

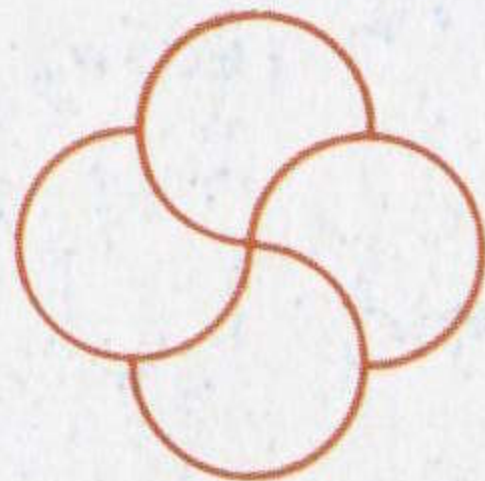
# AUTOMOBILE

*Quarterly*



RICHARD L. EVANS





*For several years now we've been planning to publish an article on the life and career of the great automotive engineer, Ferdinand Porsche, whose cryptic signature appears on the cover of this issue. But it wasn't until a gifted young Englishman approached us last year, all but insisting that we let him write it, that we figured we were ready to do the subject justice. And it occurred to us too at the time that this article might aptly be followed by another on the cars that have been and are today being built in his name—for there can be little doubt that there is and probably always shall be a lot of Porsche the man in Porsche the cars. We set David Owen to work on the project, and we think the pair of articles that resulted are among the finest things ever written about this legendary designer and the cars which perpetuate his name.*





# **automobile**

*Quarterly*

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PHOTOGRAPH BY DON VORDERMAN







POFSSOHE



If Herr Professor Doktor Ingenieur Ferdinand Porsche were to start his career at one of today's automobile production giants, it's doubtful if he'd succeed in getting beyond the door of the front office. Born in the backwoods of Bohemia, the son of a village tinsmith, he had no professional background at all. In fact he never sat for a formal examination in the whole of his life. Nor was he socially gifted. His single-minded devotion to engineering and his firm belief in his own ideas would grate harshly against today's committee-dominated organizations. Porsche didn't worry about leisure—life's purpose to him was simple: It was the opportunity to work. Truth, beauty, enjoyment, fulfilment; sound engineering, careful workmanship, a job well done. And a botched-up piece of work was the one sure spark which could fire his terrible anger to blast-off point.

Yet this extraordinary man, wayward, brilliant, contradictory and utterly single-minded, having more in common with a painter than a designer of machinery, was to work for one great name of the German car industry after another: Steyr, Austro-Daimler, Daimler-Benz, NSU, Auto Union.

He first became world famous at the age of twenty-five, when his first successful car appeared at the Paris Exhibition of 1900, and time and again afterwards his name would crop up in the turbulent history of the Twentieth Century. He was experimenting with aero-engines, airships, electric helicopters, huge artillery tractors and self-propelled supply trains in the dying years of the old Austro-Hungarian Empire, he was designing luxurious monsters in the devaluation and unemployment of the Twenties, and by 1930 he had set up shop as an independent designer in his own right. Two firm objectives kept him moving from job to job in the conservative, profit-dominated automobile business—his striving for mechanical perfection, whatever the cost in time or capital, and the longing to design a small car to put the world on wheels rather than expensive toys for the enormously wealthy. Ironically, he succeeded in this through the efforts of Adolf Hitler, another fanatic devotee of the motorcar, but with the power to force the industrial giants to do as they were told. With Nazi Government backing, Porsche produced the Volkswagen, Germany's answer to the Model T Ford, as a means of motorizing a continent. And when war finally came, he turned his genius to other problems—to the VW jeep, the Kübelwagen, the amphibious Schwimmwagen, and to the Tiger tank, the spearhead of the Wehrmacht's armored drives from Russia to

*Far left: Anton Porsche, surrounded by his sons and other relatives, in this family portrait taken in Maffersdorf in 1889. Young Ferdinand is at bottom right. Left: Ferdinand, now eighteen, poses beside the electric generating plant which was a surprise birthday gift for his father in 1894. His father was surprised.*

the Ardennes. His self-propelled gun, the Ferdinand, was named after him, and at Hitler's express command he produced his most unsuccessful design—the enormous 180-ton land-battleship, the Maus, which could ford rivers while completely submerged, carry ten-inch thick armor plating and pack the punch of a seven-inch gun. It was so cumbersome that it shattered the foundations of the towns through which it passed on exercise, and so expensive in terms of short-supply armor-plate that only three were built.

Porsche's genius knew no frontiers. Born an Austrian, made a Czech citizen when the treaties of 1919 redrew the map of Europe, he ended his life as a German, but his designs and ideas are used and produced all over the world. Stalin himself invited him to become Supremo of Russia's motor vehicle industry in the Thirties, and the French asked him to help in the design of their own equivalent of the VW—the Renault 4CV—after the war was over. Then he was seized by the Sureté and imprisoned in Dijon Jail with his son-in-law on “war crime” charges. The French demanded a million-franc ransom for their release. Only by restarting the family design business, and eventually turning it over to car production, was his son Ferry Porsche able to raise the money to buy his father's release. Porsche himself returned home in 1947, his health broken, and although he was afterwards tried and acquitted, the money has never been repaid by the French government. His doctors forbade him to work, and his life lost all purpose. Oddly enough he took little active part in the design of the only cars to bear his name, although they were developed along lines he had laid down twenty years before. He died in January of 1951 at the age of seventy-five—when the names of Volkswagen and Porsche were beginning to bring his work to more people than ever before.

He was born three-quarters of a century earlier, in a tiny village in the brooding Bohemian forests, into a way of life as alien to the mid-Twentieth Century as the Middle Ages. The old emperor Franz Josef was in the twenty-seventh year of his reign over a sprawling empire of fifty millions, stretching from the Alps to the Carpathians, from Italy to the Ukraine. For at least five generations the Porsches had lived and worked in the same stretch of country—as weavers, carpenters, tailors and tinsmiths—around the local market town of Reichenberg, now the Czech town of Liberec. Porsche's father started his own business in the nearby hamlet of Maffersdorf, and settled down to raise a large family. His eldest son Anton, heir apparent to the family firm, was injured in an accident at work, and died soon afterwards—skilled medical attention was scarce in Nineteenth Century Bohemia. From then on Ferdinand's future, in his father's eyes, was firmly decided: A future head of the family, he would

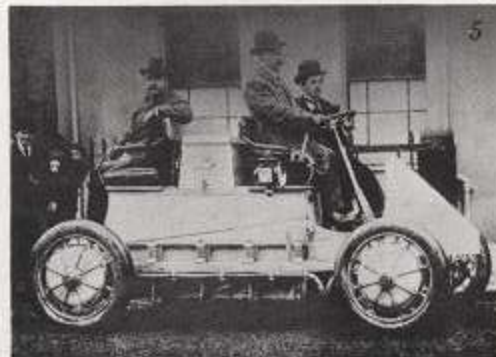
≡: THE MAN

BY DAVID  
OWEN





1: Interior photograph of the Jakob Lohner & Co. establishment at the turn of the century.  
 2 & 3: The Porsche-designed battery-powered Lohner electric, exhibited at Paris in 1900.  
 4: Ferdinand Porsche's first racing car, all electric, built for speed trials during 1900.  
 5: Another Lohner electric, with two tons of batteries, built for Englishman E. W. Hart.  
 6: Ferdinand returned to Maffersdorf in 1902 with his mixed-drive Lohner electric tourer. Seated in back are his brother Oskar (left) and their father Anton with granddaughter.  
 7: Setting up fastest time of the day with another mixed-drive Lohner at Exelberg in 1902.  
 8: Porsche, a reservist in the Imperial Infantry, served as chauffeur to Franz Ferdinand.



learn the family trade. At the age of fifteen he started his apprenticeship.

But Ferdinand Porsche already had ideas and plans of his own. At a time when few people in Maffersdorf had even heard of electricity, he was fascinated by the new source of power. His only hobby was to make his own batteries and circuits, to help him find out as much about this force as he could. His father was furious (Porsche's fierce temper and devotion to work were inherited) and he forbade his son to waste his time with such frivolous nonsense. But already the Porsche determination was rooted as firmly in his son—he retreated to the loft to carry on his experiments at the end of his twelve-hour working day. At last his father found out what his electrical Mozart was up to. Furiously he stamped on the batteries with his brand-new shiny boots, ruining them with spilled acid and burning himself severely.

Ferdinand Porsche made amends—once he'd got his own way. His father sent him away to classes at the technical institute in Reichenberg, which left him freer to carry on his work. One evening his father returned to find his house ablaze with light—*electric* light. At the age of eighteen, when only the local carpet factory could boast this wonder, Porsche junior had designed and built a generator, switchboard, distribution network, incandescent lighting, door chimes and even an intercom system! His work was well rewarded. His father started to groom Ferdinand's younger brother Oskar for the family firm instead, and that same year young Ferdinand himself was free to go and find work in Vienna.

Even then his troubles weren't over. Having poor results from the technical school at Reichenberg meant that he couldn't go to the university. He worked for the *Vereinigte Electricitäts A.G.* (United Electrical Company), keeping the machinery oiled and the workshop floors swept. After work he would sneak into the university lecture theaters, until he was

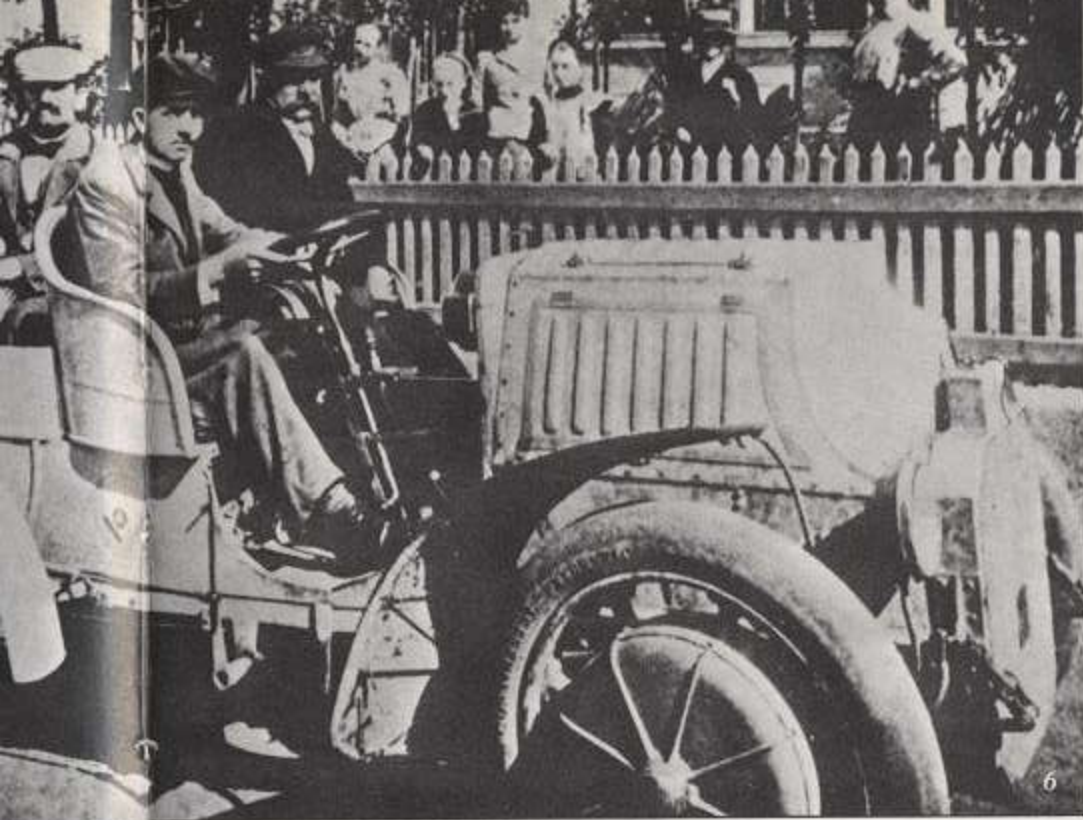
recognized and thrown out time after time. At last his patience was rewarded; he was promoted to the design office, and the college authorities, impressed by his determination, allowed him to stay for the lectures. But since he wasn't a registered student, he wasn't allowed to sit for the examinations.

His first real opportunity came in 1898, at the age of twenty-three. Jakob Lohner, coachbuilder to His Royal and Imperial Majesty, had started to switch to automobiles two years before. Deciding that the noisy and smelly internal combustion engine was far too vulgar for his lofty customers, he was a firm believer in the battery-powered electric car. But first he needed a designer, someone who could handle the new-fangled electricity. Porsche applied for the job, and was hired.

Electric cars had their problems. Then as now the main one was the weight of the batteries, which cut down the performance and range of the car. Porsche had an idea: To cut down all weight and power losses which could be saved, he would put the driving motors right where they were needed, in the hubs of the wheels themselves. He saved transmission, gears, driveshafts at one step—and the result was the Lohner-Porsche electric chaise, an imposing horseless carriage which could travel fifty miles without recharging. Lohner sent Porsche and the car to the 1900 Universal Exposition at Paris—he demonstrated the car on a test run to Versailles and back, and his design was awarded a grand prize. He was famous.

Yet already his ideas were changing. The bulky batteries were next to go—instead he used an ordinary petrol engine to drive a generator, which itself fed current to the wheel-hub motors. This meant the car was lighter and more compact, refuelling was easier and quicker, and there were still no power or reliability losses through gears, chains or belts. From this point onwards, his old fascination for electricity gave way to





a newer and more demanding interest in gasoline engines as the power units of the future.

Porsche's mixed-drive car was a success from the start. Buyers from as far afield as England and Prussia started to place their orders. The Rothschilds drove them, German generals used them as staff cars and Porsche himself, on national service as a reservist in the Fourth Regiment of the Imperial Infantry chauffeured the Austrian commander-in-chief, Archduke Franz Ferdinand (afterwards assassinated at Sarajevo on the eve of the First World War) during the Austrian maneuvers of 1902, surely the only private soldier ever to have driven his commanding officer on active service in a car of his own design! Afterwards Porsche had a letter of thanks from the Archduke, congratulating him on his car and—an unexpected accolade—a postcard published that year showing the principal members of the Royal House of Hapsburg from the Emperor downwards, Porsche's face appearing boldly and recognizably, sitting in front of the Archduke in his official car.

Lohner was now a happy man. After all the money spent on Porsche's experiments, he now had a car which was selling well, and he saw no need to spend more money on improvements. So in 1906 Porsche went to work for Austria's biggest and most famous firm: Austro-Daimler.

Their best-selling model was a car called the Maja, named after the sister of Mercedes Jellinek, who had given *her* name to the German Daimler cars. (Hitler never realized that his favorite car was named after the grand-daughter of a Hungarian rabbi.) This Maja was a thirty-horsepower car, and was to give Porsche his first experience with a purely gasoline-driven car. By 1908 he had redesigned it completely, modifying the big four-cylinder engine to give thirty-two horsepower and fitting a four-speed transmission with either chain or shaft drive. The Maja name

was dropped, but the car really took off as a sales success. Titled buyers included the Queen of Bulgaria and the Emperor Franz Josef himself.

A racing version of the Maja's successor was developed, and three cars entered for the 1909 Prinz Heinrich Trial. Organized by (and named after) the German Kaiser's car-minded brother, this was a long-distance race and rally spread over several days and covering a route from Berlin to Breslau, Budapest, Salzburg and Munich. One of the cars was driven by one of Austro-Daimler's founding Fischer brothers, another by playboy Hugo Boos-Waldeck and the third by Porsche himself. And although the team didn't win due to the opposition of bigger and more powerful cars, they completed the course without collecting penalty points and were awarded a silver shield.

After the Trial came the prize-giving banquet, but Porsche was nowhere to be found. At last Fischer tracked him down to a tiny anteroom in the hotel, chewing a dry bread roll while he sketched a new design—with a copy of the newly-issued rules for the next year's Trial beside him.

Porsche knew that the increasing importance of the Trial and the arrival of more competitors from abroad meant that only the biggest and most powerful cars stood a chance of winning. But he was determined to reach his objective by improving the efficiency of his engines. So he took the arrangement he had devised for the Austro-Daimler airship engines of two years before and used it as the basis for a compact, high-speed racing engine. Its four-cylinder, 5.7-liter capacity was puny for the days when many racers used engines of twenty-one liters or more, but its high speed and power-to-weight ratio gave it a powerful advantage. Peak power was 95 bhp at 1600 rpm, and the engine would run to 2200 rpm safely, thanks to light steel pistons and inclined valves operated by a single overhead camshaft. Great care was taken to make the cars as tough and



reliable as possible—two Porsche traits to become familiar over the years ahead. The sleek *Tulpenform* (tulip-shaped) racing bodies were an early attempt to cut wind resistance without knowing too much about the theory involved—the body panels curved outwards and upwards from the narrow chassis and all drag-creating details were removed, even to the point of doing without outside door handles, and the top speed was a useful 87 mph.

The result in the following year's Trial was a walkover for the Austro-Daimler team. They started with eight cars and only two dropped out, one through driver fatigue and one being disqualified. All the others finished, three of them taking first, second and third places in the overall classification. Porsche himself drove the winning car, and was congratulated by Franz Josef for upholding Austrian honor so well.

Austro-Daimler had cause to be pleased too. The 27/80, as the winning Prinz Heinrich car had been designated, was another instant success. In the following years a sports version appeared, orders built up and the firm began to expand. Porsche, ironically, was forced to spend more time in his office and less on the race track, and the 1910 Prinz Heinrich was to be the high spot of the pre-war Austro-Daimler team. Already the hidden causes of the First World War were nibbling away at the order and security of Europe, and the mighty Austrian Empire was within a few short years of its fall.

