



Note 133

French attempts at Grand Prix challengers, 1934 -1957

This note describes four French attempts over the years 1934 to 1956 to build challengers for Grand Prix honours, all of which involved skilful and experienced designers who tried approaches different from their previous successes (or, in one case, reverted to a long-disused approach) and none of which succeeded. Two of these attempts were government-sponsored and two were private ventures by Bugatti *père et fils*.

SEFAC and Emil Petit

After the latest GP Bugatti, the T59, was well beaten by Italian and German rivals in the 1934 French national race a public subscription was opened to fund a better car. The response was poor. The French government then offered a subsidy for the purpose. This went to an organisation with a long-winded title abbreviated to "SEFAC". Its aim was to have a car ready to race in the 1935 French Grand Prix ("GP de l'ACF"). Emil Petit of Salmson was engaged as the designer.

Petit had made his name in the early '20s with very successful 1100 cc racing Salmsons. They were IL4 62 mm/90 = 0.689 1,087 cc DOHC with VIA = 60° between 2 v/c. When pressure-charged by a Cozette vane-type compressor in 1926 they were claimed to give 80 HP @ 4,000 RPM (16.4 Bar @ 12 m/s). An illustration is shown below.



wallpaperup.com

In 1927 Petit designed a much-more-ambitious engine, an IL8 49.9 mm/70 = 0.713 1,095 cc DOHC 2 v/c, said to produce 100 HP @ 5,800 RPM (14.1 Bar @ 13.5 m/s) (Salmson details from an article in *Motor Sport* April 1962). He produced a novel configuration with two of his IL4s, scaled down, end-to-end with the camshaft gear-drive between (see the section in "[CORRECTIONS & ADDITIONS: PART 2](#)" at P.11 This centre-drive afterwards inspired Vittorio Jano for his 1931 8C-2300). This engine probably needed more money for development than Salmson could afford, because it did not achieve much.

For the SEFAC, 7 years later, Petit tried another unusual configuration – he mounted two of his IL4s, slightly enlarged to 70 mm/90 = 0.778 1,385 cc each *side-by-side on a common crankcase, geared together*. This *U-type* engine had been pioneered by Ettore Bugatti in 1916 for a large aero-engine (2 x IL8s) and Petit probably knew of this. The units rotated in opposite directions, one shaft driving a common large Roots blower supplying both, the other providing the output. This 2,770 cc engine was claimed to give 250 HP – which was nothing like enough (in 1935 the Mercedes-Benz M25C 4.3 L engine would give over 450 HP). Illustrations are provided below.



kolumbus.f1



desmodromology.nl

The author is going to speculate here, in the absence of detailed constructional data. Emil Petit in 1934 was surely too knowledgeable to cripple his project with a hopelessly low power output, when it must have been known that the Mercedes had *begun* the season with a 3.3 L engine producing nearly 350 HP (the growth of their engine through 5 successive stages within the 750 kg formula could not have been foreseen). Did he hope for a competitive Power/Weight ratio by using all-Al-alloy head, block and crankcase? The photo above of this assembly is not conclusive on the material used. If he did, the uninspired chassis design by another hand must have been a great disappointment. Weighed when the car appeared for the 1935 FGP it was 23% over the rule limit of 750 kg at 931 kg (see www.sefac.forix.autosport) and was immediately disqualified from racing by that excess.

It was allowed to practise but only did two slow laps with Marcel Lehoux at the wheel, then was taken away and not seen again in the 750 kg formula era.

The SEFAC was actually wheeled out for the 1938 formula, slightly-enlarged to 72.5 mm bore and 2,972 cc. It ran for two laps in the 1938 FGP.

To describe the quite long and sad history of the SEFAC would be too depressing here – it may be read at various sites in the internet.

P.S. Classic car garage has announced that it is rebuilding the SEFAC engine, discovered at Montlhery. A photographs is shown below..



classiccargarage

Ettore Bugatti and the type 73C

Bugatti racing history between 1934 and 1939 seems to this author rather confused, the outstanding events being the sports car victories in the 1937 and 1939 Le Mans 24 Hours with streamlined cars. The Grand Prix appearances were somewhat desultory and ill-prepared. They could hardly be described as challenges for honours; e.g. the 1938 formula single-seater T59 with IL8 PC T50B3 engine, having an Al-alloy block + head with B x S 78 mm/78 = 1 (a 1st for Bugatti) 2,982 cc was claimed to give 270 HP @ 6,000 RPM (13.5 Bar @ 15.6 m/s) when the new 3 L Mercedes-Benz and Auto Unions had well over 400 HP. Details of these years are left to others to describe and they may be found on the internet.

