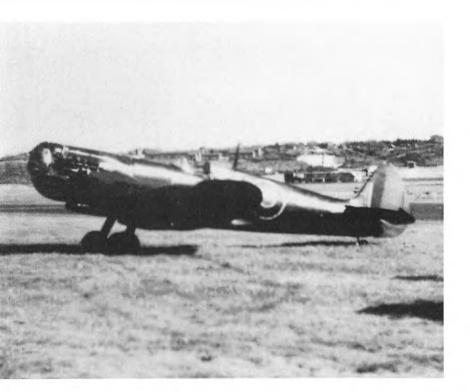
1942 – Farnborough at War by Maurice Claisse

French Test Pilot at the Royal Aircraft Establishment, Farnborough during the Second World War



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Preface

This short account is based on an article by Maurice Claisse that appeared in the French aviation magazine Icare, No 41, Spring/Summer 1967. Icare have kindly approved this translation by Bob Rose and the publication of this booklet for English readers. Bob Rose joined Aerodynamics Flight, RAE Farnborough in August 1943 and was involved in the high speed dive tests described by Claisse. The maximum speed achieved in these dives was a Mach Number of 0.91 – a truly remarkable achievement by the pilot and demonstrated the superior design of the Spitfire. Unfortunately I did not encounter Claisse as he left Aerodynamics Flight at the end of October 1943, shortly after my arrival. I consider Claisse's account of the flight test work at RAE during the Second World War is one of the best available. He not only covers the scope of the work, but captures the atmosphere of those times.

My boss was John Charnley and the head of our section Aero F/J, was Roy Smelt. I continued high speed flight research at RAE Farnborough until November 1955 when Aerodynamics Flight transferred to RAE Bedford to operate from the splendid airfield at Thurleigh. But that is another story.

Introduction

On the declaration of War in 1939 I was on Special Duties at Breguet, having joined the Company in 1932. I became Chief Pilot in 1937 on the death of my friend R Ribiere and Director of Flight Tests in 1939.

We had abandoned tests on the Gyroplane Breguet Dorand, after its last crash in 1938, but after exhausting all possibilities on this helicopter. By this time I had participated on tests on some 25 prototypes, Breguet, Breguet Wibault and others in particular the Breguet 690 and its derivatives 691,693, 695 and 697. We had constructed, tested and delivered 215 of this series of aircraft between Spring 1939 and 13 June 1940. By this date, with my comrades we left Villacoublay with the last aircraft able to fly. The Germans arrived that afternoon at the aerodrome. Evacuated to Landes de Bussac we joined other Breguet aircraft and finished the War at Toulouse. The armistice was announced on 24 June preceded by the removal of propellers from squadron aircraft. Impossible to go further by aircraft.

I went to Biarritz and joined other Breguet personnel arriving at the same time as the Germans. I told my boss, Monsieur Louis Breguet, that he had no use for pilots in his firm. He agreed and I returned to Paris to take stock of the situation. The anguish of the armistice passed and with some test pilots and others we became the group Maryse Bastie. After several unsuccessful attempts to escape via Normandy or Brittany, I left Paris on 3 January 1941, destination England via Spain with a stop at Vichy where there was much discussion amongst pilots about our future.

On 4 April 1941 I arrived at Gibraltar, after a month in Spain and on 22 May 1941 to London where I had the honour to be received by General de Gaulle. It was my aim to join operational flying. The Battle of Britain had caused losses in the ranks of the RAF. I was welcomed into the RAF and needed to improve my English. After rapid training in an OTU (Operational Training Unit), Capitaine Classe, detached duty from the FAFL (Force Aerienne France Libre) – Free French Air Force – I was sent to 66 Squadron. RAF at Perranporth, Cornwall and at the end of August 1941, I was delighted to make my first operational flight in a Spitfire.