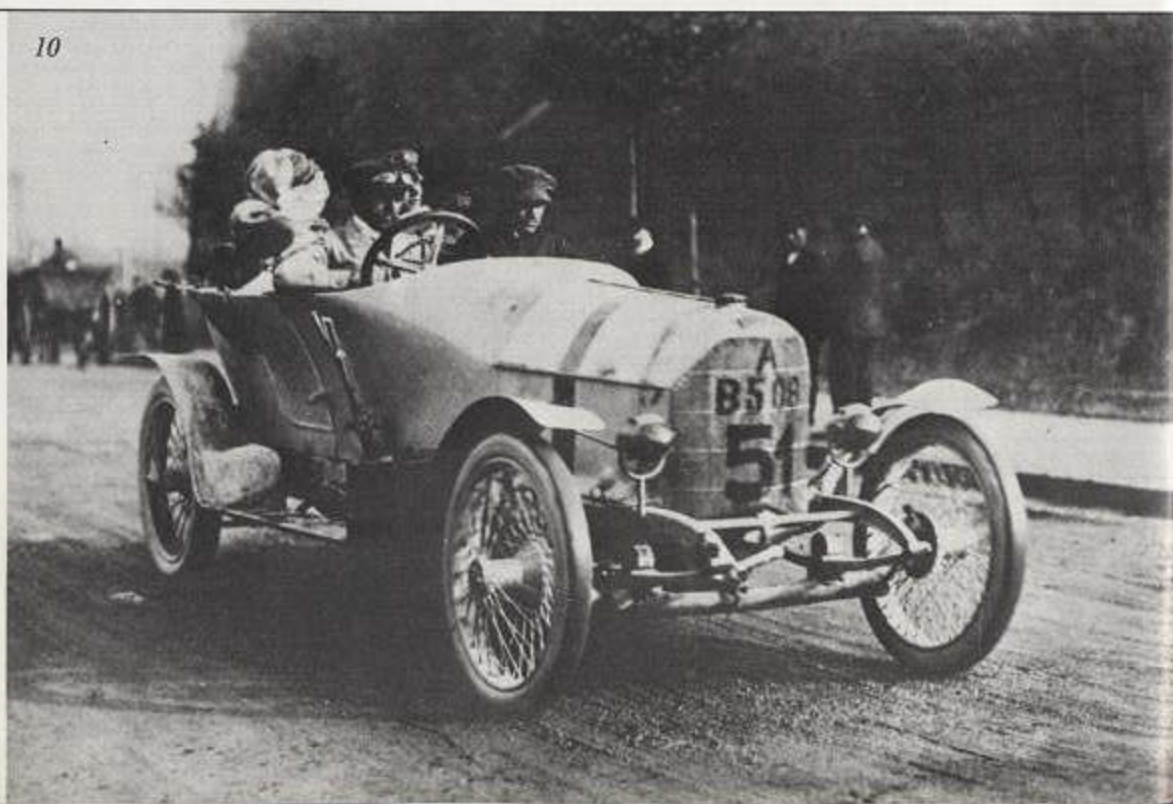
Even motorcar makers were turning their attention to military matters. In 1913 Austro-Daimler took over Skoda, the armaments manufacturer, and Porsche was given the job of providing the Imperial Army with its siege artillery. Their enormous 305 mm mortar was a devastating weapon, with its 700 pound shells, but it had to be mobile. Porsche designed an enormous tractor worthy of such a mansized task. Fitted with four wheel drive—using hub-mounted electric motors and mixed drive—the beast

could pull twenty-four tons. It squatted purposefully on five-foot wheels, and dragged its terrible weapon over the most appalling country. When General von Bülow's smashing advance through Belgium in 1914 was stopped by the fortress of Namur, assault after assault by the Germans failed. At last one of Porsche's tractors brought up a mortar—three days of slow but steady pounding, and the shattered fort was in German hands.

Porsche then did a similar job for its 420 mm big sister. This time the short, stubby barrel alone weighed twenty-six tons. And each shell another ton. He designed a tractor trailer combination—the tractor carried a gasoline engine and a generator, and the power was fed to hub motors in the tractor wheels as well as all the trailer wheels. Later still Porsche carried the same idea to produce a cross country train—the "locomotive" carried the engine and generator and each wagon was driven by its own motors. Like the VW and eventually the Porsche cars themselves, the greatest weight was over the driving wheels, an asset which helped the trains deliver supplies even among the Italian mountains in mid-winter.

Not all Porsche's wartime work was so uncompromisingly earthbound. Like many other engineers he found the booming market for aero-engines was very receptive to new ideas. One of his most successful, first designed as early as 1912, had been a four-cylinder air cooled horizontally-opposed engine with overhead valves operated by pushrods, a prescription to become hauntingly familiar to millions of VW and Porsche owners forty years later.

In 1917 Porsche was awarded an honorary doctorate from the Technical University of Vienna, and a year later he became managing director of Austro-Daimler. But times were changing fast. When the war finally ended, he was living in a small and poor country, a sad remnant of the old Empire. And technically, since his birthplace was in Bohemia, he was a Czech citizen, a foreigner. Austro-Daimler's armaments contracts disappeared with the ceasefire, its big home market was cut across by the new frontiers,





and the old privileged buying class had been decimated by the economic ruin of four years total war.

Nineteen-twenty was a crossroads for Austro-Daimler and for Porsche. Many other manufacturers, worried by shrinking markets, withdrew into an unreal world of impossibly luxurious cars, in a last attempt to woo the few buyers with enough money to afford them. Ferdinand Porsche thought differently—he was turning to another obsession, his greatest—he was convinced that the true car of the future would be a car for the people instead of a rich man's toy.

But for the time being he had to make use of what was available, to rebuild the company's finances. In 1921 he introduced the big sporting 617 model, an Austro-Daimler in the old, magnificent style but fitted with a new 4.2-liter light alloy single overhead camshaft engine derived directly from Porsche's aero-engine experience. It sold well abroad, but was too expensive for the home market.

Later that year, he had a chance to test his new theories. Count Sascha Kolowrat, a rich, aristocratic film-maker, agreed with Porsche on the future of the small car and asked him to produce a small one-liter car called the Sascha. This he did. It had a petite, two-seater body with a four-cylinder single overhead cam engine which gave it a top speed of 90 mph. In 1921 a team of three Saschas was entered in the Targa Florio, which was run over four laps of the Grande Madonie circuit. Nearly seventy miles of rough and dangerous mountain roads per lap. Two were standard cars, which took first and second places in the 1100 cc class. The third had a slightly larger version of the engine and, driven by Alfred Neubauer, an ex-officer in the Imperial Army who later followed Porsche to Daimler-Benz where he took over as racing manager, took seventh place in the bigger-car class, against much more powerful machinery.

Porsche was vindicated. If this was what small cars could do when

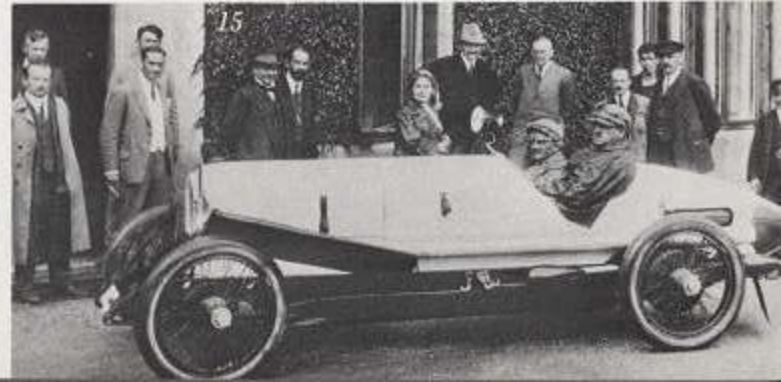
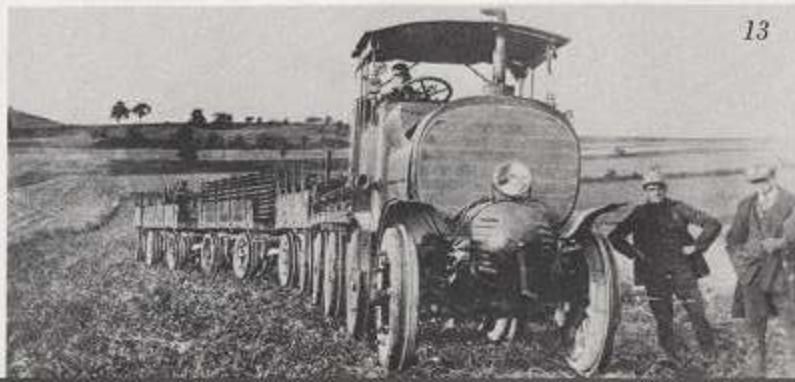
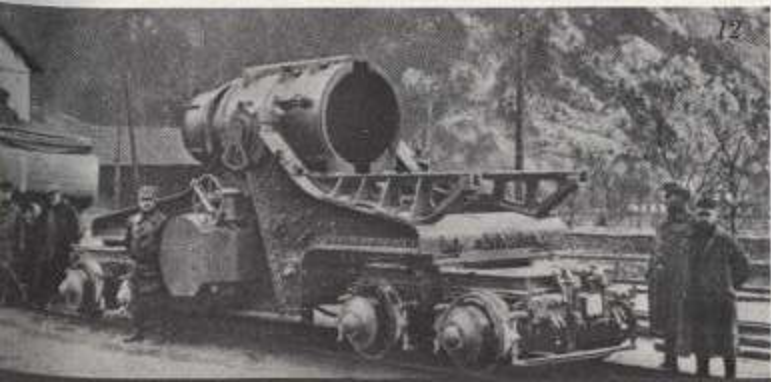
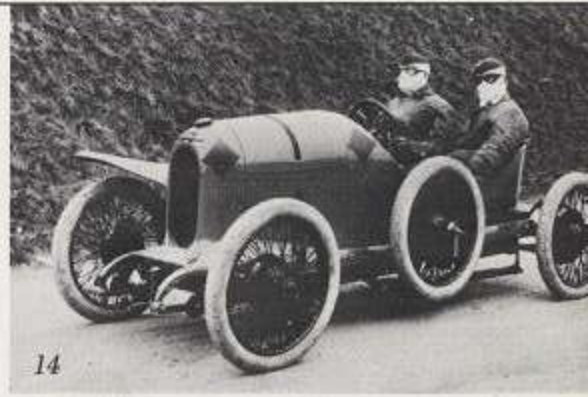
designed properly, then Austro-Daimler's fortunes could be transformed. First he tried an enlarged version of the Sascha, with an engine stretched to a full two liters, boosting top speed to 106 mph in racing trim. Then he started to develop a production model of the Sascha, and only the increasing strength of his opponents on the board of directors stopped him from making it a best-seller. Austro-Daimler's big foreign-exchange earnings were being changed into Austrian schillings by the firm's bankers at a time when the schilling was sliding down in value at an increasing rate. The resulting losses and demands for economy gave the other directors their chance to cut Porsche's high development budget, and he resigned in protest.

For his next move, in 1923, Porsche crossed the German border to work for Daimler in Stuttgart. The company had made a recent comeback in motor sport, and had developed a brand-new supercharged two-liter car to take the place of their aging 4½-liter model. Soon after Porsche joined the company the car was entered in the 1923 Indianapolis 500, where it failed miserably. The driver, Christian Lautenschlager, complained bitterly that his prize money had got stuck somewhere in the car's inlet and exhaust tracts, which wasn't far from the truth. So Porsche devoted all his energy for nine months to tuning and developing the car properly, including testing it on the track during the following winter.

By the spring of 1924 he judged the car was ready. A team of three cars was entered for the Targa Florio, against the bigger and more powerful Fiats and Alfas. Christian Werner won the race outright, Lautenschlager came in tenth and Neubauer fifteenth, though their positions in the two-liter class were one, two and three. For once Porsche's ideas and methods were accepted wholeheartedly by his fellow directors, and he was awarded another honorary doctorate, this time from the Technical University of Stuttgart.



9: Porsche (fourth from left, standing) with his drinking buddies of the Fourth Regiment.  
10: Porsche with the winning tulpenform Austro-Daimler in the Prinz Heinrich Trials, 1910.  
11: During World War I Porsche was decorated by Emperor Franz Josef at Vienna.  
12: Porsche's C-Type 420 mm mortar, with tractor, pictured in the Austrian Alps in 1917.  
13: The Porsche-designed gasoline-powered mixed-drive wagon train of the First World War.  
14: Alfred Neubauer and riding mechanic with the 1100 cc Sascha prior to the 1922 Targa.  
15: Ferdinand and friend in the two-liter Austro-Daimler raced by the factory during 1922.





But Porsche's greatest contribution to Daimler-Benz (Daimler and Benz had amalgamated in 1926) is the series of immortal monsters based on the big six-liter, six-cylinder engine he made one of the classics of automobile engineering. It was cost-no-object work at its finest, in light alloy, with the twin objectives of lightness and strength carefully reconciled. Most of the engine's worth was lost by putting it into bodies of such monumental size and weight that its performance, even with the supercharger, was nowhere near as outstanding as it should have been. The original 24-100-140 model was a massive tourer, also available in limousine form, as cumbersome as its designation, as heavy as a concrete Zeppelin and as solid as Fort Knox.

From this unpromising parent came the Mercedes K (for *Kurz*, or short, referring to the wheelbase) with the engine enlarged to 6¼ liters and fitted in a shorter and lighter body. This appeared in 1926, and was followed a year later by the S, a larger version still with a 6.8-liter engine producing 120 horsepower, or 180 with the blower on. Then 1928 saw the emergence of the SS, with a 225 horsepower, seven-liter version of the original engine, followed by a short-wheelbase SSK with a lighter body. Finally in 1931, after Porsche had left the company, the final link in the chain appeared with the SSKL (*sehr schnell, kurz, leicht*—very fast, short wheelbase, light) which was an all-out SSK with its frame drilled for lightness and a 300 horsepower, specially tuned engine.

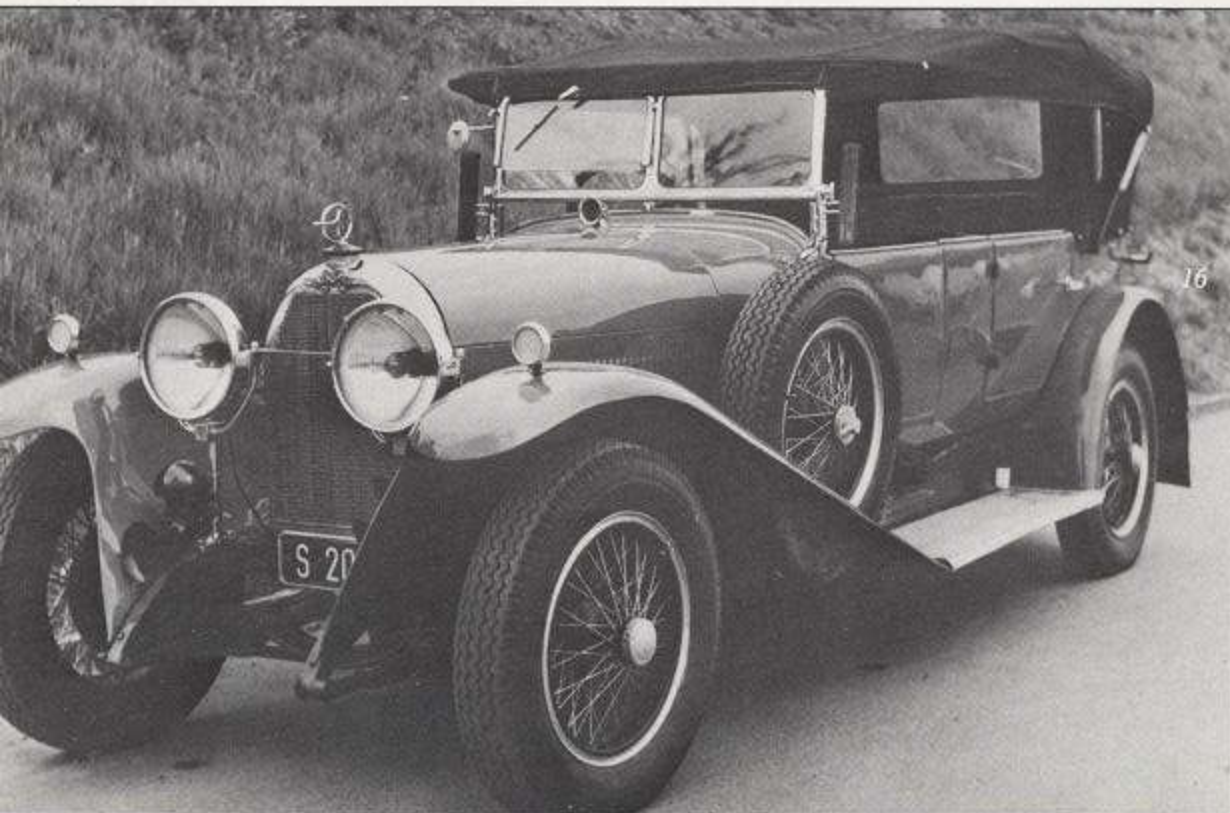
With their theatrical bodywork, staggering power and extreme toughness, these cars were unique—people either loved them or hated them, but merely ignoring them was impossible. The cable brakes had a wicked job to do in slowing them up from high speed (the 'light' SSKL weighed the best part of two tons in fighting trim) and they were said to be unreliable. To use the performance to the full, said some, meant the fuel gauge needle

moved faster than the one on the speedometer. In the galloping inflation of the times, they were totally irrelevant to most people—yet motoring needed cars like these, cars which showed what could be done by good designers and first class craftsmen if price was no object. In skilled hands, they were highly successful. The S won the German Grand Prix in 1926, the SS won it in 1928, and the SSKL in 1931, along with the Mille Miglia and a host of other events, mostly in the hands of the unforgettable Caracciola.

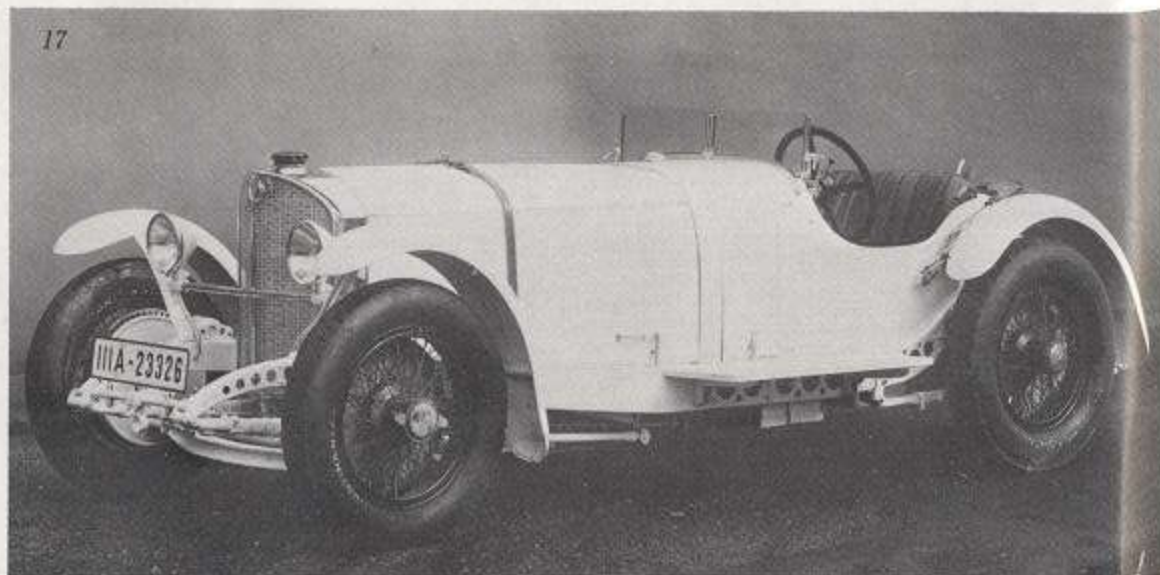
All the same, commercially these cars were too expensive—to buy *and* to run—for everyone but a very wealthy few. Paper money crashed through stage after stage of devaluation in the uncertain postwar years, and the middle classes saw their savings destroyed. Cars were impossible dreams for most people—when America had a car for every six people, Germany had to share each car between 211 people. Porsche was determined to change all that.

Unfortunately his opponents were growing stronger again. The Daimler-Benz merger had brought in more conservative directors, all of whom were against Porsche's radical ideas. The cost of the merger meant that more money was needed, and the Benz directors were the only certain source. Unfortunately, for Porsche, his development of the "Stuttgart," a medium-size car, wasn't going well; there were problems, particularly when starting the engine from cold. Porsche was challenged to start any one of a group of fifteen prototypes left out in the cold for a night. He failed, and resigned in a fury, even though a similar test by someone else three weeks later was entirely successful.

