A MISSING LINK

Frank Lugg looks at the work of Guiseppe Coda, the mystery man in early Italian automotive history

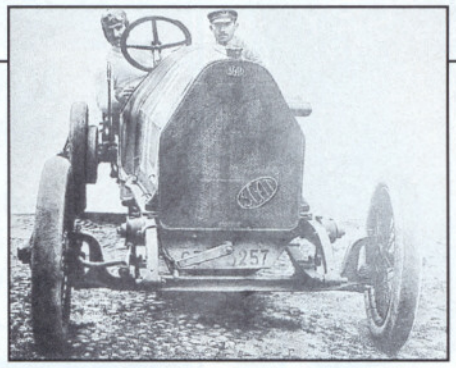
Giuseppe Coda was born in July, 1883. He worked during his long life in the Italian motor industry, and was to become a profound influence, being involved with such important names as Fiat, Ceirano, Diatto, Isotta-Fraschini and Citroën.

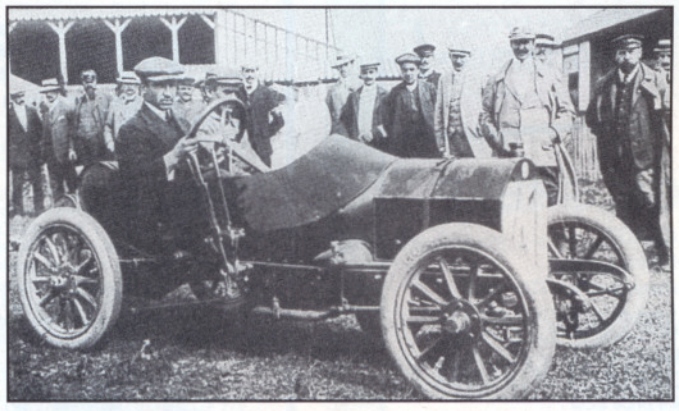
Coda was descended from a family who had manufactured furniture from the walnut trees which used to be common in the foothills of the Alps around Biella. The three storey, balconied family house, built alongside the road, had been in their ownership since at least 1700. In the future it would reverberate to the cars and motorcycles of Nuvolari, Varzi and others competing in the Biella-Oropa hillclimb. As a young man he attended the Biella Technical Institute, qualifying in 1903 and starting work immediately afterwards at the Ernest Breda locomotive works. In 1904 he was with Stigler-Ascensori, and in 1905 was a designer for Isotta-Fraschini, where he was greatly influenced by the brilliant Giuseppe Stefanini, head of the design office. He also happened to get on well with a young mechanic called Alfieri Maserati.

Another year of experience and another company, this time to STAR. (Rapid), where he worked under engineer Bertoldo, whom he had met previously at Ernest Breda. Then he was off to Brixia-Züst. Whatever it was that Coda's duties had been for all these firms, he must have impressed somebody important, as in 1908, at the age of 25, he was taken on by Fiat – already a famous and fast-expanding manufacturer – to design the engine of their most expensive road car. This engine was also to power their new Grand Prix contender, the S61.

Fiat had won the most prestigious race of the year in 1907, but Mercedes were victorious in 1908 and something had to be done. Fiat did not go racing for fun. Good publicity was essential. As it happened, all the other European manufacturers were greatly put out by the German cars' clean sweep of the French event. As a result there was not to be another Grand Prix until 1912, but this was not known when Coda pinned a clean sheet of paper to his drawing board.

In general, the engine he designed was typical of the period. It was an in-line four of 130mm bore (this was to have been the limit for 1909) by 190mm stroke, with an aluminium crankcase and sump and cast iron fixed head cylinders, cast in pairs. Most unusually, however, it had a bevel gear driven single overhead camshaft with totally enclosed valvegear, four vertical valves per cylinder, full pressure lubrication and dual ignition. As far as is known, this was the first design to have mechanically operated multi valves, though their disposition and operation look strange to us today. There were four inlet and four exhaust valves on each side of the engine. The valves were clamped together in pairs across the head by a bar with a central roller on which the cam operated, lateral thrust being taken by piston guides encasing the valve springs. The ports were cored through the head, inlet from the right, exhaust to the left, so that one valve was downstream from the other. The exhausts were at the ends of each block. This 10litre engine produced approximately 125bhp at 1650rpm, which was sufficient for 100mph with its 1.8 to one overall top gear ratio.





Top: Giuseppe Coda's Italian Touring Club membership card from the early '20s. Above: A young moustachioed Nuvolari poses on a Targa Florio SCAT. Below: The FE Isotta-Fraschini, designed by Stefanini, shown here at Dieppe in July, 1908. Its 1208cc four-cylinder engine had a shaft driven overhead camshaft and totally enclosed valve gear. It was the pioneer of the modern high performance engine.