66 Squadron had a good record of victories before my arrival. My French comrade, Squadron Leader Claude, who was later shot down over Malta, made me very welcome. I soon became well acquainted with all the pilots with sorties over Brittany, Normandy, Northern France, Belgium, etc. During these 12 months, I enjoyed being a fighter pilot, but it was not my aim here to discuss those times.

During the War, it was the rule in the RAF to send operational pilots on leave frequently, about every 35 days. Not knowing where to go I found the Hotel St Ermins in London where there were some French residents. Amongst the other residents there was Air Marshall Linnell who welcomed me with English courtesy. When he saw me in the evening engaged in a not very interesting conversation, he found a pretext to get me into a corner and we chatted over a whisky. Of course we talked about operations, Squadrons, Spitfire, etc and he noted I had a different technical background from most of my comrades. After several refills, he asked me if I would like to take up flight testing as there was much to do. My response was invariable: I had come to fight and could not conceive anything else.

The Air Marshall did not insist and we no longer talked about flight tests. I returned to my squadron and was particularly pleased to take part in the air battles over Dieppe, no time for leave.

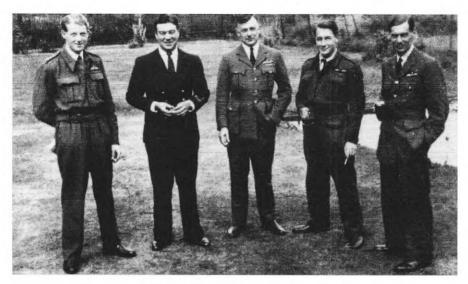
I had then spent 12 months on operations, the maximum time authorised for pilots in Fighter Command. Thus a telegram arrived for Capitaine Claisse posted to Farnborough. It was not signed by Air Marshal Linnell, Director General of Research and Development, but however....

Royal Aircraft Establishment - Farnborough

I received a very friendly welcome from the British on my arrival at the RAE Officers' Mess on 7 September 1942. The Commanding Officer, Group Captain Wheeler and the Chief Test Pilot, Wing Commander H J (Willie) Wilson were the first to show me friendly sentiments that have never since been broken. The only foreigner in a foreign uniform in the centre of British Aviation, I never felt out of place because of the immediate tie of comradeship with all at Farnborough.

The RAE during the War had greatly expanded. Serving officers, aviators or not worked alongside civilian professors, doctors, engineers and technicians. Many service personnel stayed in the Officers` Mess, where I had a room and greatly appreciated the comfort after the Fighter Command quarters. Everyone used the Mess, this allowed personal contacts of great interest.

The work of RAE was aircraft research and development and this required professional scientific and technical staff. A & AEE Boscombe Down Flight Test Centre was concerned with evaluation of aircraft for service use.



Sq/Ldr Davies, Lt Robinson RN, W/Cdr?, Sq/Ldr Tobin, Sq/Ldr Wellwood

The RAE flight programmes included problems of stability & control, manoeuvrability, compressibility to give some of the examples I knew. Current flight problems experienced in service generated new studies. From memory, RAE had many departments: aerodynamics. structures, engines, jet propelled aircraft, catapults for naval aircraft, aviation medicine, armaments, etc.

These departments had appropriate wind tunnels, test laboratories, workshops to make prototype equipment for evaluation and testing before being put into production.

Flight tests were organised into three main flights: Engine Flight, Aerodynamics Flight and Armaments Flight under the Chief Test Pilot, Wing Commander Wilson.

Engine Flight

On my arrival at Farnborough, I was attached on 8 September 1942 to Engine Flight, Officer Commanding, Squadron Leader Bill Cox. This attachment was to test my capabilities and a training period. The work was from a piloting viewpoint very attractive as I flew a large number of different aircraft from small experimental aircraft right up to large service types.

The tests on the engines, carburettors, radiators, or equipment such as cabin compressors were recorded on equipment by service or civilian technicians who flew in the aircraft. The flights were a real relaxation after the Fighter Command sorties. I rapidly rediscovered the pleasure of flying without the tension of a fighter pilot searching for an enemy to attack whilst avoiding being shot down by an enemy I had not seen.