So Porsche went back to Austria, to the Steyr factory in Vienna, on New Year's Day, 1929, as chief engineer and technical director. But the job didn't last long. Porsche had just enough time to develop a car very similar to the Stuttgart, and an imposing five-passenger limousine called



16: The magnificent Austro-Daimler ADM, built after Porsche left to join Mercedes in 1923.  
17: The ultimate Mercedes during Porsche's tenure, the famed and formidable SSKL.  
18 & 19: Few young men are lucky enough to have one of the world's greatest automotive engineers for a father. Young Ferry, age eleven, with an electric car his father designed for him in 1920. The 1932 Wanderer, with Ferry inside, first product of the new Porsche firm.  
20: The Type C Auto Union, here driven through the Karussell at Nürburgring by Varzi.





the Austria which created a lot of attention at the 1929 Paris Show, when bad news arrived. A Vienna bank, a major shareholder in the Steyr company, had collapsed, and its shares were being transferred to another bank which was already linked with Austro-Daimler. A merger was inevitable, and he would be working again alongside people he had disagreed so violently with six years before. He gave his resignation, and returned to Stuttgart. He had had enough of working for other people. From now on he would go it alone.

The door of Porsche's new offices in Kronenstrasse bore the legend "*Dr. Ing. h.c. F. Porsche G.m.b.H., Konstruktionsburo für Motoren-Fahrzeug-, Luftfahrzeug-, und Wasserfahrzeugbau.*" (Doctor Engineer (honoris causa) F. Porsche, Incorporated. Construction Bureau for the Manufacture of Motors, Motor Vehicles, Aircraft and Ships), and business wasn't long in finding a path to it. Even before he had officially set up shop, Wanderer, a German company soon to become part of the Auto Union combine, asked him to help them develop a new car. This was allocated Porsche number seven—because, said some of his helpers, this was a much more impressive number to start with than one. So successful was the little Wanderer, with its 1800 cc overhead valve engine and swing axle suspension, that the company asked for Porsche's help with a bigger 3.2-liter eight-cylinder tourer. But the Auto Union merger, and the decision to leave luxury car production to Horch, another of the companies, killed the project before it had a chance to show its promise.

Now at last, waiting for new business to emerge, Porsche had a chance to draw up his ideas for a small people's car. First of all, it had to be cheap to buy, so it should be small and simple. Cheap to run, therefore tough and reliable with a small, economical engine. Road surfaces were poor, so he decided on independent suspension for all four wheels. Cars

left in the open overnight might freeze, so the engine should be air cooled, which would also help in climbing Germany's mountain passes. And engine and transmission in a single package, located over the driving wheels, would save space, cost and power.

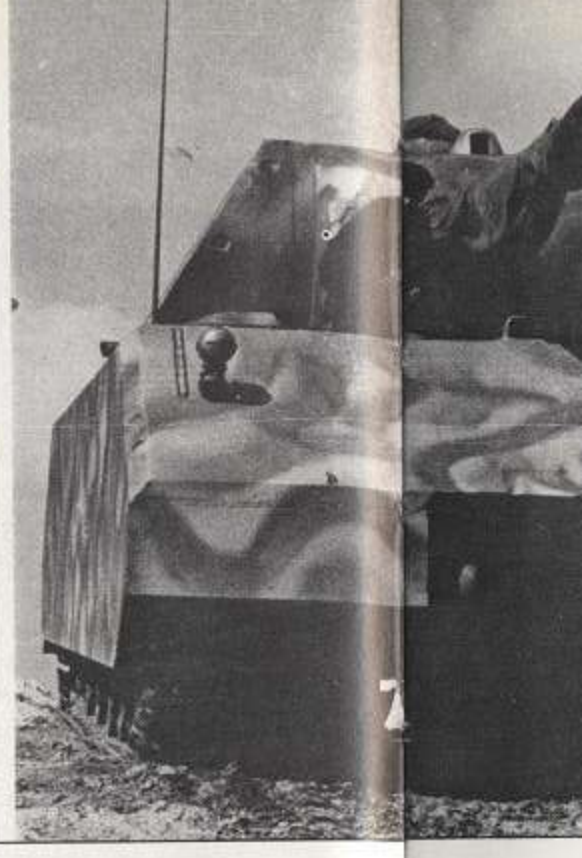
For simplicity and accessibility, he finally decided the engine should be at the rear of the car, and settled on a unit in the one-liter range as being the right balance between cost and performance. Suspension was another problem—coil springs needed space, while leaf springs needed careful attention to work consistently, so instead he decided to use an idea of his own, a torsion bar for each wheel with a trailing arm fixed to the end to carry the wheel hubs. The basic structure of the car, derived from a technique used at Austro-Daimler for airplane construction, was a flat pan, stiffened by channels and a deep front-to-rear tunnel.

While the design details were being finalized, literally down to the last nut and bolt, Porsche toured the industry trying to find a sponsor. Still in the grip of depression, no one had any time for costly new projects or uncertain new markets. But finally someone took the bait—a Dr. Fritz Neumeyer of Nuremberg, head of the Zündapp motorcycle works, who was keen to move into small car production and who had already toyed with the possibility of producing British Rovers under license. Neumeyer expressed some interest in Porsche's drawings. If Porsche would make a few alterations, he would pay for the building of prototypes, as well as development cars for eventual production.

Work started at a furious pace, as Porsche's boundless energy and creativity was unleashed. Four weeks after the two men reached agreement, the designs had been finished and work started on the prototype bodies at Reutter, the Stuttgart coachbuilders. To keep the whole project secret, Porsche's own men supervised the work, which was done overnight







after the day workers had gone home.

These first bodies were complete by April, 1932. But production bodies would be made from steel pressings instead of being beaten out by hand, and machinery was expensive. Moreover, the radical new prototypes were not doing well on test—the first air cooled engines heated up in a few miles driving, the oil boiled away and they were seizing solid. Gearboxes were spitting out teeth and torsion bars snapped under the strain of long-distance driving. Porsche's team worked hard modifying the design and tightening the specifications of the steel parts, but the project was dying on them. Neumeyer was terrified at the rising costs, and in the summer of 1932, he paid Porsche 85,000 Reichmarks and withdrew.

For Porsche, it was a rare failure—but he had little time to brood. An invitation had arrived to visit Russia as a guest of Stalin's government. He went on a grand tour of Soviet industry, he was offered a post as industrial Supremo of the Soviet Union responsible directly to Stalin, with a villa in the Crimea, a blank check for research, as well as the chance to work on his small car plans. Sorely tempted, he finally decided he was too old to uproot himself and his family, and he returned to Germany.

By this time there was heartening news to greet him. At the end of 1932, Dr. Fritz von Falkenhayn, head of the NSU motorcycle company, visited him to talk about small cars—provided Porsche could increase the engine size to 1½ liters, he liked Porsche's designs well enough to back the project.

Once again the Porsche outfit went back to building bodies at dead of night. This time the project ran smoothly from the beginning, thanks to the experience so dearly bought with the Zündapp car. Top speed was better than 70 mph, which could be kept up indefinitely without the engine overheating, and although the torsion bars kept on breaking, higher-grade steel was making failures less frequent.

In that same year of 1932, Porsche had started work on a racing car design totally different from anything else on the tracks. It was intended for the new 750 kilogram maximum weight Grand Prix formula due to come into effect in 1934. It would have a massive 68 by 75 mm V-16 engine mounted at the rear of the car (against every accepted rule on race car design) which Porsche felt would help traction and roadholding, along with independent suspension on all four wheels, using his own system of swing axles, torsion bars and trailing arms. With the enormous power pushed out by the big engine (in its final form it produced nearly 600 brake horsepower), the car would need every bit of extra grip on the road its designer could provide.

But, as with the small car, its designer's skill was not enough. What both projects needed was a powerful, wealthy sponsor to turn the dreams into reality. And by one of the oddest quirks of history, both these projects were to see the light of day through the seizure of absolute power by one man: Adolf Hitler, on January 30, 1933, was appointed Chancellor of Germany.

Hitler was one of the few dictators ever to have been a car fanatic—and certainly the most powerful. Ever since his imprisonment in Landsberg Jail early in his career (where he found time to write *Mein Kampf* and read a biography of Henry Ford) he was fascinated by mass production and the political and prestige value of the motorcar. Only days after coming into power he turned his attention to the Berlin Motor Show, then two weeks away. He sent Nazi officials to make sure the halls were lavishly decorated, he ordered that the whole tone of the show reflect his own hope for Germany's future and, to clinch the point, insisted he would speak himself at the opening ceremony.

Then he really let himself go. He promised autobahns, lower car taxes,



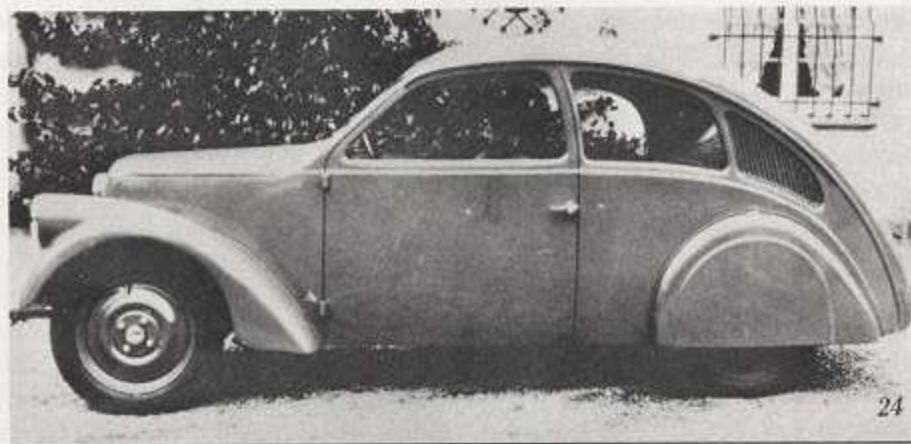


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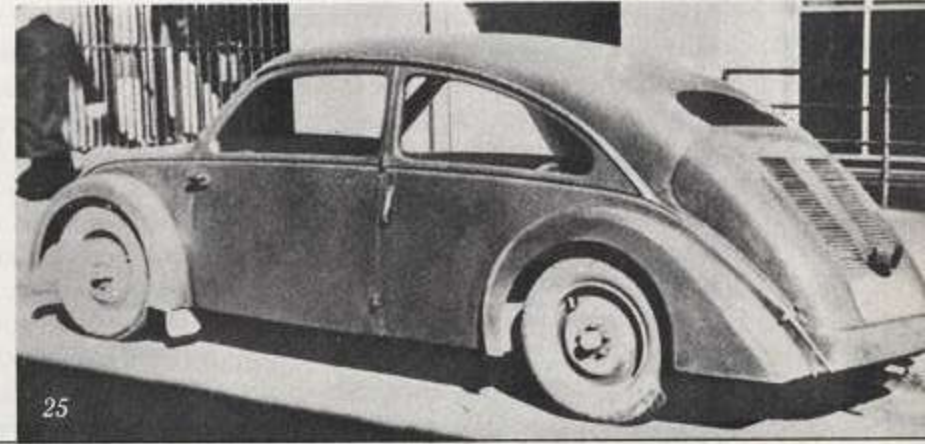
21: Bernd Rosemeyer, crack driver of the GP Auto Unions, calmly chats with Porsche before establishing the fastest road speed ever recorded—252.47 mph—in October, 1937.  
22: The formidable 88 mm self-propelled gun "Ferdinand" of 1944, named after its designer.  
23: The 180-ton "Maus," designed by Porsche at Hitler's insistence, was an enormous flop.  
24: Zündapp was the first to back Porsche in his quest to produce a people's car in 1932.  
25: The next was NSU during 1933; here the air cooled flat-four made its first appearance.  
26: Porsche Project #82, the Kübelwagen, was Wehrmacht's equivalent of the Allies' Jeep.



26



24



25

fewer rules and regulations, motor racing supremacy for Germany . . . and a new small car every working German could afford. Some of the industrialists were worried, but most happily dismissed the speech as an electioneering promise which would never be fulfilled. They couldn't have been more wrong. For once Hitler really meant business.

From then on things moved fast for Porsche. He had already contacted his friends in the Wanderer part of Auto Union about his racing car project, and a month after Hitler's auto show speech he had a message from Auto Union asking him to come to Berlin immediately. There they told him they wanted him to present the technical side of their case to Hitler in the hope that he would grant them a quarter-million-dollar racing subsidy like the annual payment he had just awarded Daimler-Benz.

The meeting started badly. Hitler denied their request before they had a chance to explain it, saying that only a firm of Daimler-Benz' experience could put the government's money to good use, and backing two German teams would be a waste of money.

Porsche boiled over. Before the officials could usher him out, he launched into a typical flood of technical argument, explaining just what his new racing car was, what it could do, and why no other car could do it. Hitler tried to interrupt, but for once in his life was forced to listen as Porsche went on without pausing for a full half-hour. At first astonished, finally he was impressed. He changed his mind completely and signed an order awarding Auto Union the same government subsidy to go ahead and develop Porsche's racing car.

But as one door opened, another closed. NSU had been reminded by Fiat of their agreement which limited NSU to motorcycle production under their own name. As Zündapp had also found, motorcycle sales were expanding, and there was less factory space to spare for car production

anyway, so that for the second time the project was closed.

This time Porsche had a new idea for a possible backer. He too had heard Hitler's auto show speech, and he decided to stir things up by sending a long and detailed memo on his small car project to Hitler's Transport Ministry. By January of 1934 his report was on its way, and he sat back and waited for results.

Four months later Porsche was summoned to a meeting at the Hotel Kaiserhof in Berlin by Hitler's aide Jakob Werling. After a brief chat, who should arrive along with the tinkling teacups and trays of cakes but Hitler himself—and as Werling listened in silence, the two men thrashed out their ideas on small cars. From the start, they spoke the same language; each talked with an Austrian drawl, each had been born and brought up in a backwoods village on the borders of the old Empire, each was fanatically interested in cars. But Hitler had the power to get things moving at last, and both men knew it. Stage by stage they agreed on the requirements for Germany's small car—a cruising speed of 100 kilometers an hour, a gas consumption equivalent to 40 miles to the gallon, a peak power of 26 bhp at 3500 rpm from a one-liter air cooled engine. And when Hitler gave the delighted Porsche the go-ahead, only one major factor remained to be decided—the price. But when he asked Hitler, he was horrified at the answer: "At any price, Dr. Porsche. Any price below 1000 marks."

Although 1000 marks, then the equivalent of 240 dollars, seemed an impossible price, Hitler had his reasons. The average German worker's savings were low, crippled by unemployment and chronic inflation, and the magic thousand-mark figure was the absolute ceiling at which any real people's car could be priced. In fact the contract later drawn up between Porsche and the RDA—*Reichsverband der deutschen Automobilindustrie*—



the German Auto Manufacturers' Association nominally responsible for producing the car, named a sale price of 990 marks, down in the even more attractive three-figure bracket.

In the meantime Porsche had to build the first prototype himself—quite literally. He and his team set up a workshop in the garage of his house at Stuttgart, and the forerunners of the millions of Volkswagens were actually put together there by hand and, when weather permitted, in the garden outside. Their budget was probably a record low for the design and development of a best-selling car. Starting at 20,000 marks a month (about \$4750) for fees, salaries, wages, equipment, tools and materials, overheads and expenses, it rose to an average of just under ten thousand dollars a month. For this trifling expense Hitler got himself a people's car designed, developed and three prototypes ready for testing. The RDA were content to do nothing, confident that this new competition would come to nothing and the whole crack-brained scheme would collapse of its own accord.

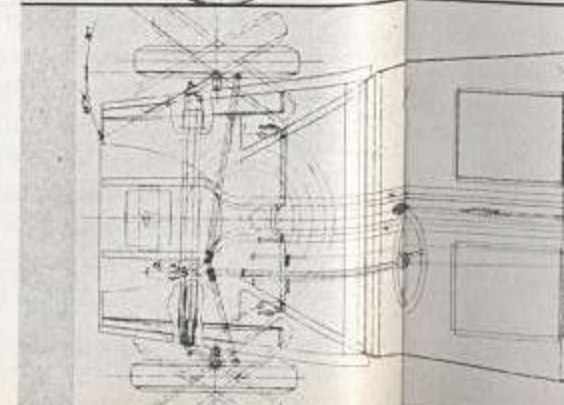
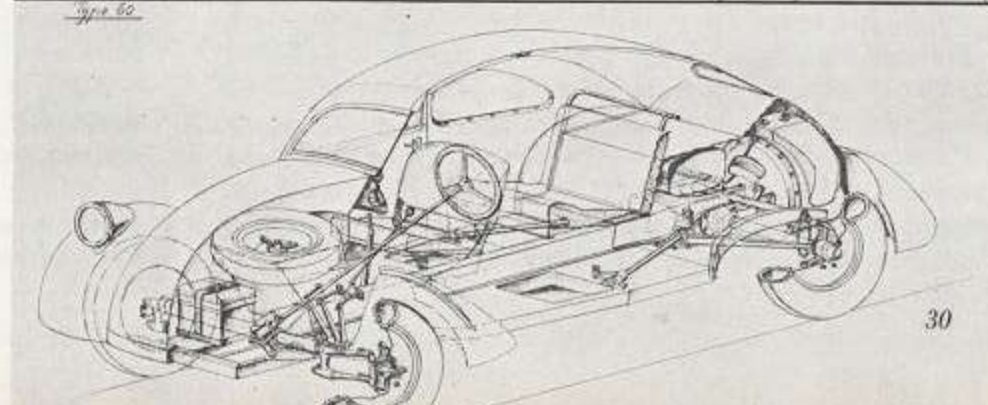
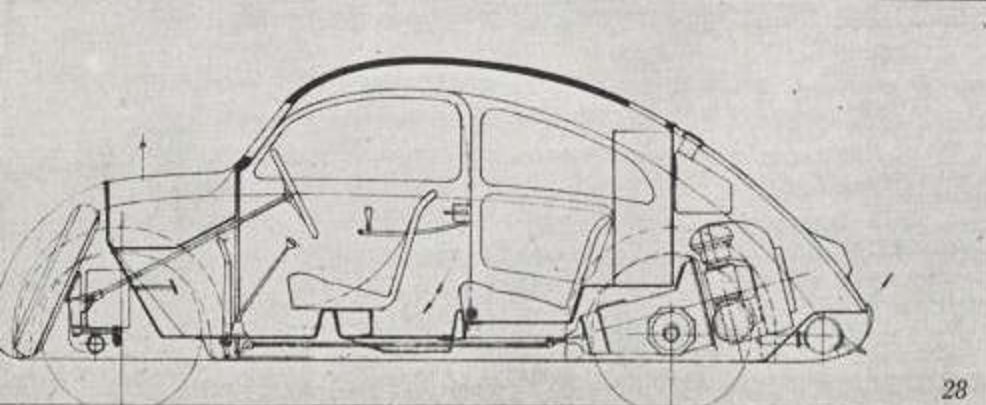
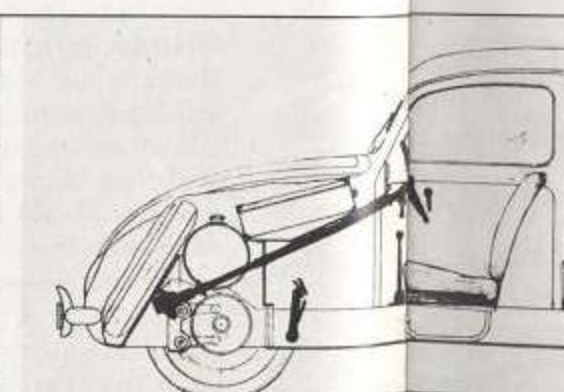
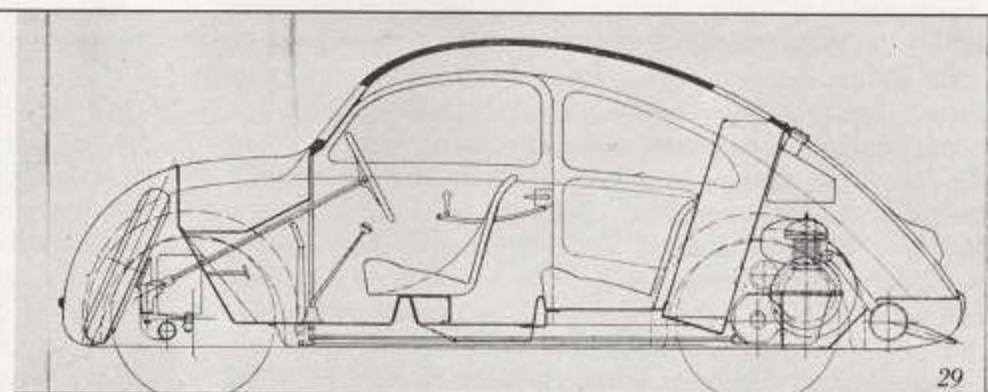
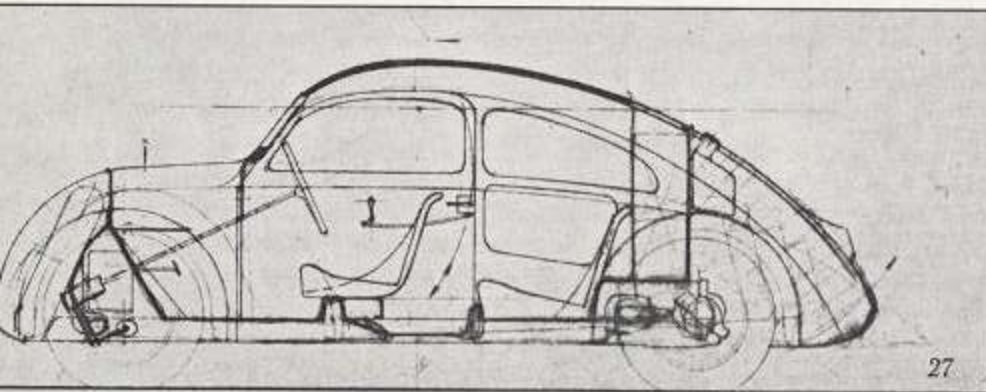
But they reckoned without Porsche's awesome persistence. The three prototypes were finished and ready for testing by the summer of 1936. Every day, Porsche's team, along with RDA representative Wilhelm Vorwig, who was already an enthusiastic supporter of the new car, hammered the vehicles over five hundred miles of country road and autobahn. Just about everything that could go wrong went wrong—but Vorwig knew, as did Porsche, that the failures were due to detail mistakes in production or to faulty materials rather than a bad design. Forged cranks replaced fragile cast ones, spares were produced and testing continued. One car hit a stag at full speed on the autobahn. The drivers dumped the corpse in the back and carried on, thanks to the engine being mounted at the rear, and they all dined on venison steaks that night. By Christmas Eve, 1936, the