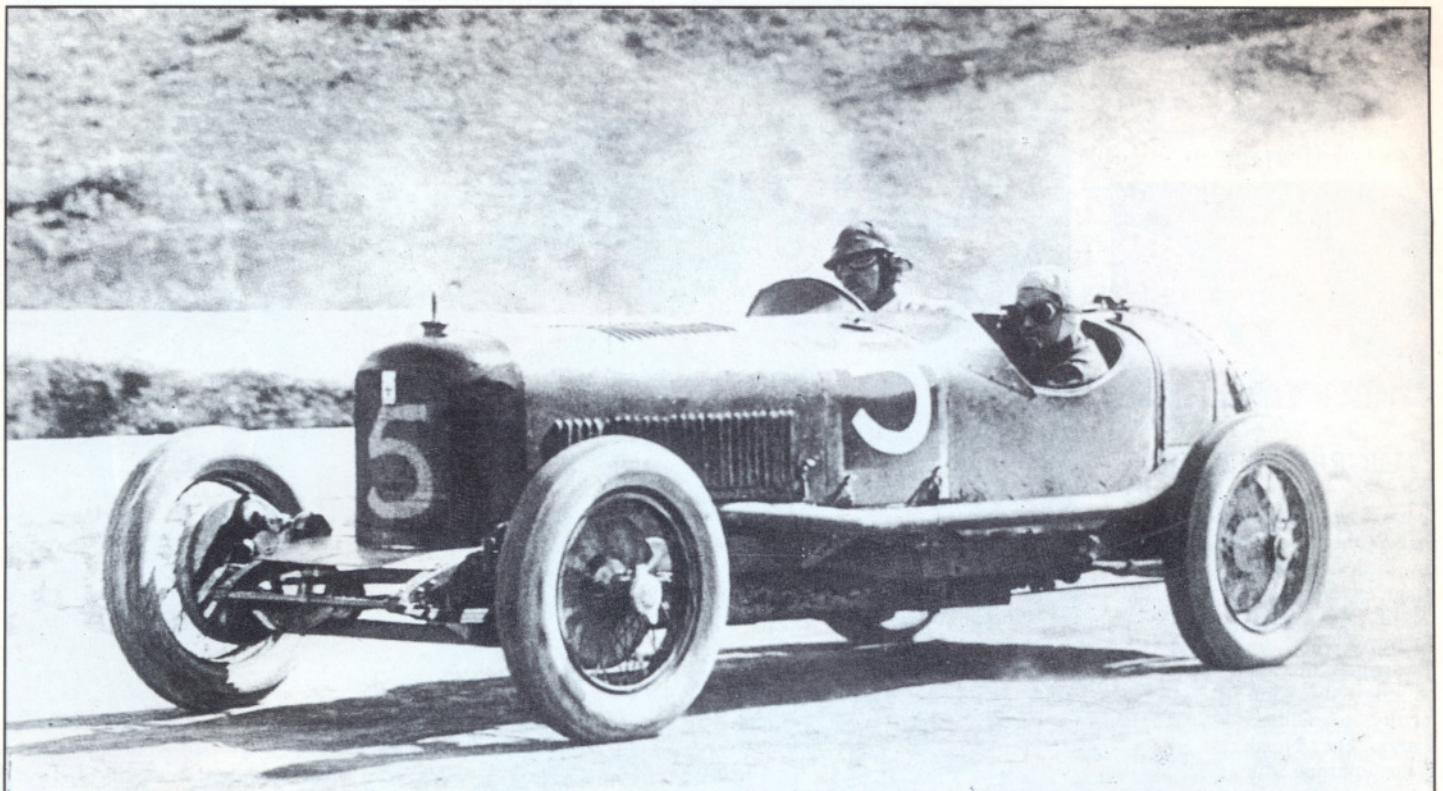
The new Fiats raced at Savannah in the United States, and a production touring chassis won the rather farcical GP de France at Le Mans in 1911. The best-known example is car No 25, originally owned by Emile Mathis of Strasbourg but for many years raced by Anthony Heal. It incorporates parts from engine No 42, bought from Lord Cunliffe, and is now in the Fiat Museum. John Cobb lapped Brooklands at 112mph in it, with the original wooden wheels still fitted.

In late 1909 Coda set to work on the S53 engine, which was a 95 by 140 four-litre version of the S61 design. It was now a monobloc, with inlet valves larger than the exhausts, and seven to one compression. It developed 70bhp at 1900rpm. Emile Mathis raced an example in 1910, the year that Ettore Bugatti opened his factory at Molsheim. Many years ago Laurence Pomeroy suggested that the five-litre Bugatti and the Fiat S61 engines had similarities which indicated that Bugatti might have been involved in the design of the latter. The five-litre Bugatti did not appear until 1912, though there was a prototype produced with a modified Mathis Hermes chassis two years earlier than that. During this period Bugatti kept in close touch with the Italian motor industry, both directly and probably through Mathis, who was a very important agent for Isotta-Fraschini and Fiat. There seems no doubt that Bugatti was influenced by the S61 and S53 engines, as well as by Stefanini's FE and FENC Isotta-Fraschini designs. Coda was a social friend of Bugatti, but further details are vague.