On 30 September 1942, I was flying an Oxford, a small twin engined aircraft, and enjoying the pleasure of flying on a sunny day. On board were two civilian technicians, C Kell and J Lowrey observing and measuring the fuel consumption and characteristics of a new type of carburettor. We had to do some seal level runs flying at very low level over the sea, which were not relaxing!

Crossing the South Coast, we arrived over the peaceful blue sea. I followed the coastline at low level over the waves whilst Kell and Lowrey recorded their test readings. I was pleased to draw their attention to four black dots that came towards us at sea level. "See the four Spitfires returning from operations over France..." I hadn't time to finish my sentence when the four aircraft banked, gained a little altitude and dropped their bombs on a coastal village.

I recognized the Messerschmitt 109s before their attack and saw the black crosses of the Luftwaffe, I had rarely seen them so close. I banked the Oxford into steep turn and took all possible evasive actions, hedge hopping all the way to Farnborough.

Never, during my thirteen months in 66 Squadron, Fighter Command with a Spitfire armed with cannons and machine guns, had I ever had such a close encounter. On this day I was the sitting duck. The German pilots had missed a good opportunity to score an easy victory.

After this experience, we abandoned the South Coast for sea level tests and preferred the Bristol Channel, much more peaceful.

Not all the flights were so pleasant. We had to test a new RAE designed carburettor that allowed fuel to flow under negative `g` conditions. This was important, as in combat a Spitfire could not follow a Focke-Wulf 190 in a dive; the Rolls-Royce carburettor float chamber cut off the fuel in a dive, whereas the fuel injection system for the Focke-Wulf functioned under any manoeuvre.

The RAE carburettor without a float chamber was fitted to a Spitfire IX. The tests consisted of inverted pull-outs from minus 1 `g` to minus 3 `g` for as long as possible. Reading minus 1 `g` on an accelerometer is possible, but reaching larger values of negative `g` was demanding. At the tea break, the pilot who had reached the largest negative `g` values dropped his cup if his reflexes had not recovered.

Aerodynamics Flight

My probationary must have been judged satisfactory as on 13 October 1942 I was sent to Aerodynamics Flight, Officer Commanding, Squadron Leader Tobin. An excellent pilot and leader, I was immediately accepted into his team.

During the year I spent in Aerodynamics Flight, I got on well with Tobin. He left Farnborough and was attached as a test pilot to Blackburns and sadly he was killed shortly afterwards.

For a test pilot the work was very exciting. The scope of the programmes, the diversity of the problems, the means at our disposal, constantly renewed our interest. The key problem in Great Britain, as elsewhere, I knew well: performance, flying qualities and handling.

I had my training as a test pilot from *l'Ecole Superieure d'Aeronautique* and my experience at Breguet. I had been used to the 1940s methods of equipping a test aircraft with recorders measuring: engine RPM, temperature, airspeed (Hussenot recorders in our Breguet 690), altitude etc... and use these measurements for performance, stability graphs or other measurements of great refinement.

At Farnborough everything was different. Much more simple and effective methods were used. A simple instrument panel with parameters of interest photographed by a camera, at times held by the pilot. The analysis was rapid and effective. Accelerometers, strain gauges, and Mach meters were new to me, I was not familiar with them in France, and these opened up a wide scope for flight tests.

Flying qualities of an aircraft, particularly for fighters, gave rise to ardent discussions, probably still lasting. I had to defend our methods, stability – all important, handling, manoeuvrability even if the aircraft was unstable. These discussions were interminable, to finish it someone asked me if the application of these theories had had something to do with the report evaluating the Spitfire in France. Every one burst out laughing! The background is as follows. In 1939 the French Government bought a Spitfire for evaluation by CEMA (the French flight test centre. Their final report, well documented concluded: the Spitfire was unfit for combat. I asked the British to repeat this tale, laughing ribaldry, because the Spitfire was the pride of the RAF.