tests were finished, and Vorwig's enthusiastic report reached Hitler.

By now the Führer really had the bit between his teeth—four years after his first announcement, and still only three prototypes. Sternly he ordered the RDA to get moving, and when they dragged their feet, he set up a company of his own called *Gesellschaft zur Vorbereitung des Volkswagens*—the VW Development Company, with Porsche on its board of directors. At long last his small car project seemed secure.

On the sporting front too, times were changing for the better. The first Auto Union racing car had been ready for testing in the winter of 1934, while Porsche was sending his memo on the Volkswagen to Hitler. Progress had been phenomenally quick. In January, 1934, the A-type version of the car with 7:1 compression and 295 brake horsepower was being tested at Monza. It was brutally fast, with a top speed of over 180 mph, and by the summer Hans Stuck was able to drive it to victory in the Grands Prix of Germany and Switzerland. It took second place at the Eifelrennen and in the Italian GP, and already the writing was on the wall—Alfa Romeo's only major victories that year were the French GP (when the German cars retired) and at Comminges (where they didn't appear at all).

In 1935 it was Mercedes' turn to dominate, but a more powerful 375 bhp version of the Auto Union still won the Italian and Tunisian Grands Prix. One of the characteristics of Porsche's design was its tendency to oversteer mightily when pushed to the limit, and many drivers were put off by this. Very few could turn this to their advantage—and of these the greatest was Bernd Rosemeyer, who joined the team in 1935. The following season belonged to Rosemeyer; in the six-liter 520 horsepower Type C car, he won the Italian, Swiss and German Grands Prix. And for the final season of the 750 kg formula the Auto Union engine was stretched again, to 6.3 liters and 545 bhp. Its top speed was now well over 200 mph,





and the driver could spin the rear wheels at 90 mph on a dry road merely by opening the throttle all the way. In it Rosemeyer beat the might of Mercedes to win Germany's own Eifelrennen in 1937, a crown to four years of blazing success.

Although Porsche himself was now almost totally occupied with the Volkswagen project, he did find time to design two more sporting cars in the final years before the war. One, for his old employers at Daimler-Benz, was a land speed record car, with six wheels and three axles, two of them driven by a rear-mounted Daimler-Benz aero-engine of the type later used in the Luftwaffe's Messerschmitt Bf 109 fighter, developing 2500 bhp and giving the car a theoretical top speed of over 400 mph. The car was built, but it was never used. The approaching war, and the insistence by the government that the car reach its record-breaking speed on German soil, killed the project.

Porsche's other design, the sports Volkswagen, was no more successful at the time. A series of three special-bodied VW's, using 1½-liter tuned engines giving a top speed of nearly 90 mph, was built for the Berlin-Rome road race of 1939, but then Germany's invasion of Poland put an end to that. One of the cars was destroyed during the war, another was driven into the ground by joy-riding GI's in 1945 and the third has survived in the hands of an Austrian collector in Innsbrück, a remarkable foretaste of the postwar Porsches.

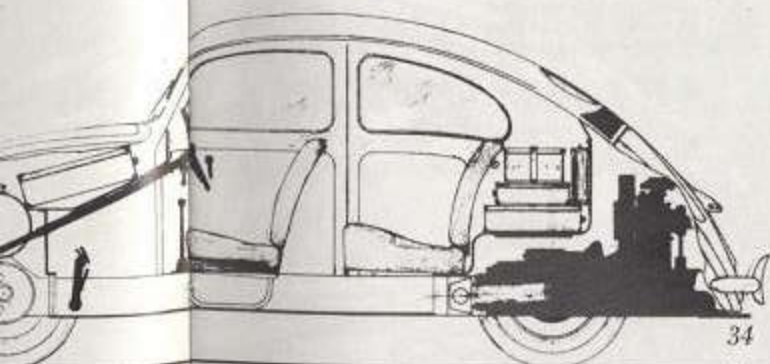
Meanwhile the standard VW project had by now progressed by leaps and bounds. Sixty development VW's had been built by Daimler-Benz and the VW Development Company. Thirty of these were taken to the German Army barracks at Kornwestheim, where relays of SS men drove them on secret long-distance development tests over a total of more than a million miles. Troubles were traced, analyzed, corrected and cured. At the end of

the development program the design was finalized, and the price fixed at 990 marks. After flying over the length and breadth of Germany, Hitler's advisers picked a site for the factory and the new city to serve it on the estate of Count von der Schulenberg, near his castle of Wolfsburg—and on May 26, 1938, Hitler himself laid the foundation stone of the factory.

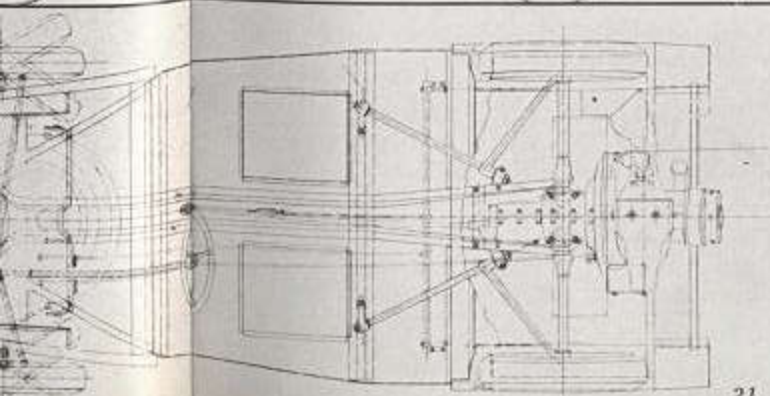
But once again, for the second time in a lifetime, the world went mad. The huge VW factory, the largest auto factory in the world, was turned over to its main wartime job of making stoves to prevent the Wehrmacht from freezing to death in the Russian winter, and to turning out parts for the V1 flying bombs being launched against London. No one got the VW's they were industriously saving up for—the few production prototypes (each one cost more than a contemporary Rolls-Royce) were snapped up as staff cars for senior SS and Wehrmacht officers, and eventually the entire savings funds fell into the hands of the Russians along with the bank in East Germany where they were kept.

Porsche was kept very busy. His first task was to adapt his beloved VW for military use, as the jeep-like Kübelwagen, or bucket-wagon. Although the firms ordered to produce it poured scorn on it in favor of their own competing designs, the Army loved it. Rommel asked for a thousand extra Kübelwagens for his march on Egypt, saying wherever a camel could go, a Kübelwagen could follow.

Later the go-anywhere theme was taken further, with the Schwimmwagen, a VW with an amphibious body, four wheel drive and a detachable propeller. The formidable Tiger tank was another Porsche design, along with the self-propelled 88 mm gun, the Ferdinand, which played an important role in the defense against the advancing Red Army's tanks. But the enormous twenty-foot high, 180-ton Maus, Hitler's dream of an invincible mobile fortress, was a grotesque failure. On damp ground it dug itself



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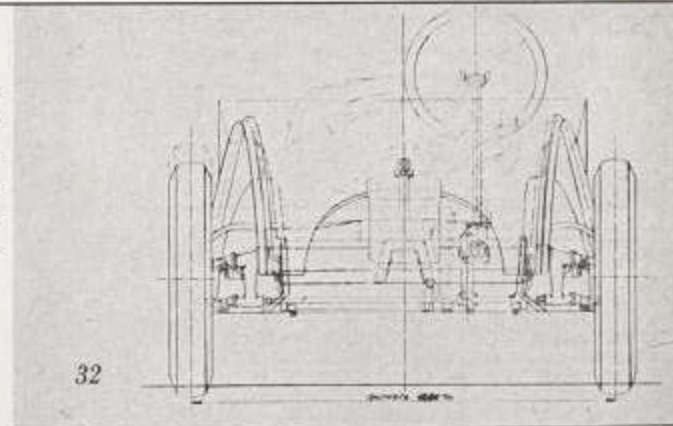


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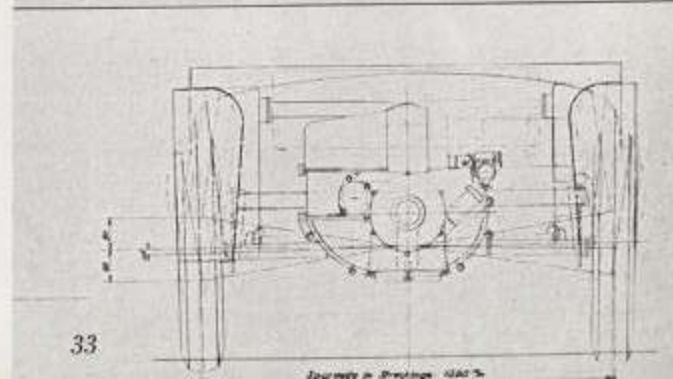
Throughout the early Thirties the engineers of the Porsche design office were constantly developing the people's car theme. As shown in these 1934 drawings by Erwin Kommenda and Karl Fröhlich (27-33), the idea had already acquired the familiar Beetle configuration. 34: The "Strength through Joy"—wagen (Kraft durch Freude, or KdF) as of March 23, 1939; virtually identical in all major respects to the Volkswagens still being produced today. 35: Two KdF-Wagen prototypes of 1937 (left) and 1936 (right) as development continued.



35



32



33







left Austro-Daimler after hurling a gold table lighter at his fellow directors to mark his disgust. On leaving Daimler-Benz he trampled his hat in the snow, a favorite gesture when his temper boiled over. On one occasion a foreman who didn't know him retrieved his squashed hat and had it cleaned and reshaped. Minutes after handing it back to Porsche, another explosion saw it squashed flat again, this time in a pool of engine oil.

He told people what he thought in the bluntest of language. When a whole squad of Daimler engineers, immaculate in white coats, were standing around a car discussing what could be wrong with it, Porsche struggled into a set of coveralls, crawled under the car, located the trouble and—spitting out “Why don't you fools look for yourselves?”—stalked off in a fury.

Those who worked for him still talk of his uncanny feel for accuracy. He could stand and watch a man at a workbench turning out hundreds of identical components. Every so often he would reach out and take one from the pile of finished parts and check its measurements with a micrometer. Nine times out of ten that would be the only one from the whole batch which was inaccurate, the difference being one of thousandths of an inch.

One disadvantage of his devotion to engineering is that, politically, he was a child. He had little idea of what was happening in the world around him, and he saw Hitler only as a bigger and better sponsor for his small car. Hitler, for his part, admired Porsche, but didn't like being called plain Herr Hitler when more formal titles were the rule. And when he saw a newspaper picture of Porsche in the Auto Union pits with his hands in his pockets, he complained, “He *never* takes his hands out of his damned pockets, even when he's talking to me!” Even in 1937, when Porsche invited Henry Ford over to Europe to see how the VW project

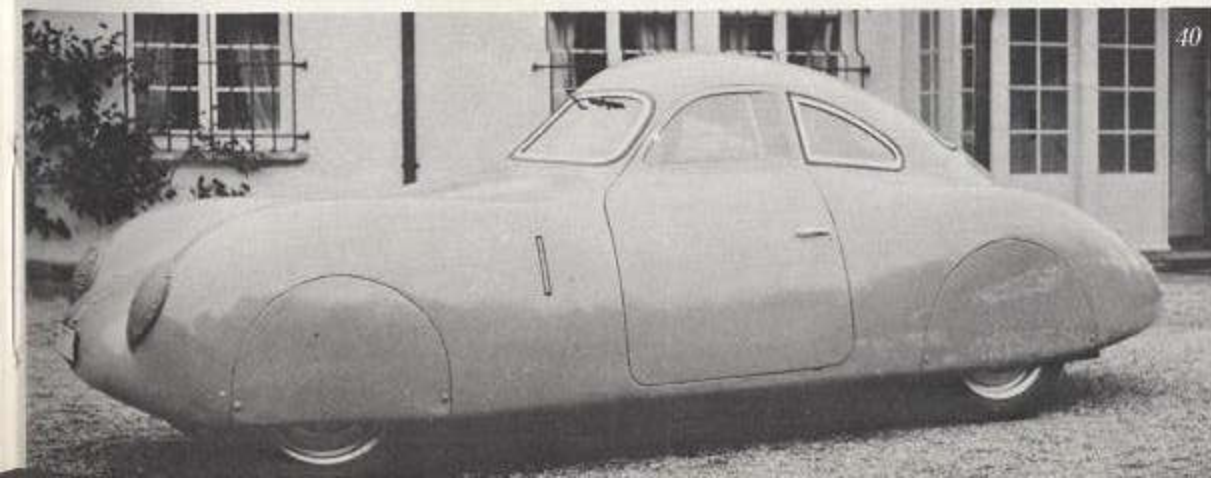
was progressing and Ford refused, saying that war was not far away, Porsche was surprised and shocked.

But like many hot tempered men, he had a lot of courage. He was told his place had been reserved in Mauthausen concentration camp for the day when he finally overstepped the party line, but his intense loyalty to the people he worked with continued to get him into trouble when he tried to save many of them from arrest. In spite of the French charges, German evidence showed that he managed to reverse the Nazi decision to deport the Peugeot workers to Germany. He stopped the Gestapo from arresting the Peugeot directors after the factory had been sabotaged by the Resistance, and he even saved Jean-Pierre Peugeot's life when the Gestapo arrested him on a visit to Wolfsburg. Peugeot was to express his gratitude a few years later by condemning Porsche to prison.

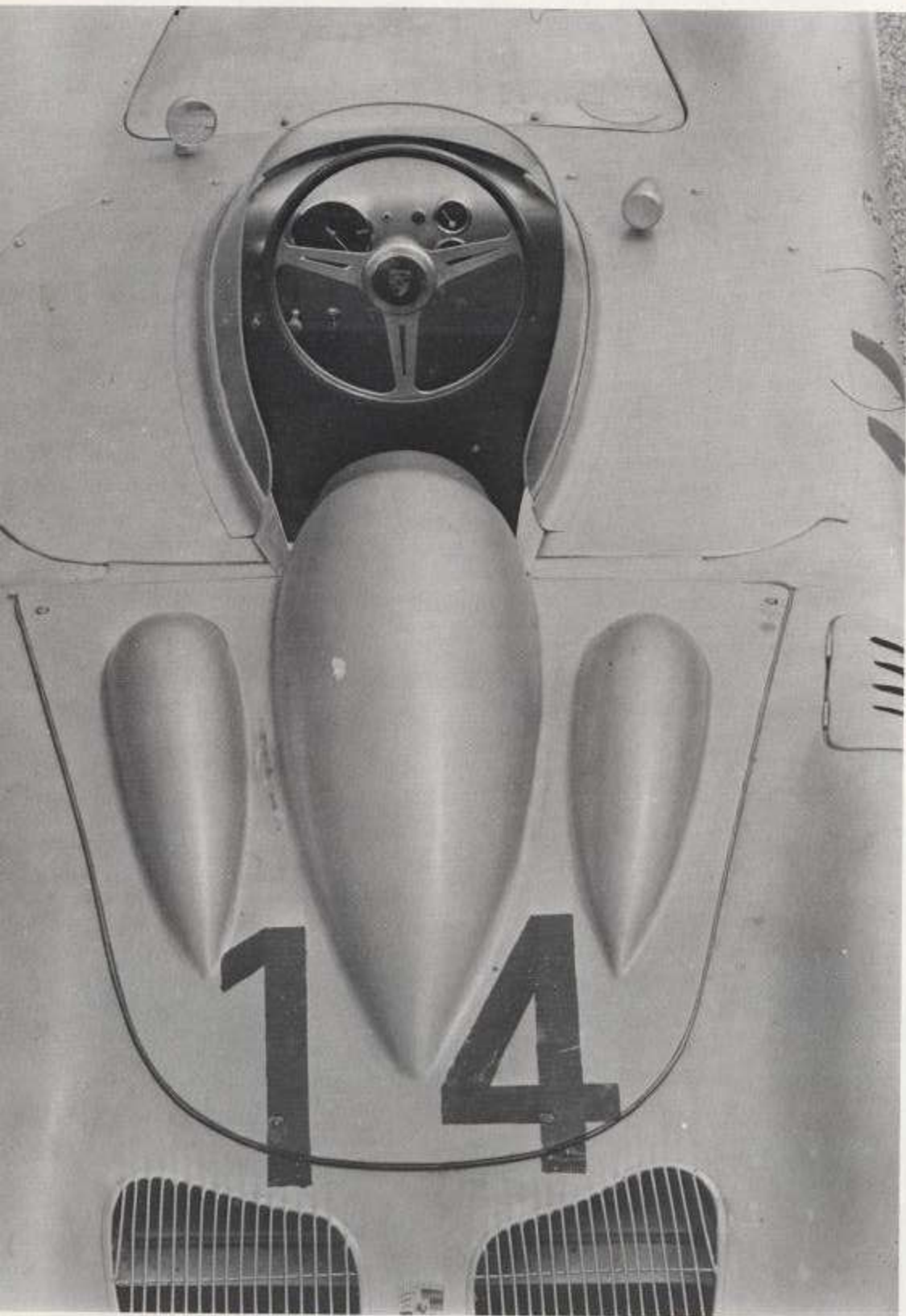
Above all, in a world of machines and machinery, Porsche was a genuinely human man. For twenty years he had dreamed of giving the workers of Europe the gift of personal mobility. In years when his own future could have been wealthier and more assured had he gone on designing cars for the very rich, he spared no effort in carrying on with his own small car project. It cost him time, it cost him money, and in the end—through his involvement with Hitler and his postwar tragedy—it cost him his life.