For the 1912 French Grand Prix, again held at Dieppe, Fiat entered 14litre 150 by 200mm monobloc developments of the S61. These were said to produce 190bhp at 1600rpm, and perhaps 500lb-ft of torque. Despite the great increase in power since 1907, a Type 14 (S74) was timed in the race at only 101.6mph – about the same as an S61 could have achieved. Lap speeds of the fastest cars were only slightly greater than in 1907, so it looks as though chassis and tyre designs were imposing a limit. The L76 Peugeot developed 130bhp, but was considerably lighter and consequently lighter on its tyres.

At the end of 1910 Ceirano had appointed Coda head of the design office at SCAT, an associate company of SV Giovanni Ceirano. There, his work included lorries, road cars and the Targa Florio winners of 1912 and 1914. These Tipo Corsa were single overhead camshaft designs, 100 by 200mm, 6.3litre four-cylinder engines with, it is believed, four valve pent roof heads. During World War One, with SCAT now under the control of Brasier, Coda was appointed technical director responsible for the production of Hispano-Suiza V8 aircraft engines. During this period he became friendly with a number of fighter pilots who flew Hispano powered Spads, in particular Baracca, Ancillotto, Ranza, Piccio and others. He also renewed his association with Alfieri Maserati, who happened to be working for one of his subcontractors.

After the war his private venture, the Veltro (Greyhound), was bought by Diatto and developed into their range of overhead camshaft



The Type 26 Maserati, a direct development of the GP Diatto, winning the 1½-litre class of the 1926 Targa Florio.

four-cylinder touring cars. Coda became technical director, and it was through him that Alfieri Maserati became the works driver and manager of the racing department, helped by this brother Ernesto. He and others drove competition cars designed by Coda, using modified production components in lighter works-only chassis with springs passing through the front axle.

All the Coda designed Automobili Diatto engines were straightforward designs with skew-gear drive to the camshaft, two slightly inclined valves per cylinder and long studs clamping head and block to the crankcase. The lapped, gasketless head joint was sealed with a mixture of linseed oil and varnish. As well as the 79.7 by 100mm two-litre there was a 97.7 by 100mm three-litre, for competition purposes only, arrived at simply by changing the block and pistons. These engines produced 75 and approximately 110bhp at 4500rpm respectively. The two-litre racing car is said to have had a maximum speed of 165km/h (103mph). In addition, there was a mountain climb special which was a racing chassis fitted with an engine using one 5881cc bank of a Hispano V8 aircraft engine. One of these units had been used by Maserati in his Isotta-Fraschini special, having been obtained by Coda through his contacts. The aircraft engine developed 205bhp in 1918, so one bank with camshaft and compression changes could in theory have developed 150bhp or more.

An 8C twin-cam engine was put in hand in 1923 under Coda's direction, seeing competition in 1924 in an all-alloy unsupercharged form. He was forced to leave the development of this engine in the hands of Maserati because André Citroën, on the recommendation of Brasier, had offered him a post as head of his Italian factory, shortly to be opened in Milan. This was a very important position, as Citroën were highly regarded at the time.

After the departure of Coda, the Diatto 8C was developed and supercharged and became the Maserati Type 26. It is probable that Coda remained a technical consultant to the Maserati brothers during Alfieri's lifetime, perhaps up to World War Two. There is no direct evidence of this, but Coda's son (Raffaello, also an engineer, but not in the motor industry) remembers that they were great friends during their time at Diatto, with Alfieri frequently visiting their house for meals and conversation. So far as is known, the Maserati brothers had no technical qualifications. Before 1926 the only car they had built themselves was the Isotta-Fraschini special. Common sense would indicate that Maserati must have kept in touch with Coda, an engine design specialist with an excellent record, whose work for Citroën was administrative, so there would have been no conflict of interest.

Following the withdrawal of Citroën from Italy at the end of 1934, due to the political situation, Coda joined the parent company in Paris as an executive engineer. In 1938 he returned to Turin to spend the remainder of his working life as a consultant in the design of industrial vehicles and cable cars. He also conducted research into automotive hydraulic transmission systems. In retirement, he was president of his local water company.

According to Raffaello Coda, his father was always looking forward to his next project and rarely talked about the past. The late Griffith Borgeson endeavoured to obtain his reminiscences, with little success. This was a great loss to motoring historians, as Coda was the missing link between a very interesting group of manufacturers and personalities.

Cyril Posthumus used to speculate on where the money came from for the Maserati brothers to purchase the Diatto racing team. They had little money of their own at that time. He thought it possible that it came from the Marquis de Sterlich or the Baroness de Avanzo. Recently an Italian, who knew Ernesto Maserati and de Sterlich, said that it would seem that it was the latter who put up the money. In fact, he supported both Diatto and Maserati to such an extent that he expended his entire family fortune.

Coda's prototype of 1932 shows his advanced thinking. Innovative ideas included centre driving position, utilising the spare wheel as a front bumper, and four-wheel steering.