Certain test methods used at the RAE, were so empirical, it was difficult to see their value straightaway. It was only through use that I recognized their value, so much so they gave confidence to the professional pilot.

As an example we tested rates of roll for a number of fighters: Spitfire, Typhoon, Mustang, Focke-Wulf FW 190. A complete roll was made for different aileron angles with rudder pedals fixed over the complete aircraft speed range. A graduated sector allowed the pilot to apply and hold 1/4, 1/2, 3/4 or full aileron. A cross was marked on the windscreen and a stop watch fixed to the pilot's left thigh and tarted at the beginning of the roll and time was read to 1/10th of a second as the wings passed through port vertical, inverted, starboard vertical and wings level, each position was established by the marked cross lining up with the horizon. It was also necessary to keep speed constant. This was demanding, particularly at speeds beyond maximum level. These were done in a dive with full engine power. With practice after some poor results at first tests by different pilots gave results in good agreement and the method was shown to be useful particularly for a comparative study, which was the objective.

Other new methods were for me a novelty. Tests with normal acceleration made possible by sufficiently accurate accelerometers opened up new horizons of great interest. The use of strain gauges in flight allowed the study of aircraft structures, long desired by design offices.

Test flights required were issued daily and done the following day, subject to aircraft serviceability. Squadron Leader Tobin set the priorities and designated the pilots. Because of the scope of tests on performance and flying qualities, it gave me the chance to fly most of the single, twin or four-engined current operational aircraft.

In particular I was personally interested in the Bristol Beaufighter, so similar to our Breguet 690, but with poorer flying qualities.



Sq/Ldr A F Martindale flying a captured Focke-Wulf Fw 190

Reading my flight log, I recall certain particular cases. The Focke-Wulf Fw 190 – the capture in England of this famous and formidable German fighter aircraft has been told elsewhere – it was a most important event. This aircraft had been sent to RAE for evaluation, a most important matter. First of all the servicing engineers overcame many difficulties and made the Fw 190 available for flight test. It was not the lack of technical documetation that hindered them, because they were trained to understand aircraft using their eyes and hands without reading documents. However the BMW aero engine would not run on any British petrol or oil. It only ran satisfactory on enemy stocks captured in North Africa.

On 22 January 1942 I made a handling flight on the Fw 190 at 1000 ft because of poor visibility. The next day, 23 January 1943, some VIPs from parliament and the aviation industry came to Farnborough for a flying demonstration, the star attraction was the Fw 190. This visit was directed by Air Marshal Linnell. The meteorological conditions had scarcely improved and the Air Marshal was kind enough not to chide me for my limited aerobatics. But he laughingly reproached me for removing his cap by the Fw 190 wing tip during my demonstration of manoeuvrability at low altitude.

The Fw 190 tests were deemed No 1 priority. However there were some difficulties in flying an enemy aircraft over England. Each flight was given advance notice by Flying Control to allow an escorting Spitfire. This is how I teamed-up with Lt Robertson, Royal Navy, he was a truculent character, but a great comrade and an exceptional pilot. Endowed with common sense and innate piloting skill, his judgement sometimes intuitive and always appreciated. He was killed some months later landing a Seafire on a carrier. The hook broke away on engaging the arrester wire, and a photo taken at the moment when the aircraft tipped on to the port wing as it went into the sea, showed his face creased with distress.

We formed a team, alternatively one taking the Fw 190 and the other the escorting Spitfire. We did the major part of the test programme on performance and handling qualities in the fighter and fighter-bomber configurations. The flight report was much appreciated for its operational tactical information as well as the technical details.

Compressibility tests

In 1942-1943 Mach 1 and the sound barrier had not been reached, but the aerodynamicists were feeling their way. Compressibilty effects were observed well before an aircraft approached Mach 1due to the increase of local flow speed. For certain aircraft, for example the Lockheed Lightning, its twin fuselage created a venturi effect and the aircraft suffered compressibility effects at a very modest Mach Number.