Only in his final months was he able to see that all his work had not been in vain. In September, 1950, he went for the first time since the war to Wolfsburg. On the way, he and his son Ferry passed shoals of VW's crowding the autobahns, and for Porsche, coming at the end of his captivity and illness, it was too much. The old man broke down and wept. Yet if Porsche was an artist—and he was—he was unusually fortunate. Not many artists are lucky enough to see their work valued at its true worth before they die. ❖

- 36: The thirty production prototypes built with the assistance of Daimler-Benz in 1937.  
 37: Hitler at the Wolfsburg plant for cornerstone laying ceremonies on May 26, 1938.  
 38: An application form for membership in the KdF-Wagen savings plan instituted in 1938.  
 39: The membership card itself which, on this example, shows us that Ghislaine Kaes, (Dr. Porsche's secretary), born in London on July 4, 1910, and living at No. 25 Herdwegstrasse in Stuttgart, had so far contributed 750 Reichmarks toward the RM 1190 price (including insurance) of a KdF-Wagen “Limusine.” Postwar these investments were honored by Volkswagen.  
 40: One of three special VW's built for a Berlin-Rome race of 1939, cancelled by the war.  
 41: The presentation to the press of the Porsche-designed Cisitalia GP car: Nuvolari up.  
 42: After the war; Ferry and his father examining plans of the contemporary Volkswagen.







**T**here are no half measures with Porsche cars—people either love them or detest them. And even if they detest them, they have to show some grudging respect: Any marque which can win the world manufacturers' and prototype championship, *and* make it look easy, can't be all bad. Last year Porsche trampled the opposition into the dirt with a procession of victories which included the BOAC 500 at Brands Hatch, the 1000 Kilometers of Monza, Spa and the Nürburgring, plus the Targa Florio, the Watkins Glen Six Hours and the Austrian GP. This year they won the Targa Florio, Le Mans and *all* the other Manufacturers' Championship races but one: Sebring, and they only missed that one by twenty-two seconds.

Even the production cars are individuals in a world where more and more automobiles are turning into efficient but faceless committee-cars. The short and stubby bodywork, the uncompromising turbine scream of the engine, the gearshift so light that one feels something vital must have become disconnected. The superb old-fashioned finish, with a painstaking Teutonic attention to detail—like the gas tank filler cap covered by a lifting flap which can only be released from inside the car, and which contains a protective folding pad which must be spread out to protect the bodywork before the cap itself can be taken off. The harsh ride, the fierce ventilated-disc brakes, the dead but precise steering. The ever-present threat of terminal oversteer once the tail-heavy weight bias gets its chance to take over if the chips are really down. The optional Sportomatic, possibly the ultimate semi-automatic transmission, which combines four-speed gearbox, centrifugal clutch and a torque converter in the same setup. The high degree of refinement, from the fuel injection system to the belt-and-suspenders provision of three-speed windshield wipers and four screen-washer jets to make sure the driver can always see where he's heading. All add up to the sharply defined, never mistakable, Porsche character.

All this, plus the reliable race-winning image, leads many fans to assume the marque has been around from the very beginning, along with rivals Alfa Romeo, Lancia, Mercedes and Fiat. But the first Porsche car of all only saw the light of day a scant twenty-two years ago. And in a business which has seen many respected names progress from the shakiest of starts, the Porsche's birth was even less promising than most. To begin with, the

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**P O R S C H E**

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BY DAVID OWEN

founder of the business was only just out of prison, and gravely ill. The company offices were in another country, barred to the firm's directors, and occupied by foreign troops. The local currency had almost no value, and their temporary base was in a tiny mountain town, without heavy machinery, a railway link to the outside world, or even access to parts like spark plugs or electrical components.

The only trump card in the Porsches' hands was experience. But Porsche Senior was a sick man, forbidden by his doctors to take an active part in running the firm. And his son Ferry's previous contract with wealthy Italian industrialist Piero Dusio, which had provided the ransom money for his father's release from a French prison, was falling to pieces due to lack of money.

What had happened was that Dusio had commissioned Porsche's firm to design him a Grand Prix car. (See "Cisitalia," *AUTOMOBILE Quarterly*, Volume VIII, Number 2.) Although produced by Porsche's old team, headed by veteran engineer Karl Rabe, while its leader was in France, it was typically Porsche in its originality. Fitted with a slightly oversquare flat-twelve engine mounted at the rear of the car, it was reminiscent of the big prewar Auto Unions—in fact, a persistent rumor said, incorrectly, that the Cisitalia was the resurrected 1½-liter Auto Union which had been projected in the Thirties. Each cylinder bank had twin overhead cams, a twelve-valve head, and two Centric blowers geared 1:1.7 above engine speed which delivered the mixture at three atmospheres. To improve adhesion and roadholding, the car was fitted with four wheel drive which could be engaged by pulling a lever inside the cockpit. Unlike his Auto Union GP cars, the engine, clutch and gearbox were all placed ahead of the rear axle. The five-speed transmission was the first to use the Porsche ring synchro—but instead of a separate synchro for each speed there was one for upward changes and one for downward ones, the shift being arranged like a motorcycle box, with all the gears in constant mesh. The chassis was a chrome-steel space-frame with fuel tanks arranged down the sides to keep the weight distribution constant as the fuel was used up, and it was both light and aerodynamically clean, with a low frontal area. Rabe estimated it should produce 450 brake horsepower, giving it a

potential maximum speed of 210 mph.

The trouble was that Dusio underestimated the cost of developing a competitive Grand Prix car, particularly one as complex and advanced as this one. And although the Cisitalia was the car which got Professor Porsche out of prison, it very nearly put Dusio in—certainly it bankrupted his firm and forced him to look for new backers. In the end, he was forced to do what Porsche himself had done with his prewar small car design—he found a prestige-hungry dictator, in Dusio's case Peron of Argentina. The car crossed the Atlantic and nothing more was heard of it until 1953, when it was entered for the Buenos Aires Grand Prix and, for good measure, for an attempt on the South American flying-kilometer speed record. Both failed, due to an almost complete lack of preparation, although the racing drivers who tried it said its roadholding was superb, though it was pushing out only 380 bhp on test.

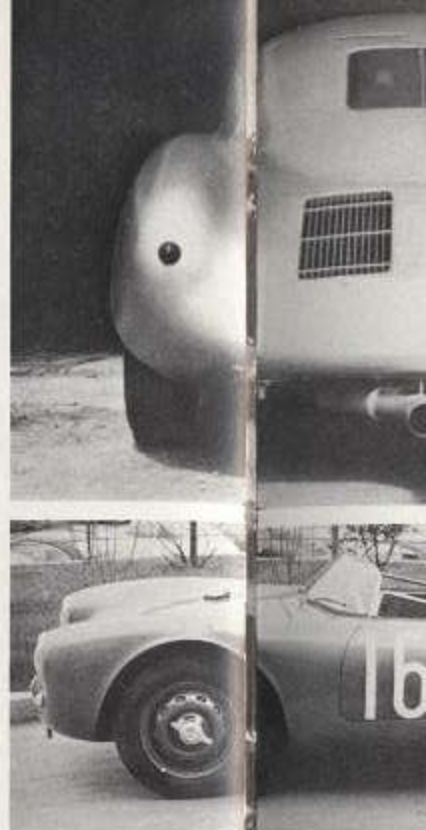
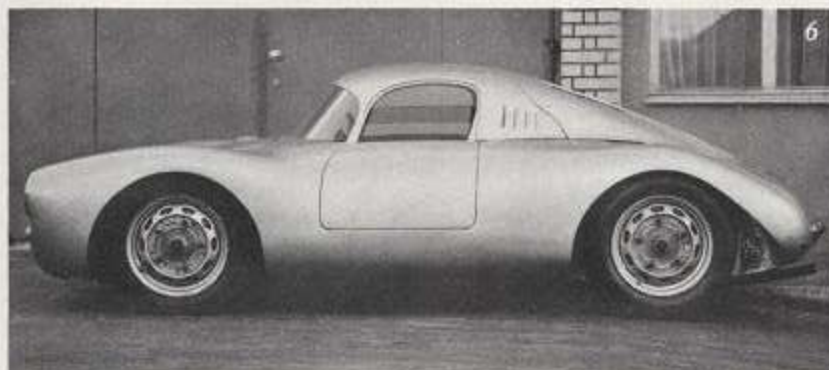
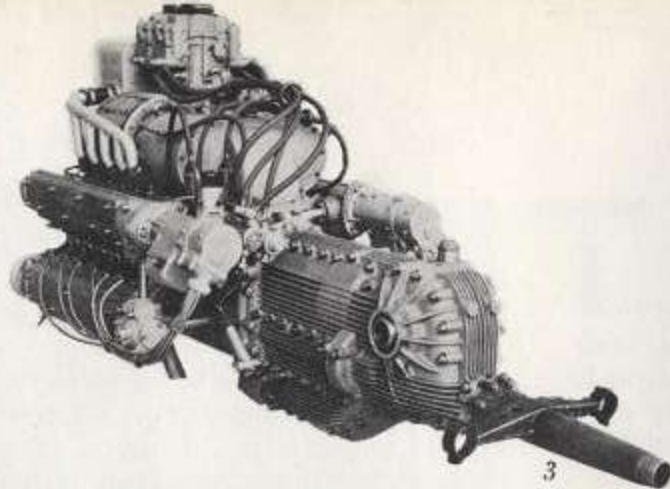
With the falling through of the other Dusio projects, which included the Cisitalia sports car, a small tractor and a marine turbine engine, the Porsche firm was out of work. So they dusted off another set of plans labelled Porsche Project #356, which related to a two-seat sports car bearing some resemblance to the prewar sports Volkswagens designed by the Professor. By now he was home again, and he backed Ferry Porsche's judgment that the time had come for the firm to go ahead and develop a VW-based sports car, and if necessary to produce it themselves.

But the difficulties were immense—designing a car in the rural surroundings of Gmünd had been difficult enough, and producing one might well be impossible. Parts couldn't be imported from Germany, nor could the team take over its workshop and offices in Stuttgart, since these had been taken over by the U.S. Army.

The first need was for a prototype—unless a car actually existed, there was no way to create a potential demand and see if there really *was* a market for it. So the team set out to scratch together the vital parts any way they could—electrical components came from Switzerland, spark plugs were smuggled over the border from Germany, and the Volkswagen parts were bartered and cannibalized from the military VW's and Kübelwagens which were almost the only transportation in the area.

SCHE:THE CARS





They decided on an open car as a first attempt, since this would be simpler than a fixed-head coupé, at least while they had no access to proper bodybuilding facilities. The box-section chassis frame was started at the end of 1947, and was finished by March of 1948. An 1131 cc Volkswagen engine, with higher compression (itself a risk, since only low-octane fuel was then available in Austria), a modified cylinder head and a single downdraft carburetor was mounted in front of the rear wheels, with a standard VW crash gearbox behind it. Front and rear suspension, steering and all other parts came from Volkswagens. The big difference was that the Porsche was light, with a total weight of just over 1300 pounds, with an increased engine output of 40 bhp to give it additional performance.

The car was finished at the end of May, 1948, and testing started straight away, over the mountain roads of the Katschberg and the Grossglockner, where it behaved well and began to attract a lot of attention. The much-needed publicity soon followed throughout Europe's motoring press, and orders and inquiries began to pour in. But apart from the problems of import licenses to allow the cars to be sent out of the country to the would-be buyers—the Portuguese even offered to pay in sardines to avoid currency exchange difficulties—it was obvious that the backyard organization in Gmünd could not hope to cope with even a fraction of the new business.

But they did their best. After the success of the first prototype, Ferry Porsche decided to have a crack at a closed coupé after all. They found a local panel-beater who had once worked for Austro-Daimler and put him to work. They built up a set of formers shaped from wood, and the alloy panels were hammered into shape over these. Unfortunately, the panel-beater, although highly skilled, was inclined to spend his wages on long

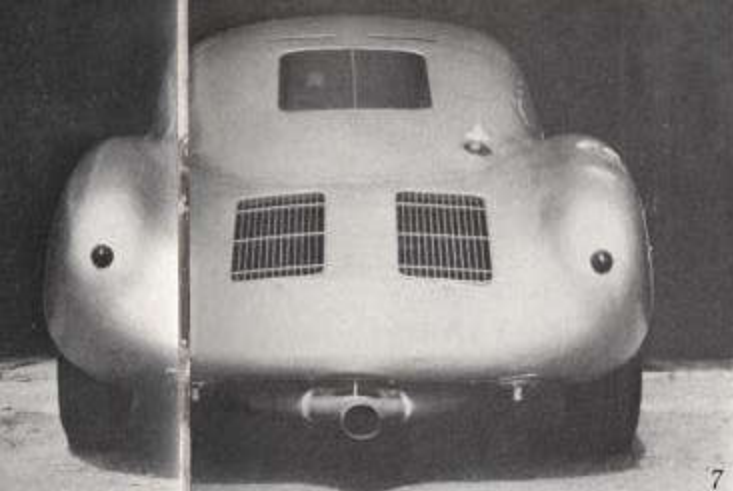
drinking sprees, ending up on sick-call for days on end—although he would compensate afterward by working all through the night. But the first closed coupé was finished by the end of August, 1948, after which the original open car had to be sold to a Swiss buyer to provide the hard currency for the next set of parts from Switzerland.

By mid-September Porsche had signed a new contract with the reviving Volkswagen organization—Porsche's firm promised for its part not to design a car which might be competitive to the VW, and agreed that VW should be allowed to use any Porsche patents free of charge, while in return Porsche were to be paid a royalty on every VW produced, VW were to supply parts for Porsche cars, and Porsche would be allowed to use the expanding VW service network.

By now Porsche had hired three hundred workers, and production was under way. With primitive production methods, no more than five cars a month could be turned out at Gmünd, but slowly the operation expanded. Brochures were printed in English, German and French. There was even an alternative drophead version with a body built in Switzerland, by Beutler of Thun, with an 86 mph top speed.

But real expansion was impossible, and a move back to Stuttgart was the only answer that made sense in the long term. With Porsche himself still barred from Germany and the factory requisitioned, some stopgap alternative would have to be found. So Ferry Porsche contacted Reutter, the Stuttgart coachbuilders who had helped with bodies for the Porsche-designed Zündapp and NSU small car prototypes, and persuaded them to start making bodies for the new cars—in addition Reutter would set aside part of their factory for assembling the cars. A task force of those Porsche workers who could enter Germany, led by Karl Rabe, would go ahead and get things moving in advance of the move proper. They built a com-





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- 1: Professor Porsche, with son Ferry, alongside the first car to carry the family name.
- 2: The tiny work force stands proudly alongside first car to be produced in Stuttgart.
- 3: Porsche's brilliant, but undeveloped, twelve-cylinder GP Cisitalia power unit of 1947.
- 4: A couple of mid-engined racing cars were built by VW dealer Walter Glöckler in 1950-51.
- 5 & 6: First Porsche-built mid-engined racing cars were the two 550RS prototypes of 1953.
- 7: The still later fastbacked Le Mans Porsches of 1956 featured new low-pivot swing axles.
- 8: Second 550RS prototype, of 1955, with four overhead cams and spyder coachwork.
- 9 & 10: Third 550RS prototype "Buckelwagen" (humpback) of 1954, capable of 140 mph.
- 11: The first 550RS production models as built during 1954-1955 in the Stuttgart works.



plex of wooden huts in the grounds of the Reutter plant, and they set up the nucleus of the Porsche factory there—after one of the original fifty cars produced at Gmünd had been shown at the 1949 Geneva motor show, the order book was filling rapidly and the backlog was growing.

There was another reason why Porsche needed to go into large-scale production without delay. The Porsche family fortune had been held in trust for them in Stuttgart, where it had been increasing in value all the time, augmented by the Volkswagen royalty payments and the American Army's rent for the Porsche premises. For tax reasons, it was essential that some cars be built in Germany as soon as possible, so the first prototypes of the new series were constructed in the garage of the Porsche family home, in the same place the original Volkswagen prototypes had been built more than ten years before.

Some changes were made with the move to Germany—light alloy panels were replaced by heavier steel bodies, and the 1086 cc engine which had replaced the 1131 cc engines used in the first Gmünd cars wasn't really big enough for its new role. At the same time the twin-leading-shoe brakes of the Gmünd cars were replaced by easily-obtained VW parts. Although Reutter could only spare a little over 5000 square feet of their factory space, this was used to turn out first eight, then thirty, and finally eighty cars every month!

Originally the Porsche factory was due to be handed back by the military on September 1st, 1950, when the transport stored there was to move to barracks at Cannstatt on the other side of the city. But the Korean crisis delayed the move, and the stopgap production arrangements continued for another two years, when a new Porsche works was built. The old factory was eventually handed back in 1956, and Porsche finally completed the chain when they themselves took over Reutter and made it part of the

company.

During this time the Porsche carbuilding company had changed from a hole-in-the-wall operation to a multi-million dollar industry, yet still with its own traditions and individual ways of doing things. Each engine was the responsibility of a particular fitter, who not only assembled it and checked it himself, but stamped his initials on the block when he was satisfied with it. And all the time, although the basic shape and design of the car was to be maintained unchanged for the next fifteen years, detailed but worthwhile improvements were still being made. The engine size and power climbed steadily—at the end of 1950 1300 cc, a year later 1500 cc and 60 brake horsepower, with a top speed of over 100 mph. In September of 1951, one of these 1½-liter cars broke the seventy-two hour record at Montlhéry. After several hangups—a valve on the refuelling truck stuck, the record car could only keep going on four gallons provided by a private owner parked at the trackside, and at three-quarters distance the gearbox failed, leaving the car to finish the last eighteen hours at peak revs in third gear—it took the record.

In the following year, 1952, Porsche introduced a more powerful Super version with a tuned 70 bhp 1½-liter engine—power outputs had climbed so high that the old crash gearbox was now replaced by an all-synchro box, using the system already tried on the Cisitalia, while the brake drums were enlarged to cope with the increased performance. Two years later an extra, more spartan lightweight drophead was added to the range and tagged the "Speedster".

The next step in the long 356 saga came in 1955, with modifications to the chassis, steering and suspension to improve the roadholding and cut down the tendency to oversteer shown by the earlier versions, producing the 356A. The engines of the 1500 versions were stretched again to 1600



cc, the 1300's being dropped a few years later. At the same time, one of the most famous Porsches of all made its bow—the Carrera, named after the Carrera Panamericana, the great Trans-Mexican road race last run in 1954. This highly tuned 1500 cc engine gave out 105 bhp and, with a lighter coupé body, it could reach a top speed of 125 mph.

