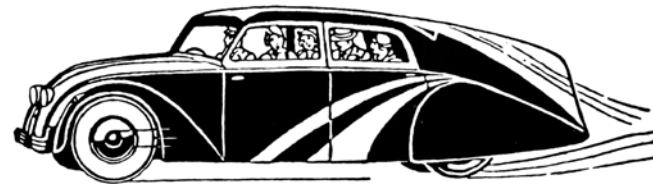


The rear engine prototypes T57 and V570 served the Tatra designers as study models while they were searching for new directions in automobile construction and styling. They aimed at keeping on a level with the contemporary progress in the fields of new technology, architecture, design and the visual arts.

Paul Jaray (1889-1974), born in Vienna, of Hungarian descent, who worked for Zeppelin in Friedrichshafen, Germany, had published scientific papers since the early 1920s setting down the basic design parameters in aerodynamics. He tested streamlined automobile models in the Zeppelin wind-tunnel, and the forms which he had evolved profoundly influenced contemporary car, industrial and aircraft designers. Jaray provided scientific justification for streamlining in terms of advantages of increased speed and stability, which directly improved fuel consumption, leading to the use of smaller capacity engines, and safety. Jaray designed special streamlined bodywork for a number of manufacturers, such as Apollo, Dixi, Ley, Mercedes-Benz, Audi, Fiat and others. Tatra negotiated with Jaray to licence his patents and Jaray provided several proposals starting with his improved T57 body design from 1932.

When Ledwinka and his design team established the principle of a streamlined rear-engined car, they claimed that their intention was not to seek originality at all cost. Their ideas were based on sound engineering judgement and that the form of the automobile had to follow its function with the best possible results.

These new developments also responded to changing road conditions and the requirements of a growing



DRAWINGS FROM THE 1933 TATRA WORKS T77 PROMOTIONAL LITERATURE, ILLUSTRATING THE ADVANTAGES OF STREAMLINING, AND SHOWING THE INCREASED COMFORT WHEN PASSENGERS ARE SEATED BETWEEN AXLES.

Autobahn network. In addition, it was necessary to produce something spectacular and different which would appeal to the extensive foreign markets, most of which were within easy reach of the Central European, Moravian factory. The car required would have to be fast, silent, stable,



THE IMPOSING 1946 TATRA T87. (COURTESY BINKY NIXON)

known well enough but usually considered to be inefficient; F W Lanchester, for example, produced prototypes of air-cooled cars as early as 1896, and the H H Franklin Manufacturing Co successfully made air-cooled vehicles from 1902 until 1934.

Ledwinka's main contribution was the forced ducted airflow, and his perception that, in replacing a perimeter frame with the central tubular structure, the chassis would gain torsional stiffness and make lighter bodywork possible. This would then result in the vehicle being easier to handle at high speeds and on bends, as well as cheaper to make. Another clever innovation was the use of a double bevel drive coupled to a differential. Ledwinka himself never

claimed to have invented any of these features, but he did make them work well together; sometimes all in one automobile.

For example, for the Type S, Ledwinka designed a completely new gearbox, using known experimental features but turning them into a workable production assembly. Apart from the engine plus gearbox monoblock innovation, he had refined the actual elements. The common gearbox of that time needed skilful handling. To improve its operation, Ledwinka substituted radial engagement of an entire toothed flank for the sliding axial mesh. This so-called 'bell' or 'Glockengetriebe' gearbox was connected to an oil-bathed, cast iron cone clutch, an

TATRA WITHOUT LEDWINKA

were used. In the early 1960s, special design studies led to a modernised prototype T603A but no production followed. Similarly, in the Tatra branch in Bratislava, another prototype T603X was developed as well as a 13-seater front-wheel-drive T603MB minibus. By June 1975, when manufacture of the T603 ended, 20,422 units had been made.

In 1959, in Wiesbaden, West Germany, a white Tatra T603 was awarded a Golden Ribbon for its looks and

elegance. Between 1957 and 1967, T603s participated in 79 domestic and international competitions, rallies and races and during these they had gained 60 first, 56 second and 49 third places. The biggest success these cars achieved was in 1966, when three special rally T2-603s of the B5 category with 150bhp output took part in the 84-hour Marathon de la Route. In competition with 37 cars of major world marques, the T2-603s were awarded the first, second, and the third



T603 BROCHURE.



T603 PARTICIPATING IN THE 1959 ALPINE TRIAL.



THE MODERNISED T2-603 MODEL WITH CLOSELY-SPACED HEADLAMPS MADE BETWEEN 1963 AND 1967. (COURTESY SIMON REDRUP)



Ledwinka continued to be a protagonist of swing half-axle trucks and, even after his retirement in Munich, he tried to persuade British and German manufacturers to include this basic design concept in their new truck design. He advised Perkins, Klöckner-Humboldt-Deutz and Magirus on truck engines and suspension design, sometimes suggesting the use of water cooling, even though his past dedication leaned towards cooling by air. His prime concern remained with driver and passenger comfort, which took precedence over pure, traditional engineering theory. He got so carried away sometimes that he would almost shout at his audience: "Wie vor hundert Jahren sind auch die heutigen Lastkraftwagen eigentlich nichts anderes als Bauernwagen, in die man einen Motor eingebaut hat!" (Similarly as 100 years ago, our trucks today are made like peasant carts, except they have an engine installed!)¹ In the mid-1950s, for Harald Friedrich of Alzmetall, Ledwinka reconfigured a little three-wheel Spatz sports car with four-wheel backbone chassis and air-cooled one-cylinder two-stroke 191cc 10bhp Fichtel & Sachs engine placed in front of the rear axle. Over 850 units were built by Bayerische Autowerke GmbH and later 729 units by Victoria-Werke with a larger 250cc 14bhp engine.

Ledwinka was one of the most original and logical thinkers to work in the motor industry. He believed the automobile was destined to become an object of everyday use to modern man. However, he developed his innovative ideas in all aspects of transport design. There was the streamlined prototype V855 from 1942 of the propeller-driven snow sledge powered by a T87 engine, now renovated and exhibited at the Tatra Museum in Kopřivnice, the design for the stageless electro-mechanical rail carriage transmission, and a pneumatic suspension for trucks. The list of some of the many patents which he applied for in the Tatra name speaks for itself: engine arrangement in



Dr Ing h.c. Hans Ledwinka,

HANS LEDWINKA, AGED 80, IN 1958.

combination with the central tubular chassis; air-cooling turbine fan for the horizontally opposed engine; three point engine fixing on silentblocs on a backbone chassis car; a backbone chassis structure made of hollow box frame forked at one end; a rear-engine car with a rear opening engine compartment; car suspension with swing half-