So the aerodynamicists decided on a forward-looking programme with the aim of pushing the study to the greatest possible Mach Number. The best available aircraft was without doubt the Spitfire, and Spitfire PR Mk XI EN409 was assigned for the tests. The aircraft left the installation hangar with wing pressure orifices measuring static pressure and a rake behind the wing to measure total pressure. We started a long and important flight test programme that lasted throughout my stay at Farnborough and beyond.

The tests were not complicated. We climbed to altitude and dived with full power at the optimum angle, automatic recorders did the rest. After several flights, the aircraft was returned to the installation hangar for modifications, refined streamlining and minor improvements.

Little by little we increased the Mach number in small steps. It was during one of these dives that the propeller came off the Spitfire and fell on the aerodrome without causing any other damage. The pilot Squadron Leader Martindale was able to land the Spitfire on the runway at Farnborough, a remarkable achievement. I learnt later that the Spitfire attained a Mach Number of 0.91 after my departure.

[Note The front cover shows Spitfire EN409 at RAE Farnborough airfield in 1944 after a dead-stick landing by Squadron Leader AF Martindale, AFC]

Clipped wing Spitfire

This matter was curious and its origin unusual. A Spitfire had a damaged wingtip. A ferry flight was urgent, the other wingtip was removed. The pilot after take-off was surprised to find the ailerons were better and more effective than normal. One must say the Spitfire had good qualities, but some faults. In particular the ailerons became heavy and lost effectiveness at high speed. This was due mainly to the torsion of the wing. The ferry flight experience was not lost on pilots.

A Spitfire W3248 was prepared for this work; the wingtips were removed and replaced by streamline fairings of rectangular planform. This improved the aircraft's speed and handling qualities. A long series of flights covering performance, stability and manoeuvrability enabled the pros and cons of this modification to be assessed, which to my knowledge was not retained.

Dive parachutes

Coastal Command's task was patrolling over the sea and of course locating and attacking submarines. It was therefore desirable that their aircraft could dive steeply under power to keep the submarine in view. The solution proposed was to fit aircraft with tail parachutes that could be deployed by the pilot at the start of his dive and could be jettisoned afterwards.

Aircraft obtained from Coastal Command were modified with a system of multiple parachutes mounted on the tail. The parachute was streamed at a certain altitude and aiming to achieve the steepest dive angle and minimum airspeed. We were concerned about failure of the parachute due to tearing, burning or twisting that would have put us in a tricky situation.

A large number of tests were made on an old Whitley and mainly on a Lockheed Hudson; all went well with some anxious moments. These tests did not have an operational application, the braking efficiency did not reach anticipated values. However this technique was used some ten years later for braking parachutes for landing jet-propelled aircraft. I did not know that a reserve braking parachute was tested in France by Breguet at Gourdou for the French Navy.

Jet-propelled aircraft

From the end of 1942 jet-propelled aircraft began to be mentioned. Discussions were a little nebulous and nothing detailed was said or released. The secret was well kept. Service and civilian security officers visited to ensure that security regulations were observed. It was by the lads of the village that I learnt about the Gloster E28/39, because they were curious to know if "the aeroplane without a propeller" was soon to fly. However the aircraft was placed secretly in a small camouflaged hangar in the woods and protected by a triple cordon of police.

Jet propulsion had greatly interested me since 1937, I had worked with Rene Leduc at Breguet and had followed with great interest the construction of Leduc 01, that I had hoped to fly it in 1941. It was with sadness that we left this fine aircraft in the exodus to the Basque region in May 1940. It was therefore not surprising that I was more interested than others in the stories about jet propulsion.

The aircraft was the second built by Glosters, the first having been already successfully tested. It first flew at the end of 1942 and on 23 May 1943 I was designated to fly the aircraft. It was a remarkable achievement for the time. Glosters had rapidly built this aircraft to make the first jet propelled flight with an engine conceived and realized by Whittle. It was an experimental aircraft, even a flying test bed, but of extremely exciting appearance.