In 1959 the 356A was replaced by the 356B, with repositioned headlamps, lowered seats, raised fenders and improved brake cooling. A Super 90 tuned version was added to the normal and Super variants, and the final stage was reached three years later with the 356C. Again the chassis was revised in detail from the B, disc brakes were fitted on all four wheels, those at the rear carrying small drums for the handbrake as well. The C came in two body styles, coupé (closed) and cabriolet (drophead), and in two stages of tune—the 75 bhp, 1582 cc cooking version, and the higher compression, alloy-block SC version with 95 bhp and 112 mph top speed.

But production cars are only half the story. Professor Porsche always believed fanatically in the value of competition in proving and improving car designs, and Ferry Porsche inherited this attitude. From the very first, Porsches have been involved in racing, rallying and speed record attempts. Some of the Gmünd cars, in the hands of private owners, won their classes in the 1950 Rally of the Midnight Sun, and started a tradition. The first works car, another Gmünd coupé, won its class in the Le Mans 24 Hours of 1951—in fact this car was cannibalized from two originally entered, one damaged by a collision with a cyclist during practice at the circuit and the other smashed up in an autobahn collision.

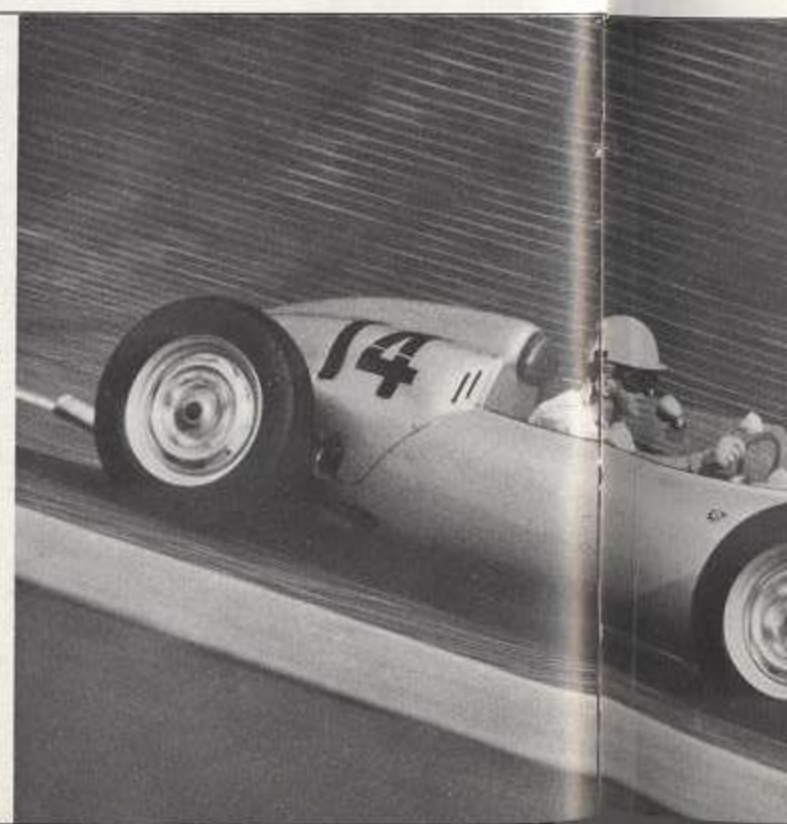
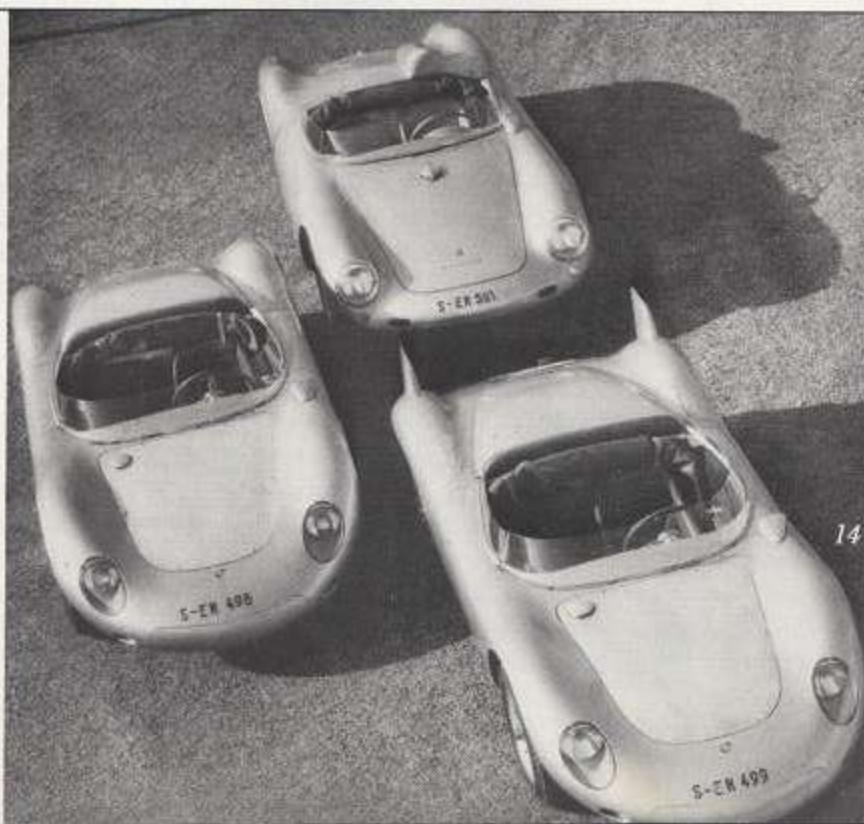
Yet another Gmünd car (these were used as long as they lasted, as they were so much lighter than the Stuttgart-produced ones) with a 70 bhp 1½-liter engine was entered for the 1952 Mille Miglia, where it finished

well and won its class, in spite of being stuck in third gear for the last 200 miles.

It was in the summer of 1952 that Porsche took the next big step forward in producing cars for racing, with a design for an open two-seater sports-racing car fitted with a four-cam (two per bank) four-cylinder engine. Late in 1953 the car was finished, with a tubular cross-braced chassis and a pared-down alloy two-seater body, and the car was shown at Paris in the fall, where it was given the name "Spyder." Its first race proper was the 1954 Mille Miglia, where it was driven by Hans Herrmann and Herbert Linge. On one occasion the low-slung bodywork saved their lives, allowing them to slip under a level-crossing barrier which suddenly came down in front of them as they approached it at 90 mph! The car finished first in its class and sixth overall in a field of bigger and more powerful cars. Three works Spyderys were entered for the 1954 Le Mans, but incorrect ignition settings caused the pistons to burn through—one car managed to finish and win its class, in spite of running for four hours on three cylinders. Porsche's well-known stamina was beginning to show.

From then on the Spyder went from strength to strength—it won its class in the Rheims 12 Hours and at the 1955 Le Mans and then cleaned up at the Nürburgring. Only in the Nürburgring 500 Kilometers was it obvious that the opposition—in particular the 1½-liter Maseratis and the East German EMW's—had caught up. So Porsche went one better with the Spyder RS, with an even lighter chassis, a more powerful engine and a five-speed box—one of these cars won the 1956 Targa Florio—and finally the Spyder RSK, with lower, leaner bodywork and a modified front suspension.

One offshoot from the Spyder program was the first Porsche Formula 2 car, originally a Spyder RS with the second seat covered in and entered





in the 1957 German GP. Driven by Edgar Barth, it not only beat Salvadori's F2 Cooper to win, but it set up fastest practice time by a handsome margin. Encouraged by this, the works entered a modified single-seat Spyder RSK in two F2 races in 1958. Its enveloping bodywork gave it a definite aerodynamic advantage on the faster courses compared with the stark, exposed Coopers, and at Rheims Jean Behra beat everyone to win, and even Peter Collins' Ferrari couldn't keep up with him. Behra's average (even though he eased off towards the end) was as fast as Fangio's had been in a 2½-liter Grand Prix Mercedes only four years before on one of the fastest circuits in Europe!

Finally in 1959 the seal was set on the RSK's success when Porsche works cars finished first, second, third and fourth in the gruelling Targa Florio, while none of the two-liter and three-liter Ferraris stayed the course. By this time, the Carreras were taking over the brunt of Porsche's sporting efforts in events where absolute top speed was not so important, among them the Liège-Rome-Liège Rally, where Carreras gave Porsche their third and fourth outright victories in 1957 and 1959.

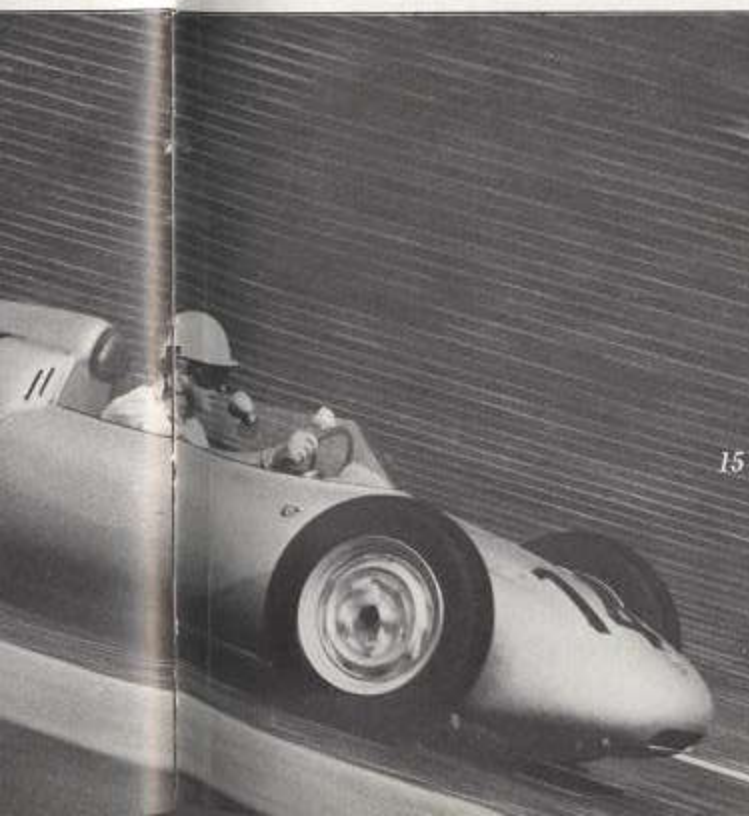
Later in the 1959 season Porsche took the last step towards Formula racing when they produced a proper single-seater body for the car. Entered in the Monaco GP, where von Trips qualified it in a field of 2½-liter cars, it crashed on the second lap. Rebuilt, it was driven by Behra into third place at the Rheims F2 race a few weeks later. But the main reason for building the car was to gain experience for a Formula One car, when the new 1½-liter formula came into effect in 1961.

Unfortunately, GP racing proved a complete blind alley. Like almost everyone else, with the exception of Ferrari, Porsche started the new formula without a competitive engine, since the all-new flat-eight was taking longer to develop than they had expected. As a stopgap, Dan Gurney

drove the car with a four-cylinder engine, and nearly won the 1961 French GP at Rheims when the all-conquering Ferrari team collapsed in confusion with a variety of ills, the only survivor being Baghetti, who just managed to scrape past Gurney on the final straight. After that, in spite of its apparent promise, the flat-eight never did really well—its only major win, again with Gurney at the wheel and again at the French GP, was the following year when the Ferraris didn't turn up. After that the increasing ascendancy of BRM and Lotus made it clear that Porsche's efforts would be in vain—a disgruntled Ferry Porsche complained that the German component manufacturers hadn't risen to the challenge of a homegrown GP team as the British ones had, and the firm was having to carry the technical and financial burden of GP racing entirely on its own. And since the return in publicity from even a moderately successful team was less than the cheaper and more reliable feedback from sports car racing and rallying, the F1 excursion was written off to experience and back they went to the field they knew best.

Porsche's new program set off with a bang, with the new Type 904 coupé. Probably the sleekest Porsche yet, with a long, low silhouette built, for the first time, in glassfiber, the 904 set the pattern for a whole new generation of racing Porsches. But aside from that it was only a first stage. It was beautiful, but it wasn't as aerodynamically efficient as it could have been. It was tough, with its body bonded to a double-box steel chassis, but it wasn't as light as it should have been. And it used the old four-cylinder engine, stretched in this case to 1966 cc and producing first 180 bhp and finally 195 bhp, mounted ahead of the rear wheels.

Yet the 904 was good enough—backed by the ageing Carreras of private owners—to put the name back on the sporting map. Time and again, in races like the 1964 Rheims 12 Hours, the Porsches would come roaring



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12: Hans Herrmann's 550RS awaits scrutineering at Brescia before the 1956 Mille Miglia.  
 13: Daniel Sexton Gurney enroute to Porsche's only Grand Prix victory, at Rouen in 1962.  
 14: The three variants on the 550A/1500RS theme, as campaigned by the factory in 1957.  
 15: Von Trips conducting the 1500RSK single-seater which performed so well in F.2 races.  
 16: The great Edgar Barth, winner of the Hill Climb Championship in 1959, 1963 and 1964.  
 17 & 18: At Le Mans in 1961 the Masten Gregory/Bob Holbert RS 61 won its class and finished an impressive fifth overall. But the Gurney/Bonnier prototype coupé retired.  
 19: The magnificent 904 introduced in 1964, some say the greatest road-going Porsche ever.



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home just behind the big Ferraris—and in 1963 and 1964, Edgar Barth led the Porsche team to complete domination in the European Hill Climb Championship.

What finally killed the 904 wasn't its own fault. Ferry Porsche's son Ferdinand Porsche III, who designed the car, said it had a lot of untapped potential. But using the old policy of progressively more powerful engines in progressively lighter chassis, Porsche soon had something much better up its sleeve, thanks at last to a complete switch in the production car range after sixteen years with the same model.

This was nothing less than the final break with the old VW origins—apart from the use of torsion bars, and a flat air cooled rear-mounted engine, the two marques now had nothing in common. The new generation Porsche 911 which replaced the 356 had a completely new six-cylinder two-liter engine with chain-driven overhead cams (one per bank) and an all-synchro five-speed box. Front suspension was by modified MacPherson struts, but still with Porsche torsion bars instead of the conventional coils, backed up by extra rear suspension arms at the back to reduce the roll-steer effect. Once again the short wheelbase, although longer than the 356's, is still only four inches longer than a Mini's, and this confines the engine to its old place behind the rear wheels, although the suspension changes mean that brute oversteer is more reliably tamed.

Porsche's own progression is logical enough—small engine, since big ones are punished by German tax authorities. Big performance is Porsche's stock-in-trade, therefore the car itself must be small, therefore only two seats. But the front track isn't big enough on its own, therefore they need the rear seating luggage space, therefore there is nowhere else for the engine to go but out back. There are some compensations—thanks to the slight increase in length and other changes, the body is much roomier

- 20: With the beautiful 2-liter 8-cylinder cars of 1963, Porsche began to threaten Ferrari.  
 21: With the new 8-cylinder 910 Porsche outpointed Ferrari in 1967 but lost championship.  
 22: The short-tail 908 introduced in 1968 is still a fiercely competitive machine today.  
 23: The late Jerry Titus with a 911 enroute to an SCCA D Production championship in 1966.  
 24: Jo Siffert with the new 4½-liter 917PA at the Bridgehampton Can Am in 1969.  
 25: Ferry Porsche and sons (photographed in 1958): Ferdinand, Gerd, Wolfgang, Hans-Peter.  
 26: Under a photograph of Ferdinand Porsche, Ferry Porsche and the late Karl Rabe, one of Prof. Porsche's oldest and most trusted co-workers, discuss a production problem.

than the old 356's, lower and sleeker with a tough unitary body-chassis combination, based in typically Porsche style on two immensely strong box-sections running back from the front suspension anchor points to the rear engine mounts, with transverse boxes formed by the cowl and trunk floor, the rear seat pan and the engine front support member. Even the roof is stressed, which killed the old Porsche tradition of a convertible version of all models. Instead they introduced a semi-convertible called the Targa, on which the all over roof of the 911 is replaced by a wide "roll bar" which carries the roof stresses yet allows an open top.

The 911 was big news in commercial terms, from the moment it made its first appearance, as the "901," at the 1963 Frankfurt show. When the production 911 followed the next year, it was obvious that Porsche had gone a long way towards killing the drawbacks which still bugged some would-be buyers—oversteer, lack of luggage space and a dated body style. They've implied that this body style will last at least as long as the previous one did, and it has indeed weathered its first five years well and still looks fresh and appealing.

The 911 was news in racing terms too—a brand-new ohc engine in quantity production, with its racing potential still completely untapped! And the 911's racing sister, the Porsche 906 appeared for the beginning of the 1966 season to take over from the 904 GTS. This used a lighter and finer space frame of steel tubes to carry the low, carefully streamlined bodywork. Once again, since the FIA requirements for sports cars as far as passenger and luggage room are concerned are a lot more lenient than commercial ones, the engine was turned around and mounted ahead of the rear wheels. Compared with the 904, the Carrera 6, as the new car was called, seemed an ugly brute to some people—but it was fast, strong and efficient. The first of the new cars, driven by Herrmann and





Linge, took sixth place at Daytona in '66, closely followed by the works 904's, all fitting neatly into the usual place behind the big Ferrari-Ford machinery. By Sebring, the Carrera Sixes had really arrived in force and although the leader went off the road avoiding Andretti's spinning Ferrari, the others took fourth, sixth, eighth and twentieth places. The Targa Florio was yet another Porsche win, with Carreras first, third, fifth and eighth. Another new Porsche racing car, a prototype with a 2.2-liter flat-eight derived from the Formula One engine led for nearly six laps until it dropped out after colliding with one of the Carreras. And at Le Mans, in the excitement of the first Ford victory, people tended not to notice the Porsches finishing in fourth, fifth, sixth and seventh places, just behind the leading Fords. For those with the eyes to see it, the writing was on the wall . . .

The following season—1967—saw Porsche very narrowly beaten in the constructors' championship. In fact they got more points than Ferrari in the whole season, but since only the *best* five races counted towards the effective total, Ferrari pipped them on the post in the last championship event of the season. Once again the high spot of Porsche's year was the Targa Florio, this time with the new 910—a lighter space-frame glass-fiber with a longer, sleeker body and the 2.2 flat-eight—followed by two other 910's (with two-liter sixes) into second and third places. Another 910 two-liter followed the big Ferraris home at Daytona, while two more took third and fourth at Sebring and another took third place at Monza and second at Spa. The Nürburgring was the last overall Porsche victory of the season, with a gaggle of 910 sixes taking the first three places and the eight-cylinder coming in fourth after losing its electrics on the final lap.

After the second Ford clean-up at Le Mans, the Automobile Club de

l'Ouest, organizers of the event, announced a capacity limit on Group 4 cars of five liters and on prototypes of three liters. This decision, afterwards backed by the FIA/CSI, played right into Porsche's hands. At a time when all the big boys were going to have to find new engines they already had one under development—a flat-eight three-liter, in a new 908 chassis, setting them up for overall victory on level terms. Reinforcing this challenger would be the new 2.2-liter engine in the 907 chassis, introduced at the end of the 1967 season.