From 1932 much of Bugatti's output had been Autotrains. After labour unrest in the Alsatian works in 1936, Ettore Bugatti retreated to Paris in disgust and left the Molsheim works management to his son Jean. Tragically, he was killed in an accident while testing a streamliner on an open road in August 1939.

In WW2, when Alsace was once again incorporated forcibly into Germany and the Bugatti works was seized, *Le Patron* remained in Paris. There he occupied himself with a wide variety of designs for cars, aero and marine projects in hopes of making them when peace returned. Amongst them in 1943 was a type 73C 4-cylinder racing car. It was IL4 PC 76 mm/82 = 0.927 1,488 cc DOHC 4 v/c, Roots supercharged. The cylinder head was detachable, a 1st for Bugatti. The suspension was classic Bugatti, i.e. well-out-of-date by 1943.

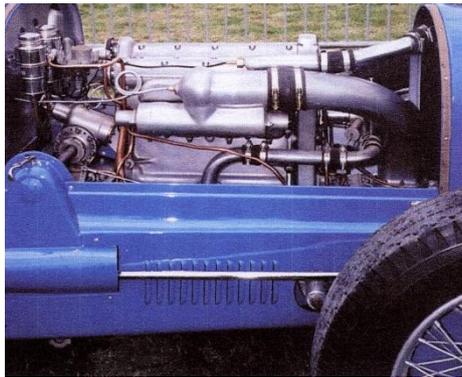
Presumably the capacity was picked in expectation that the pre-war talk of making that the Grand Prix PC choice for 1941 would come to pass post-war. Why Ettore Bugatti chose only 4 cylinders

after 20 years of building 8s is a puzzle though. He knew that for potential competitors there were two 8-cylinder cars (Mercedes-Benz W165 and Alfa Romeo 158), a 6-cylinder (ERA E-type) and a 4-cylinder (Maserati 4CL), plus any large-capacity NA cars that might be included in a new formula. Perhaps he had given up hope of competing with the first pair mentioned and, with money likely to be tight post-war, he meant only to sell to private owners. The names of Noel Domboy and Antoine Pichetto are mentioned in the design, and are worth recording because other design associates are never given for Bugattis.

When Germany was defeated, peace returned and so did motor racing; the Grand Prix formula was indeed 1.5 L PC, with 4.5 L NA. German competition being impossible, the Alfa 158 soon established dominance. Bugatti had 5 sets of parts put in hand for his 73C, and the car was advertised for sale.

Alas! Whatever the intention, the cars were incomplete when Ettore Bugatti, worn out in his efforts to recover his Molsheim works from a French government seizure of "Enemy property", died in August 1947.

The subsequent fate of the 5 cars which were eventually assembled may be read on the internet. An illustration of the type 73C engine is given below.



DASO 1094

The large volume of charge between the supercharger and the inlet ports, one would have thought, could cause difficulty in control. One car has appeared in Goodwood Revival racing (shown below) and it would be interesting to know the driver's comments on this.



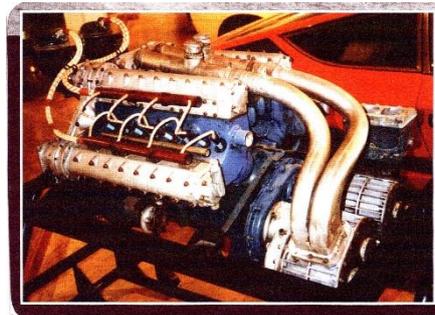
supercars.net

The author admits that it is rather unkind to include the Bugatti 73C in a list of "French Challengers for top Grand Prix honours"! It might have given the Maserati 4CL a run for occasional place money.

The CTA-Arsenal and Albert Lory

The French government will have been aware of the Bugatti 73C project in 1946 but clearly they did not consider it a challenger for Grand Prix success against the resurrected Alfa 158. That team, after a poor debut post-WW2 in the Paris St Cloud race of June 1946, when both cars DNF with clutch trouble, had begun a run of 26 race wins in Geneva a month later. State aid was therefore provided to another long-winded-titled group, abbreviated as CTA (coupled with the government Arsenal at Chatillon which was to build it) to produce a suitable car. As in the case of the SEFAC, a designer with a great - tho' distant- record of success was chosen; Albert Lory of IL8 1.5 l 1926 – 1927 Delage fame (see Eg. 13 in 1st Pressure-Charged Era (1PC) Part 1).