The first flight was impressive enough accompanied by some black magic. Normally starting the engine, whatever the aircraft, was a daily routine. For this aircraft it was different. It was towed to the start of the runway, the pilot climbed into the cockpit, strapped himself in and when ready gave the OK sign. Then a team of specialists busied themselves round an enormous engine starter and began a series of operations under their chief, these were a mystery for the pilot. It was in effect a check list, each operator responsible for a sole phase of the operation that is now done by an automatic starter. The start was successful and the aircraft hydraulic and electrical services were disconnected, the green light was given for immediate take-off.

The first problem was the application of engine thrust. This was done by a normal throttle, but there was no automatic mechanism to control the fuel flow. We were given strict and formal instructions that the throttle opening and closure must take at least 10 seconds; 10 seconds is a long time when one can see the runway passing by and before sufficient speed has been attained for the engine to be producing significant thrust. Happily this apprehension was in vain as the runway length was adequate.

Once airborne, I experienced all the joys of jet propulsion: absence of vibration and even the noise was the first euphoric impression. Flying an aircraft without the torque effects due to a propeller was like a dream. The performance of this aircraft, remember it was an experimental type, was not particularly impressive. It was about the same as current aircraft of that era: Spitfire, Tempest or even Mosquito, but this prototype foretold aircraft of the future. One had the feeling of being in a new era of aviation with future exceptional possibilities. I finished my first flight proud to be the first French pilot to fly a jet-propelled aircraft.

This aircraft had a priority programme. Shortly after my flight in the E28/39, it took off from Farnborough, climbed normally to about 15,000 ft and then exploded. The pilot Squadron Leader Davie, was one of the best at RAE and a much respected test pilot with excellent personal qualities and charm. He was thrown out through the canopy and fell at the foot of the control tower, his parachute having not opened. We did not know the results of the court of inquiry into the accident, but we attributed the accident due to rupture of the aileron control that put the aircraft into violent inverted flight.

[Editorial Note.] Claisse's recall twenty four years later in 1967, confuses two events.

The E28/39 W 4046/G flown by Davie climbed to 37,000 ft when the ailerons became immovable, resulting in a complete loss of control and the aircraft entered an inverted spiral. Davie bailed out at 33,000 ft over Guildford and made the longest free-fall on record at that time before deploying his parachute and landing safely. The subsequent accident report by Fred Jones of RAE, showed the aileron seizure was due to the very low temperature at altitude on two dissimilar metals of the control run and the wing structure.

Although Davie survived this accident, sadly he was killed soon afterwards in January 1944 flying the twin-engined Gloster F9/40 DG 204/G aircraft powered by axial flow RAE/Metropolitan Vickers F2 engines. Davie had climbed to 30,000 ft to investigate engine surging characteristics. The compressor drum of the port engine fractured leading to the disintegration of the engine. Davie`s body with his parachute unopened crashed through the roof of a store behind the famous Farnborough Black Sheds.

[REFERENCE Farnborough's Caterpillars by Richard Dennis, Footmark Publications 1996]

Four-engined aircraft

Four-engined bomber aircraft: Stirling, Halifax, Lancaster of different marks, were available for tests at Farnborough, even Fortresses and Liberators. However they gave relatively less work than the other aircraft. Most often, it was urgent problems found from operational flying.

The RAF was concerned with an increasing number of accidents to the Halifax. For example, in sideslips on two or three engines, a reversal of rudder pedal force produced violent buffeting and failure of the fuselage. The current way to study this type of problem was a round-table discussion between the manufacturer (Handley Page), Boscombe Down (A&AEE) and Farnborough (RAE)

I went to the meeting representing Farnborough and was amazed and delighted to see my old comrade Riess who represented Boscombe Down. In 1930 at l'Ecole Superieure de l'Aeronautique, Riess was certainly the best, well read and most pleasant comrade of the five Poles in our year. He was now a Squadron Leader in the Polish Air Force, and I was unaware of his whereabouts until our providential encounter.

We set out a programme of tests for the Halifax promising to meet again soon. It was not to be, Riess was killed several days later testing a Halifax.