The 1968 season started well, with three 907's taking the first three places at Daytona, plus first and second at Sebring, while at Brands Hatch in the BOAC 500 a Ford GT 40 narrowly beat two Stuttgart works cars across the line. By Monza, the three-liter 908 was ready, but not yet reliable enough, and it was another 2.2-liter 907 which came in second behind a GT 40. But while they lasted the 908's were as fast as anything on the track, and when they dropped out, it was due to irritating detail faults rather than fundamental flaws.

Then came the Targa, and this time the winning Porsche was another 907, which was fast enough to beat the old lap record by a full minute—but since the tightness of the course didn't give big cars much advantage the three-liters stayed at home. The 908's first win came on home ground, at the 1000 Km of Nürburgring, where it set a new lap record for prototypes, and was followed home by two 907's in second and fourth places. But the powerful engine in such a light and lean chassis was causing severe stability problems, particularly when braking on the roughly patched track. At Spa a GT 40 still managed first place but there were five Porsches (a 907, a 908, two 910's and a 906) in the first seven finishers. The three-liters were disappointing at the Watkins Glen Six Hours, and even though they came in first and second in the Austrian GP this only





1955 Type 356 Continental | Owner: Clarence Rutbell

counted for half the points in the championship series, since it was a short-distance race, and the Ford GT 40's win in the postponed Le Mans 24 Hours meant that yet again Porsche had been beaten in The Big One.

For this to happen once was bad enough—twice was unforgivable. The result was a Palace Revolution. Racing manager and former works driver Baron Huschke von Hanstein retired to manage his family estates and act as Ferry Porsche's racing consultant and part-time personal stand-in. In his place came Rico Steinemann, writer/driver who started and edited the Swiss motor sport journal *Powerslide*, drove for the Swiss Hartski team, managed a pit for Jack Brabham and took second place at Le Mans 1968 in a Porsche. Along with stars like Londoner Vic Elford and German drivers Hans Herrmann, Gerhard Mitter and Rolf Stommelen, they recruited Englishmen Richard Attwood and Brian Redman from John Wyer's Ford team in a shrewd piece of gamesmanship, and former team driver Udo Schutz from Alfa Romeo. Rounding off one of the biggest and strongest teams in motor racing came F2 star Kurt Ahrens, plus a trio of rallymen, Pauli Toivonen from Finland, Bjorn Waldegaard from Sweden and Gerard Larousse from France.

The machinery side too was thoroughly overhauled. Until the newest spearhead of Porsche's effort, the fearsome new 917, with its 4½-liter flat-twelve engine, could be ready, the team would rely most of all on the different versions of the trusty 908. Where acceleration mattered rather than top speed, they would use the open 908 spyder, and on courses like Le Mans or Rheims, the closed long-tail 908 coupé, with the short-tail coupé as a compromise between the two. All would use the flat-eight three-liter four-cam magnesium-alloy prototype engine with titanium-alloy flywheels and connecting rods, working through a five-speed gearbox in the open cars and a six-speed one in the heavier closed ones. At the

same time the team's calendar was ruthlessly pruned to enter only those events which would count towards the championship. They withdrew from the Mountain Championship for the first time in six years, leaving the Porsche banner to be carried by the private owners, and the works rally drives were limited to those who agreed to go for championship points rather than personal ones. The name of the game was domination, utter and complete, with no chance of failure.

But the first event of the new season—Daytona—was a disaster. Five closed long-tail 908's, sent to steamroller the opposition into the concrete, started off in terrific style, leading the race in close order for the first hour. Then faults in the exhaust manifolds leaked gases into the cars and started suffocating the drivers, three of the cars had to stop for welding repairs to plug the leaks, and eventually all dropped out with mechanical breakdowns. Porsche's only consolation was that Waldegaard won the Monte Carlo Rally in a works 911. Sebring was equally bad—the exhaust manifolds held together, but the progressive paring down of weight and strength lead to fractures at the rear end of each car's chassis. Only in the BOAC 500 did events start to go Porsche's way at last. After a race dominated by the team from the start, they took first, second, third and sixth places.

It was the same at Monza, with the 908's finishing first and second after a spirited scrap with the Ferrari 312P's of Andretti and Rodriguez—but in the end the Ferraris broke, letting through a private 907 to make it a Stuttgart hat-trick. The Targa Florio was bound to be a Porsche win anyway, with only the Alfa 33's to dispute it, but the 908's again took the first four places. The Spa 1000 Kilometers, and a 908 got home ahead of a Ferrari 312P, followed by two more Porsches. But the big 917's didn't show to advantage on their first appearance. During practice the drivers





1958 Type 356A Speedster | Owner: Bruce Birth

found the whippy chassis and the enormously powerful engine were not the happiest of combinations, especially on a wet track, where they tended to wander all over the place. One of them sprang an oil leak so missing the race, and the other one dropped out on the first lap with engine trouble. But even on this short showing, the engine's 520 bhp power output made it potentially the fastest Porsche yet, although keeping all that power firmly on the ground was problem number one.

At the Nürburgring, where one 917 appeared, none of the works drivers seemed keen to drive it, and privateers David Piper and Frank Gardner were flown over from England the day before the race. It finished, after an easy drive, in eighth position, while a squadron of 908's took the first five places, giving Porsche the championship they had worked so hard to win.

So by the time Le Mans came round, it was mostly a research-and-prestige exercise as far as Stuttgart were concerned. Spa and Nürburgring had shown that the 917 had potential, but chassis flexing was creating serious handling problems. Since it carried Porsche's future competition hopes, these would have to be solved, and quickly.

In fact the race was a disaster. Privateer John Woolfe got the first non-works 917, but his co-driver refused to drive it so that works driver Herman Linge was sent to lend a hand. But Woolfe crashed at White House on the first lap, the car exploded, and he was killed. The works 917's set off in fine style, proving themselves the fastest cars on the circuit by a wide and generous margin, but the old Porsche reliability had taken a holiday. The leading 917 dropped out with transmission trouble with less than four hours gone. By the time the race was over, all but two of the works cars had followed it into retirement with wrecked clutches or gearboxes, one had crashed in flames and the sole survivor,

Herrmann's 908 coupé, after a nose-to-nose battle with Ickx's GT 40 for the last twenty minutes of the race, was beaten across the line by two car-lengths.

But in spite of the disappointing beginning and end to the season, Porsche had a mid-season record which earned them a crushing victory in the series. Their final total was 76 points, to John Wyer's Ford team's 26, Lola's 19 and Ferrari's dismal 15. And the 917, after careful strengthening, had acquitted itself well in the hands of Jo Siffert in its Can Am appearances with a third, two fourths and a fifth place, just behind the bigger American-engined cars.

Though Porsche won the Manufacturers' Championship quite convincingly in 1969, this year their performance was nothing short of incredible. After twenty years of playing the role of underdog on racing circuits around the world, the full talents of the engineers at Stuttgart-Zuffenhausen have finally come to center stage. Porsche is now indisputably the builder of the best racing machines in the world.

When the 1970 Manufacturers' Championship season started at Daytona there was no doubt that Porsche was ready. Porsche *had* to win, as Ferrari or Ford had had to win in the past; there could be no excuses, no rationalizations if Porsche lost.

For 1970 the burden or the glory would be borne mostly by twelve-cylinder 917's that would not be racing under the factory colors. Instead, they would be campaigned by two teams that were independent of the factory and, in fact, in competition with each other.

John Wyer's J. W. Automotive Engineering of Slough, England, backed by Gulf Oil, the team whose Ford had handed Porsche that heartbreaking defeat at Le Mans in 1969, had agreed to run a team of 4.9-liter 917's on the factory's behalf. The other team, that of Porsche Konstruktionen, Salzburg,



Austria, was the result of Austrian—and to some extent—family pride.

The Daytona results were a poster-maker's dream: Porsche first and second. Pedro Rodriguez and Leo Kinnunen drove a Wyer car to first place and were trailed by the second Wyer entry driven by Jo Siffert and Brian Redman. The pale blue and orange cars outlasted a host of Ferrari 512's. The results were a good omen for the season and a fitting finale to the new-car press introduction staged by Volkswagen of America's newly formed Porsche-Audi Division.

Sebring saw the return of the red Italian cars to the winner's circle. Giunti, Vaccarella and Andretti in a 512 watched a strong Porsche challenge disintegrate from mechanical problems and an accident (Vic Elford was forced out about halfway through the event when another car tore off his 917's left rear wheel.) Movie star Steve McQueen, driving a 908 Mk. 2, almost saved the day for Porsche in a scene worthy of an Oscar nomination. Though his foot was in a cast (the result of an earlier accident in a motorcycle event) McQueen and his co-driver, Peter Revson, drove steadily, keeping within striking distance but out of trouble during the early hours of the race. As more cars withdrew, they advanced through the ranks until they found themselves fighting with Andretti for first place.

Though the race was more than eleven long hours old, the spectacle of the three-liter independently entered Porsche battling the more powerful and faster Ferrari brought the tired crowd to its feet. It was one of the most exciting Sebrings recorded with only 22.1 seconds between the Ferrari and the Porsche at the finish.

The Wyer-Gulf-Porsche team returned to first place at Brands Hatch in the BOAC 500 with Rodriguez and Kinnunen again sharing the winning

car. The second, third and fourth positions were also Porsches with Elford and Denis Hulme in second, and Dick Attwood and that grand old man (forty-one years) Hans Herrmann in third, trailed by Lennep and Laine in a 908.

At Monza, Rodriguez and Kinnunen again outran the field, but in the Targa Florio Siffert and Redman were first for the Gulf-Wyer team. The car they used for the Sicilian race was a 908/3, a road-racing offspring of the ultra-light bergspyder which, though powered by an engine of only three liters, was found to be faster in the long, twisty Targa than the more powerful but less wieldy 917's. Second was the other Gulf car with Rodriguez and Kinnunen. The influence of new blood in the styling department was beginning to show in the way the cars were painted, numbered and identified. Broad longitudinal arrows of orange streaked along the pale blue body shells. No-nonsense white or silver, Germany's traditional racing color, was giving way to a more modish look. Hard-edged numerals of the past were becoming softer, more voluptuous and instead of Dayglo red or green snouts for quick identification, a heart, a club, a spade or a diamond was used to distinguish one car from another as it flashed toward the pits. Laine and Lennep finished a respectable fourth while rally driver Waldegaard—in his first race—teamed with Attwood in the fifth-place 908.

Spa saw still another Porsche triumph—with Siffert and Redman claiming first place. Odds were now that Ferrari would never catch Porsche for the championship. Ahrens and Elford claimed third position while Laine and Lennep slipped into fifth.

The Austrian team after a season of disappointment, swept the Nürburgring 1000 Kilometers with Ahrens and Elford, driving a 908/3,

1962 Type 356B Super 90 Roadster | Owner: Buz Hahn





taking first and teammates Herrmann and Attwood finishing second. The victory was marred by the death of Hans Laine, a promising young twenty-three-year-old driver whose car ran off the road, struck a tree and burned.

The stage was now set for Le Mans. Porsche had traditionally fought hard and had done well at the French classic but overall victory had always eluded the cars from Stuttgart. This year the dream would finally be realized. In one of the rainiest Le Mans races ever, Hans Herrmann capped his career, winning the event with Dick Attwood as co-driver. The red and white Austrian 917 led a three-car sweep with Larrousse and Kauhsen taking second in another 917 and Rudi Lins and Helmut Marko third in a 908/2.

Overshadowed by the overwhelming victory was the performance of the new 914/6 appearing in international competition for the first time. It claimed an impressive sixth overall and won the Grand Touring class outright. Appropriately the new mid-engined sports car was entered by the French importer, Auguste Veuillet, who in 1950 had driven the first Porsche ever raced at Le Mans.

In the United States, where the new mid-engined Porsche has been wildly successful (especially in its less expensive four-cylinder form), the importer, the Porsche-Audi division of Volkswagen of America, campaigned six 914/6's. In the cars' first seventeen races, thirteen first places were achieved in the Sports Car Club of America's C-Production category, and sights were already being set on the run-offs this November in the American Road Race of Champions.

Shortly after the French race and the ensuing celebrations in Stuttgart, Herrmann announced his retirement from racing. The Le Mans win had been the high point of a life of racing and was a heady finale to his long

association with Porsche competition.

After the tremendous showing at Le Mans, the rest of the season seemed almost anticlimatic. Watkins Glen saw a return of the Gulf Porsches to the winner's circle with Rodriguez and Kinnunen claiming first while Siffert and Redman took second. Elford and Hulme took fourth place.

The action and excitement of the World Manufacturers' Championship did not keep Porsche from competing in another of its favorite sports: rallying. Porsche 911 series cars cleaned house in the Monte Carlo with Waldegaard and Helmer in first; Larrousse and Gelin in second and Andersson and Thorselius in fourth. The Nordic drivers are strong; they proved it again in the Swedish rally when Waldegaard and Helmer won handily and for the third time in succession at the Austrian Alpine Rally when Waldegaard and Nystroen took the honors.

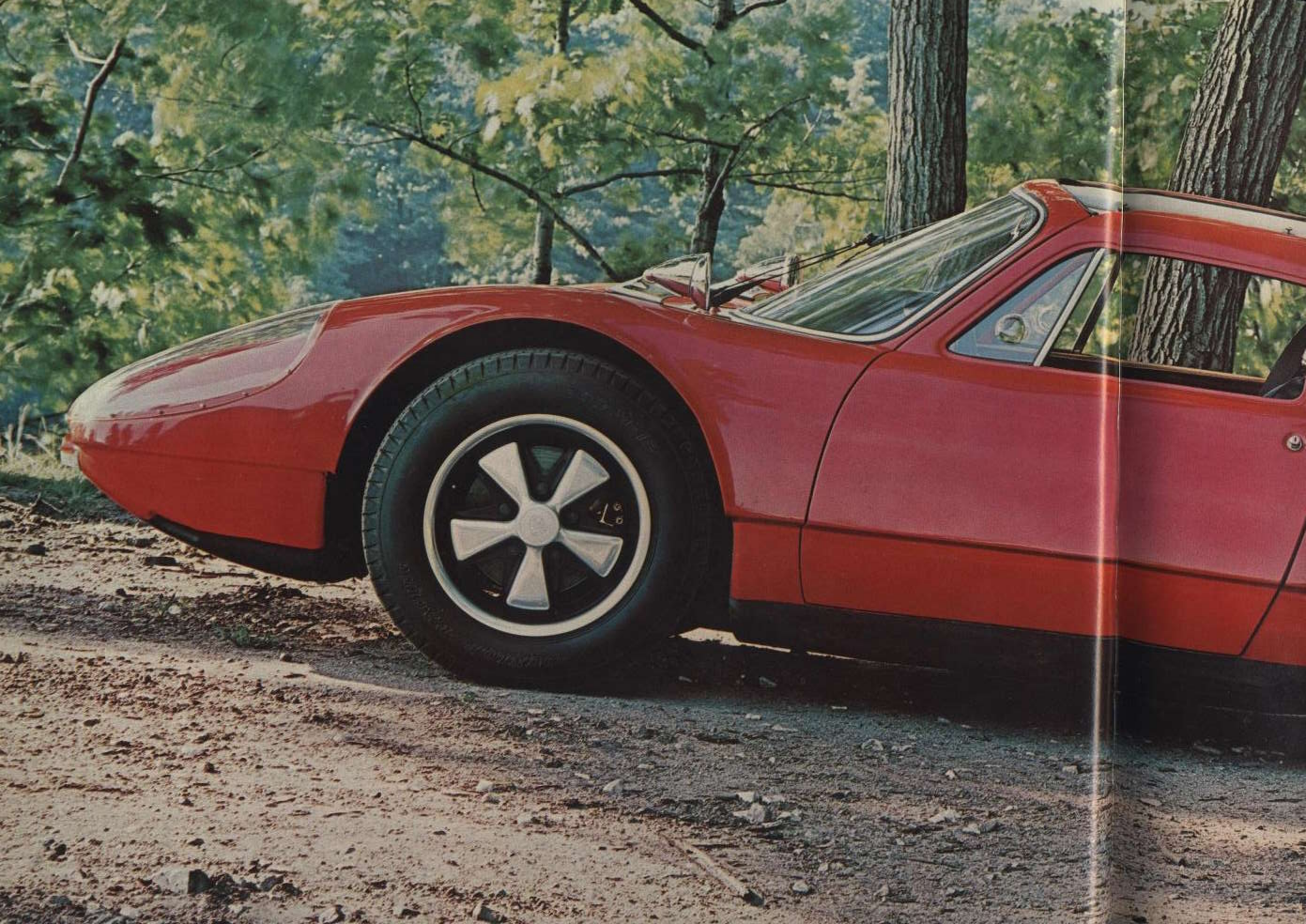
The new 914/6 has proved to be at least as effective as the now well-established 911's in endurance racing. At the recently revived Marathon de la Route held at the Nürburgring last August, the factory-entered team of three 914/6's swept all before them, finishing one-two-three in this incredibly gruelling, eighty-four-hour nonstop event. Of the sixty-four cars which started the race, only twenty-three were still alive at the finish.

Which brings us—after twenty-two years—more or less up to date. From the tiny workshop in Gmünd and the original team of a dozen people, to one of the most famous car manufacturers in the world with a work force of well over a thousand. Old Professor Porsche's original title for his design office "F. Porsche Construction Bureau for the Manufacture of Motors, Motor Vehicles, Aircraft and Ships" is becoming more accurate all the time, and half the firm's business is devoted to design work for outside consultants. Biggest of their customers is still Volkswagen, for

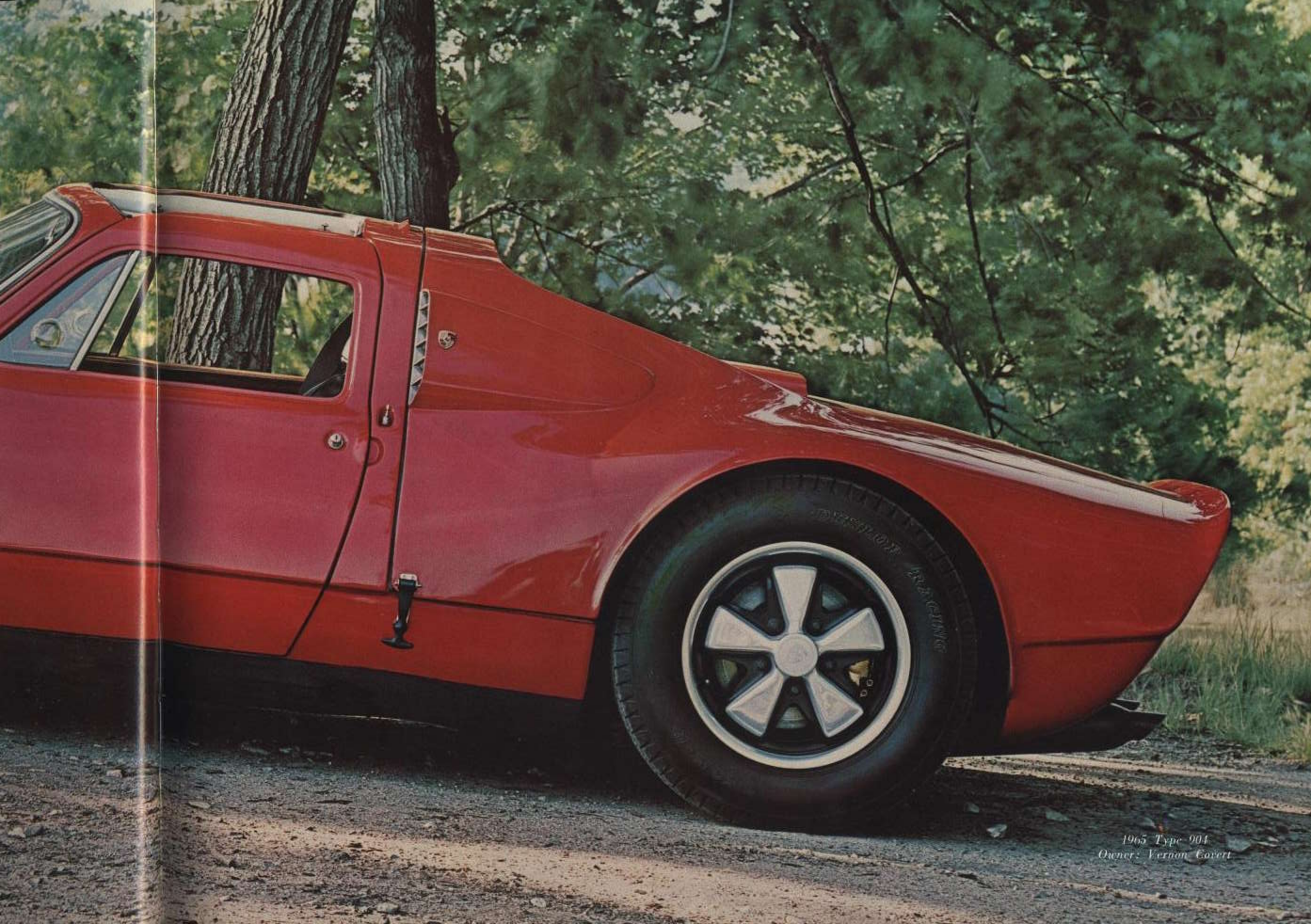
1964 Type 356C Coupé | Owner: Ray Ringler











1965 Type 901  
Owner: Vernon Covert



whom Porsche develop and build prototypes of new models—other projects include tanks and military vehicles for the West German Wehrmacht, industrial Porsche engines for generators, compressors, fire pumps (a Coventry-Climax in reverse!), combine-harvesters, a range of marine engines for fast rescue boats and power units for light airplanes. In addition there are subsidiary companies like Porsche Konstruktionen KG in Austria, and Porsche Diesel Motorenbau GmbH in Friedrichshafen, which turns out a series of Porsche tractors.