Like Petit before him, Lory produced a design which did not follow his previous work but, unlike Petit, conventional. He did not cripple himself with too few cylinders, as Bugatti had done in 1943 and as Ernesto Maserati had done with the 1938 4CL (see [CORRECTIONS & ADDITIONS; PART 2](#) at P.8). His engine was a 90V8 PC 60 mm/65.6 = 0.915 1,484 cc DOHC 2 v/c and 2-stage Roots-supercharged. The latter system had been pioneered by the 1939 Mercedes 3 L and was added to the 158 in 1946*. The integral block + heads were cast-iron. See the illustration below.



DASO 1094

*A reminder:- the Alfa Romeo 158 in 1946 was IL8 PC 58 mm/70 = 0.829 1,480 cc DOHC 2v/c 2-stage Roots-supercharged which was claimed to produce 254 HP @ 7,500 RPM (DASO 31) (20.5 Bar @ 17.5 m/s).

The CTA suspension (not by Lory) was by vertical guides at each corner (DASO 779), giving a roll axis at track level. This was not *necessarily* a severe handicap, as shown by the Alta of George Abecassis in 1938 (see [CORRECTIONS & ADDITIONS](#) at P.33) and by the much-later Coopers (see [Notes 66](#) and [66B](#)).

Like the SEFAC before it, the history of the CTA-Arsenal is too painful to detail here, but can be read on the internet. Suffice that it had a ½-shaft break on attempting its first race start at the French GP in 1947, re-appeared at the 1948 FGP for a little practice and then disappeared from sight.

Once again, a good designer had done something different some years after his glory days and once again the execution by an under-funded group with no racing experience, if not the basic concept, had brought no credit to his career.

P.S. A restored CTA has appeared at Monaco (shown below) and in a Goodwood Revival meeting.



wikipedia

The Bugatti 251 and Gioachino Colombo

After *Le Patron* died, his younger son Roland took charge of *Usine Bugatti*. By 1955 the firm's finances were sufficient, under the management of Pierre Marco, a very long-time member, for Roland Bugatti to authorise the construction of a Grand Prix car to the 2.5 Litre NA class of the 1954 formula. He engaged Gioachino Colombo to do the design. By that date this designer had the most distinguished record of success:- long-time assistant to Vittorio Jano of Alfa Romeo fame; creator in 1937 of the 158; post-WW2 designer of the first Ferrari engine to carry the *Commendatore's* name, which in various capacities was still in production two decades later; initial designer of the 1954 Maserati 250F.

Colombo, with all his experience, did just what Pettit and Lory had done before him when called on to create a French Grand Prix challenger – for the Bugatti type 251 he created something quite different from anything he had done before. The I18 NA 75 mm/68.8 = 1.09 2,432 cc DOHC 2 v/c engine (with central camshaft drive and also power offtake – like the 1954 Mercedes-Benz) was mounted *mid-engined transversely!*. An engine section is shown below.

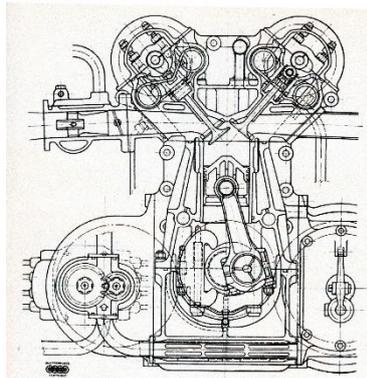
$$\text{VIA} = 80^{\circ}$$

$$R = 12.5$$

265 CV @ 7,500 RPM
(12.8 Bar @ 17.2 m/s)

Note that Colombo used hairpin valve springs, as in his 1947 Ferrari type 125.

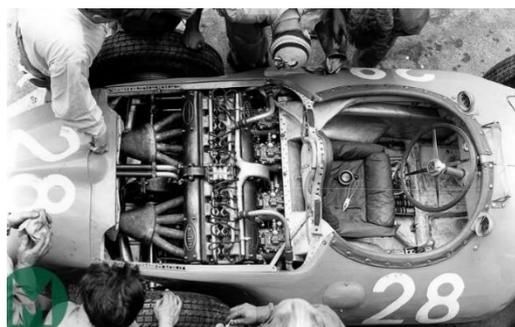
Carburetters Weber 42DCO



DASO 1235

Another surprise was that beam axles were used at each end – the rear being the de Dion type. With transverse locations by central guides this gave a roll axis at hub height again, as in pre-1934 cars. On the smooth circuits which had become common this layout was not *entirely* inappropriate. Springing was cross-coupled in an idiosyncratic fashion.