Catapults and deck landings

The RAE had three types of catapult: powder, steam or a centrifugal system to simulate a deck. Periodically we had to test their effectiveness for Fleet Air Arm aircraft such as: Hurricane, Seafire, Barracuda.

The emergence of tricycle undercarriages gained the attention of the Royal Navy. The good forward view from the tricycle-undercarriaged Airacobra suggested this was a good layout for a single-engined aircraft landing on a carrier deck because of the unimpeded view of the deck. Engineers explained that the tricycle undercarriage was an ideal layout for a deck landing. We made a series of landing tests and everyone was convinced of the utility of the layout.

The summer of 1943 finished without any reduction of the work. In spite of that, and in spite of enjoying my job as a test pilot, I had a fixed idea of returning to operational flying. I had decided on one year for test flying and I began to sense that 1944 was going to be the climax of operations against the enemy. It was important I was ready to participate in them.

Despite the support of my superiors at Farnborough, Fighter Command was reticent to accept me as squadrons were now operating new marks of Spitfires or Tempests, also because of my age. Bombers? I had no suitable operational experience. On the other hand, at Farnborough radar and new techniques for night fighters was much discussed. I requested a transfer to Armament Flight and it was with much regret that I left Aerodynamics Flight at the end of October 1943.

Armament Department and Navigation

After 13 months at Farnborough, I knew everyone in the know. The attitudes in Armament Flight was not very different, but the techniques were more adapted to warfare. One smelt the powder when one fired the canon, launched some rockets or dropped bombs. One investigated operational problems by using collimators, view-finders, navigation systems or radio. In particular AI: Airborne Interception, radar installed in an aircraft, with evolution and development, opened up new possibilities for night fighters. This was very attractive work and I went from one aircraft to another, small to large, fighters to bombers, never fearing monotony.

51 Operational Training Unit and 219 Squadron

On 24 January 1944 I was posted 51 OTU (Operational Training Unit) for instruction on night fighters. I owed this posting to the authorities at Farnborough and it was the Commanding Officer in person who escorted me to my new unit. Subsequently I joined 219 night fighter Squadron equipped with the latest mark of Mosquito and had the greatest satisfaction in taking part in operations until December 1944. But that is another story. I left with regret the RAF and 219 Squadron at the end of 1944

I left Farnborough grateful to my superiors and comrades who allowed me experiences and adventure that left me with happy memories. I regret most of all leaving when the jet propelled aircraft began appearing at Farnborough. First the Gloster Meteor and the small twin-engined sleek Bell soon left the hangars and gave pilots happy days. It was a good time to think of other things. My Log Book credited me with 305 flying hours on 71 different aircraft with the following note: "As a test pilot; above average. His difficulty in using technical terms in English makes it difficult for him to make his aerodynamic assessments understood, otherwise his assessment might be higher." Courtesy of British humour!

With regret, I left the RAF and 219 Squadron at the end of 1944. *L`Etat-Major de l`Armee de l'Air* had selected me to flight test the four-engined Heinkel 177 left behind by the Germans in their rapid departure from France, then to fly the aircraft to the USA. However this was not possible as the aircraft had been destroyed taking off with an American aircrew.



Maurice Claisse, 1905 - 1986. Engineer, test pilot, member of the Free French Air Force, *Companion de la Liberation*.

Military pilot in 1931, joined Breguet in 1932 and became chief test pilot of Breguet-Dorand helicopters. Held five international altitude and endurance records in 1936. Developed the BR 690 in 1938. Joined the Free French Air Force in 1941 and flew 300 missions on Spitfires. Posted to the Royal Aircraft Establishment, Farnborough and flight tested seventy different types of aircraft. The first French pilot to fly a jet-propelled aircraft, the Gloster E28/39. Rejoined operational flying on night fighters in 1944. Became after the liberation of France in 1944, test pilot at SNECMA (French engine company), then consulting engineer at Breguet until 1971.

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