In spite of this enormous expansion, the company is still firmly in the hands of the family—or families. Professor Porsche's son Ferry is the managing director of the parent company in Stuttgart, and the Professor's daughter Louise is head of Porsche Konstruktionen KG in Salzburg. Louise married Anton Piëch (who shared Porsche's cell in Dijon and died a year after him, in 1952) and now the whole setup is owned on a fifty-fifty basis between the Porsche-Piëch clans. Another link was forged when Porsche's grandson Ernst Piëch married Elisabeth Nordhoff, daughter of the man who was responsible more than anyone else for rebuilding Volkswagen after the war and putting it back on the path to success.

Now the third generation of Porsches is playing their part in running the company—Ferry's sons, Ferdinand, Gerd, Hans-Peter and Wolfgang head departments within the organization, as do their Piëch cousins. Ferdinand in particular, known to his friends as "Butzi," is responsible for styling—his was the beautiful 904 racer, still his favorite design, and the current 911 range was styled by him originally, although he didn't get things all his own way—for one thing, the engineers insisted that the design be altered until the drag coefficient had been brought down to at least the same value as the *original* 356, before later alterations had begun to increase it.

What of the future? Ferdinand the Third said just after it appeared that the 911 series is going to be with us for at least ten years, so there will be few changes in that direction for some time. But Porsche have always had the same approach to detailed improvements as their VW cousins—instead of a 1968-69 model change, they introduced fuel injection as standard for the two more powerful 911's, the E and the S (the 911R is the most powerful of all, but is meant for racing and rallying only), they produced improved heating and ventilation for all three 911's and the four-cylinder identical-body 912 (now discontinued), plus larger brake pads front and rear, hydropneumatic self-leveling front suspension struts, a slightly longer wheelbase, improved weight distribution, revised rear lights with individually replaceable lenses and another twenty detail changes.

For this year there have been bigger alterations. The two-liter six is up to 2.2 liters, and both power and torque have gone up on all three 911 models—the 911S from 190 bhp to 200, the 911E from 158 to 175, and the "cooking" 911T from 125 to 142. All three models now have ventilated disc brakes as standard equipment, and the prices have risen still higher into the luxury class.

But the most exciting news out of Porsche has been a whole new model, first fruit of a closer tieup with Volkswagen, which is expected to lead to a complete, and long overdue, sales and service amalgamation between the two marques—and which, as we've seen, has already enjoyed considerable racing success. This is the joint VW-Porsche sports car, the 914, called by some, to Porsche's horror, the VolksPorsche. Why horror? Because some Germans are already abbreviating it further to VoPo, the rudest four-letter word in the German language, standing as it does for the hated East German People's Police.

Names apart, the 914 is potentially the most exciting Porsche yet. For

1968 Type 911 | Owner: O. Reagan Rowe, Jr.





one thing, it's cheaper than the other luxury-express models, and for another it returns after twenty years to the ideal Gmünd concept of a mid-engined car, hitherto reserved for competition Porsches only. The reason is that Porsche's revised front-end design now allows adequate space for a worthwhile luggage trunk in front, and provided one is prepared to sacrifice the two tiny rear seats the engine can at last be fitted ahead of the gearbox and final drive. This gives the 914 a balance which has always been lacking in the road cars, and handling and road-holding that is equalled only by some, but not all, competition cars. Like the original 911, there are two versions in identical bodywork—a four and a six. The 914/6 is the more expensive, naturally enough, since it uses the Porsche 911T engine (130 hp) with E, S and R versions obviously ready and waiting for future upgradings or competition versions. The four-cylinder 914 uses the VW 411E engine producing 80 bhp, but working through a Porsche five-speed box to produce a 110 mph-plus top speed.

Where do Porsche go from here? This has been probably the biggest year yet for changes and decisions—after the heart-searching in 1967 and 1968 over the cost of the racing effort and the disappointing results, the complete-supremacy-at-all-costs faction had its way, and events proved them right. All the same, the cost in cash and—more important—the time and knowhow, to a firm of Porsche's size, was crippling, and couldn't be kept up indefinitely. They could have done what Mercedes have done successfully many times—pull out while on top, wait for a good time to re-enter in a blaze of publicity, leaving the legend to carry them through in the meantime. But Porsche have always been convinced that continued racing success means good business in their small and specialized market, and so they decided to support a full program in 1970. The real difference was that, for the first time, the running of

the team was taken out of factory hands, leaving them to concentrate entirely on bread-and-butter cars.

On the production car front a great deal is happening too. The 911's will go on selling well to the small but constant and traditional Porsche markets—the U.S.A. (not forgetting the sales to U.S. servicemen in Germany), France, Switzerland, Scandinavia and England—but times are getting ever harder for small producers in this increasingly expensive and competitive field. Porsche are fortunate, like Aston Martin, in that they are linked to a big corporation, and there seems little doubt that the VW connection is going to get tighter and stronger, so that the exciting 914 may be the first of a whole range of new models.

And even the faithful 911 will be too old one day. Ferdinand Porsche III has already said that glassfiber for road Porsches is a definite possibility, once they're satisfied they can maintain their traditional high-quality finish with the new material—and front-engine, front wheel drive, once the heresy of heresies at Stuttgart, has been mentioned as a long-term project. Unless Germany's tax laws change, the firm will go on relying on small, highly-developed engines, and anything larger than a two-seater or a two-plus-two is not being thought of at the moment.

One of the ingredients in the Porsche character which fans value highly is that they never need fear change for change's sake—although the firm will obviously stay in the forefront of technical development as it has throughout its short but eventful life. Producers of one of the world's most desirable luxury coupés, as well as one of the most exciting new medium-price sports cars, World Champion constructors, European rally champions, and partners in the continuing success story of the Volkswagen. Yes, indeed—the old Professor would be mightily proud of what's being done in his name. ♦

1970 Type 914 | Owner: Richard W. Hall





# POORS

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TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 356</b>									
Prototype	48	75.0/64.0	4	1131	7.0	40/4000	4	90	0
356	48-49	75.0/64.0	4	1131	7.0	40/4000	4	90	1, 2
356/1100	50-54	73.5/64.0	4	1086	7.0	40/4000	4	90	1, 2
356/1300	51-54	80.0/64.0	4	1286	6.5	44/4200	4	92	1, 2
356/1300A	54-55	74.5/74.0	4	1290	6.5	44/4200	4	87	1, 2
356/1300S	53-55	74.5/74.0	4	1290	8.2	60/5500	4	100	1, 2
356/1500	51-52	80.0/74.0	4	1488	7.0	60/4800	4	96	1, 2
356/1500	52-55	80.0/74.0	4	1488	6.5	55/4400	4	96	1, 2, 3
356/1500S	52-55	80.0/74.0	4	1488	8.2	70/5000	4	105	1, 2, 3

*Prototype: only 1 unit built. First 356: used aluminum bodies; 45 coupés built in Austria, 5 cabriolets built by Beutler, Thun, Switzerland. 1300: first all synchromesh transmission, 1952 on. 1300S: used Hirth built-up roller bearing crankshaft. 1500: known also as "Damen", 1952-55. 1500S: also 15 open roadster built called "America." Speedster bodies built by Reutter, Stuttgart, for 1500's only.*

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 356A</b>									
356A/1300	55-57	74.5/74.0	4	1290	6.5	44/4200	4	90	1, 2
356A/1300S	55-57	74.5/74.0	4	1290	8.2	60/5500	4	100	1, 2
356A/1600	55-59	82.5/74.0	4	1582	7.5	60/4500	4	100	1, 2, 2a, 3, 4
356A/1600S	55-59	82.5/74.0	4	1582	8.5	75/5000	4	110	1, 2, 2a, 3, 4
356A/1500GS	55-58	85.0/66.0	4	1498	9.0	100/6200	4	125	1, 2, 3
	58-59	85.0/66.0	4	1498	9.0	110/6400	4	125	1, 2, 2a, 3
356A/1600GS	58-59	87.5/66.0	4	1588	9.0	105/6500	4	125	1, 2, 2a, 3
	58-59	87.5/66.0	4	1588	9.8	115/6500	4	125	1, 3

*Identification: wider track, more weight, new engines, cleaner lines. 1500GS: "Carrera," used 4-ohc Spyder engine. 1600GS: "Carrera Deluxe" in 105 hp version, "Carrera GT" with 115 hp. Convertible "D" (for Drauz body) replaced Speedster in 1958.*

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 356B</b>									
356B/1600	59-63	82.5/74.0	4	1582	7.5	60/4500	4	100	1, 2, 2a, 4, 5
356B/1600S	59-63	82.5/74.0	4	1582	8.5	75/5000	4	110	1, 2, 2a, 4, 5
356B/1600S90	59-63	82.5/74.0	4	1582	9.1	90/5500	4	116	1, 2, 2a, 4, 5
356B/1600GS	61-63	82.5/74.0	4	1582	9.8	110/7000	4	130	1 + Abarth
356B/2000GS	61-63	92.0/74.0	4	1966	9.8	130/6200	4	150	1 + Abarth

*Identification: heavier, shorter gearchange lever, raised headlamps, improved brake drums, higher and larger bumpers, larger glass area, two rear deck grilles from 1961 on. 1600: "Normal" through 1961, "60" from 1961-63. 1600S: "Super" through 1961, "75" from 1961-63. 1600S90: "Super 90" through 1961, "90" from 1961-63. 1600GS: used modified 356B body or lightweight Abarth GT body. 2000GS: "Carrera 2." C. R. sometimes listed as 9.5:1; also used modified 356B body or lightweight Abarth GT body, with four-wheel disc brakes standard. Hardtops were made by D'Ieteren, available through 1962.*

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 356C</b>									
356C/1600C	63-65	82.5/74.0	4	1582	8.5	75/5200	4	110	1, 2, 2a, 5
356C/1600SC	63-65	82.5/74.0	4	1582	9.5	95/5800	4	116	1, 2, 2a, 5

*Identification: larger rear window disc brakes standard, headlamps nearer vertical, larger seats and rear deck, smaller bumpers.*

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 550</b>									
550/528	53	80.0/74.0	4	1488	9.0	79/5200	4	130	7
550/547	53	85.0/66.0	4	1498	9.0	110/7000	4	140	7
550/547	54	85.0/66.0	4	1498	9.0	110/7000	4	140	7
550 Spyder	54-55	85.0/66.0	4	1498	8.5	110/6200	4	140	7
550/1500RS	55-57	85.0/66.0	4	1498	8.5	110/6200	4	140	7

*First three are prototypes. 528: two prototypes built by Weidenhausen, Frankfurt, one open and one closed; if alcohol fuel is used, c.r. is 10.8:1 and engine output is 95 hp DIN. 547: latter type known as "Buckelwagen." Both 547's built by Karosseriebau Weinsberg. Spyder: first 550 production model, built by Wendler, Reutlingen. 1500RS: second 550 production model, built by Wendler; special-bodied coupé competed at Le Mans in 1956.*

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 550A</b>									
550A/1500RS	57-58	85.0/66.0	4	1498	9.8	135/7200	5	150	7

*Third 550 Spyder production model, built by Wendler, Reutlingen. Competed at Le Mans 1957. Chassis and transmission similar to 550 Spyder.*

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 597</b>									
LKW/0.25t	57-58	82.5/74.0	4	1582	6.5	50/4200	5	60	military

### Key to Body Types

0 = roadster prototype (48)      2 = cabriolet (49-65)  
1 = coupé (49-on)                      2a = cabriolet/hardtop (55-58)

# BY RICHARD M



# SCHE:

# WIDE OUGH MAZE

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	DISPL (CC)	C. R. (:1)	BHP/ RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
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Developed with various wheelbases and bodies for military applications and did not get into production. The first of the prototypes were equipped with 1500 cc engines.

### Series 718

1500 RSK	58-59	85.0/66.0	4	1498	9.8	148/8000	5	156	7
1600 RSK	58-59	87.5/66.0	4	1588	9.8	150/8000	5	160	7
RS60/1500	60-61	85.0/66.0	4	1498	9.8	150/7800	5	156	7
RS60/1600	60-61	87.5/66.0	4	1588	9.8	150/8000	5	152	7
RS61/1500	61-62	85.0/66.0	4	1498	9.8	150/7800	5	156	7
RS61/1600	61-62	87.5/66.0	4	1588	9.8	160/7800	5	160	7

Small tubular framed sports/racing cars, fourth Spyder production models built by Wendler, Reutlingen. Formula II: monoposto based on 1500 RSK with the addition of a six-speed gearbox.

### Formula I

(GP car)	61-62	66.0/54.6	8	1494	10.0	180/9200	6	180	7
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Multi-tubular steel space frame of 15-30mm diameter and 1mm wall. Porsche literature also lists a 66.0/54.7 eight-cylinder version of 1499 cc, developing 203 hp at 9700 rpm. The 1494 engine was also used in some Spyder coupé and roadsters, producing 210 hp at 8400 rpm.

3 = Speedster (54-58)      5 = roadster (61-65)      7 = competition models  
4 = convertible "D" (58-61)      6 = Targa (66-on)

TYPE	YEARS BUILT 19-	BORE & STROKE (MM)	CYL	DISPL (CC)	C. R. (:1)	BHP/ RPM (DIN)	GEARS FORWARD	TOP SPEED (MPH)	BODY TYPES
<b>Series 900-touring</b>									
901	64	80.0/66.0	6	1991	9.0	130/6100	5	124	1
911 Deluxe	64-66	80.0/66.0	6	1991	9.0	130/6100	5	130	1,6
911 E	69	80.0/66.0	6	1991	9.0	140/6600	5, a	134	1,6
911 E	70-	84.0/66.0	6	2195	9.0	155/6200	5, a	137	1,6
911 L	67-68	80.0/66.0	6	1991	9.0	130/6100	4, 5, a	130	1,6
911 N	67	80.0/66.0	6	1991	9.0	130/6100	5	130	1,6
911 S	66-68	80.0/66.0	6	1991	9.8	160/6600	4, 5	140	1,6
911 S	69	80.0/66.0	6	1991	9.8	170/6800	5, a	140	1,6
911 S	70-	84.0/66.0	6	2195	9.8	180/6800	5, a	144	1,6
911 T	69	80.0/66.0	6	1991	8.6	110/5800	4, 5, a	125	1,6
911 T	70-	84.0/66.0	6	2195	8.6	125/5500	5, a	128	1,6
912	65-69	82.5/74.0	4	1582	9.3	102/5800	4, 5	116	1,6
914	69-	90.0/66.0	4	1679	8.2	85/4900	5, a	110	6
914/6	69-	80.0/66.0	6	1991	8.6	125/5800	5, a	125	6

Identification: completely revised design, sleeker lines, more glass area, MacPherson front suspension, double trailing arm rear suspension on 901-911 series, all designed for type 901 six-cylinder sohc engine. 901: prototypes and a few production cars built using Carrera 2 type exhaust and triple-throat Solex carburetors. 911L: temporarily replaced 911S with detuned engine. Top speed given for Sportomatic-equipped model; otherwise identical to 911N. 911T-E/S fitted with fuel injection beginning in 1969. General model succession: 901; 911 Deluxe and 911S; 911 N and L; 911 T, E and S. Symbol "a" indicates optional Sportomatic four-speed transmission.

### Series 900-competition

904 GTS	64-66	74.0/92.0	4	1966	9.8	180/7000	5	162	7
906 Carrera 6	66-67	80.0/66.0	6	1991	10.3	220/8000	5	175	7
907/6	67-68	80.0/66.0	6	1991	10.3	220/8000	5	164	7
907/6 Langheck	67-68	80.0/66.0	6	1991	10.3	220/8000	5	186	7
907/8	67-68	80.0/54.6	8	2195	10.2	270/8600	5	174	7
908	68	85.0/66.0	8	2997	10.4	310/8000	5	180	7
908 Langheck	68	85.0/66.0	8	2997	10.4	310/8000	5	200	7
908 Coupé	69-	85.0/66.0	8	2997	10.4	350/8400	5	199	7
908 Spyder	69-	85.0/66.0	8	2997	10.4	350/8400	5	186	7
909 Berg	69-	76.0/54.6	8	1981	10.4	275/9000	5	156	7
910/6	67	80.0/66.0	6	1991	10.3	220/8000	5	164	7
910/8	67	80.0/54.0	8	2195	10.2	270/8600	5	174	7
910 Berg	67	76.0/54.6	8	1981	10.4	272/9000	5	164	7
917	69-	85.0/66.0	12	4494	10.5	580/8000	4-5	200+	7
917 PA	69-	85.0/66.0	12	4494	10.5	580/8400	4-5	200+	7
917	70-	86.0/70.4	12	4910	10.5	615/8100	4-5	200+	7

904 GTS: also available with detuned 155 hp engine. Had fiberglass moulded sectional body on both versions. 906 Carrera: fiberglass coupé with gullwing doors; same body used on other versions. 908: available in coupé, "Lang" coupé, spyder roadster—performance varied with body style. 909 and 910 Berg: developed for hill climb championship. 917 PA: basic 917 4.5 liter with spyder body; built exclusively for Can Am races 1969. A 911 R variant exists which applies to cars taken off the regular production line and prepared for racing, a few of which have been delivered with 4-cam engines.

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