A pair of 251s was built in time for the 1956 FGP. They came from a firm which had vast ('tho 17 years old) racing experience, and had Stefano Meazza, long-time chief mechanic for Ferrari, to supervise preparation. The second car had a slightly longer wheelbase – the prototype was 5% shorter than Colombo's 250F. It also had revised front springing by dual-pivot roll-stiffening transverse leaf. Both changes were aimed at better directional stability which had proved to be insufficient. However, Maurice Trintignant preferred to race the prototype, which had more power (261 HP @ 7,500 RPM). Its handling was quite unlike the front-engined cars to which he was used – it probably needed a second Rosemeyer! *Much* more power was also required. In the GP it ran slowly and retired when grit entered the forward-facing intakes (DASO 1232, see the illustration below) and jammed the throttles.



motorsport

The 1956 FGP was won by Fangio driving the Ferrari-modified Lancia D50, which went on to power him to the World Championship (see CoY Eg. 34). This was after 3 years of development from the design of Colombo's old chief, Vittorio Jano, which had also initially proved very hard to handle, even by Alberto Ascari. Lancia had given up the project in 1955 as the cost had been more than they wished to pay, and Ferrari had been subsidised by FIAT to carry it on.

This inglorious debut was also the abrupt end of the project. It is presumed that Bugatti did not have the money to sort out the shortcomings of the car, as Ferrari had done with the D50. The type 251 never raced again and it is now preserved in the French national car museum.

Ironically, Trintignant won the Monaco Grand Prix two years later with an *under-powered mid-engined* Cooper!

Colombo's career survived this novel racing car, but subsequently he worked for MV Agusta on motor-cycles and helicopters.

Delahaye and Talbot

This note was written initially because the author was intrigued by the curious way in which successful designers tried something different from their previous experience (it was a stretch to include Ettore Bugatti's type 73C). The common feature was that the projects they worked on were French and the motivation was to take that nation back to the top rank of Grand Prix racing.

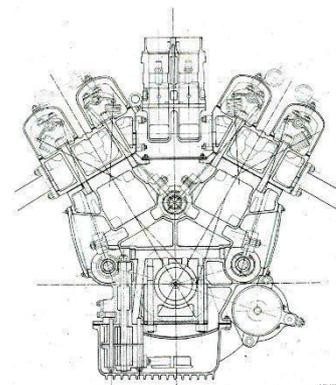
There were two other French firms which must be mentioned in this context:- Delahaye and Talbot. They produced large-capacity NA sports cars in the 1936-37 period after the national sporting authorities converted their major races to that category so as to escape Nazi German supremacy. These firms then entered the Grand Prix arena after the formula for 1938-1940, published in September 1936, included 4.5 litre NA engines with 3 Litre PC, probably intended to encourage French entrants to return.

Delahaye

In 1936 Delahaye had fitted into their T135C sports car a tuned-up cast-iron truck engine, which was I6 NA 84 mm/107 = 0.785 3,558 cc "standard" PROHV, i.e. 2 in-line v/c operated by push-rods from a crankcase camshaft. In due course its major success would be winning the 1938 Le Mans 24 Hour race.

After the SEFAC fiasco of 1935 the next encouragement to the French car industry to enter motor racing was a government offer of 1 million francs (£10,000 at that date) prize to whichever manufacturer could pass a speed test at Montlhery. The condition to be met was an average speed of 146.5 kph over 16 laps – 200 km – with a car to the forthcoming 1938 formula. The figure was to match, from a standing start, the fastest GP race lap at that circuit, set up by Louis Chiron in the 1934 French race with an Alfa Romeo P3B (5 minutes 6 seconds = 147 kph; this had not been bettered in 1935).

Delahaye had just completed a new engine for essentially the same chassis as the T135C, typed T145. Designed by Jean Francois it was 60V12 NA 75 mm/84.7 = 0.885 4,490 cc. It retained PROHV but with 2 v/c at VIA = 66° operated by 3 crankcase camshafts, one each side plus a third central shaft in the Vee to operate the inlet valves. A power of 225 HP @ 5,000 RPM was claimed (9 Bar @ 14.1 m/s) (DASO 938). An Al-alloy head closed an Mg-alloy block& crankcase. The engine section illustrates the camshaft arrangement.



DASO 1236

The T145 is illustrated below, winning the race at Pau in 1938.



forix.autosport.com

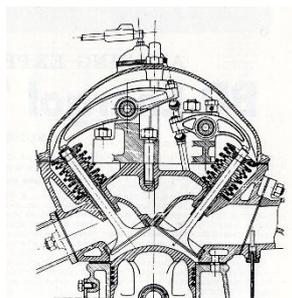
Rene Dreyfus in the 145 just met the required speed to win the million francs in August 1937.

Delahaye's real moment of glory in the late '30s was at Pau, a non-classic GP, in April 1938. Dreyfus and the 145 beat the new formula Mercedes-Benz W154 V12 PC 3 L driven in turn by Rudy Carraciola and Hermann Lang. This was the first race for the German car (only one started) and on the slow street circuit (92.3 kph in practice) its double power did not produce sufficient speed to offset the pitstop needed because of its doubled fuel consumption. This French feat could not be repeated over faster circuits:- at Pau the 145 lapped in practice at the same speed as the W154 and beat it in the race by 1%; at their next meeting, in May on the superfast Tripoli Mellaha circuit the Dreyfus/145 was 11% slower in practice than Lang's 228.7 kph Mercedes pole lap, and in the race was only 7th, 14% slower than Lang's winning speed. At Berne in August Dreyfus was 10% slower in practice than Richard Seaman's pole Mercedes speed of 165 kph (the race was wet so not admissible evidence).

In mid 1938 Delahaye produced an offset *monoplace* for Grand Prix racing, type 155. Its V12 engine was a little bit more powerful. The chassis had a de Dion rear end to replace the rigid axle of the 145. This had a novel fore-and-aft location by a pair each side of parallel trailing links, to prevent the transverse tube from acting as a super-stiff anti-roll bar on one-wheel bump (this was a simple solution which Mercedes had not thought of!). However, there *was* something wrong with the 155 because Dreyfus found its handling was completely unsatisfactory. *Possibly* the *lateral* location was too flexible. The car had no success in 1939.

Talbot

Talbot, managed by Tony Lago, also provided a car to compete in the French sports car races of 1936-1937. They won the 1937 FGP with the T150C, designed by Walter Becchia, formerly of Sunbeam and FIAT. This was IL6 NA 90 mm/104.5 = 0.861 3,989 cc. The head design is shown below.



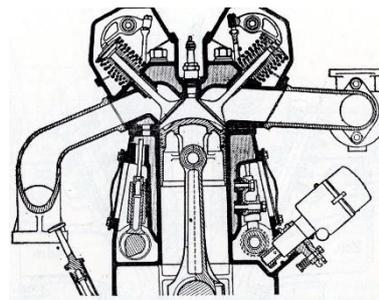
motor sport March 1959

Power claimed was 170 HP @ 4,700 RPM (8.1 Bar @ 16.4 m/s). An offset *monoplace* was built for 1939 Grand Prix racing, with the engine enlarged to 93 mm/110 = 0.861 4,483 cc. Raymond Mays drove it in the 1939 FGP at Rheims, but the fuel tank failed so he DNF – see below.



DASSO 446

Post-WW2 this type was driven by Louis Chiron to win the 1947 FGP (the Alfas were absent). A completely new engine was made in 1948 with the same bore and stroke but with Riley-type PROHV, see the section below.

*motor sport march 1959*

Power claimed was 240 HP @ 4,700 RPM (10.2 Bar @ 17.2 m/s) (DASSO 938).

These post-war T26C cars were named Lago-Talbot. In the 1949 season, when the Alfa 158s were not raced, their lower fuel consumption compared to the rival Ferrari and Maserati supercharged opposition enabled them to win twice – Louis Rosier in the Belgian GP and Louis Chiron in the French. However, when the Alfa team returned for 1950 and 1951, the 158 did have the extra speed to overcome the penalty of a pit-stop or two, and the T26Cs, even when developed to 280 HP in 1950, won no more races. The 4.5 L type 375 Ferrari, when it appeared fully-grown in late 1950 was a different case!

Tony Lago did have the consolation that the T26 could easily be fitted as a sports car and in this form Louis Rosier (and son for two laps!) won the 1950 Le Mans 24 Hours. So the wheel turned full circle. Only one other type of car ever won both GPs and the 24 Hours; the Alfa Romeo 1931-34 8C 2.3 L.

Envoi

The net result of all this French effort over two decades from 1935 in premier class motor racing was therefore victories in one minor race to Delahaye pre-WW2 and three in classic Grands Prix to Talbot after the war. A sad decline from the previous three decades, when Renault (once), Peugeot (twice), Delage (twice) and Bugatti (five times) produced the “Grand Prix Car-of-the-Year”.

It would be another decade before a new French firm – Matra – entered Grand Prix racing.

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- DASSO 1232 RACING CAR REVIEW 1957 D. Jenkinson Greville.
- DASSO 1235 ex Quattroruote 1976, courtesy of Ron Rex.
- DASSO 1236 ex René Dreyfus, courtesy of Ron Rex.