

Last Month's Meeting

Last Month's Meeting

“German Fighters, How did they Handle”

Speaker: N/A

Reporter / Compiler: Bob Winson

For the scheduled March 8, 2008 meeting Mother Nature was not very kind to the CAHS Toronto Chapter. A major winter storm with a forecast snowfall of up to 30 cm. for the GTA caused many members to reconsider attending the meeting. After a flurry of phone calls in the early hours of March 8th. Chapter President, Howard Malone and Secretary-Treasurer, Bob Winson made a joint decision to cancel the meeting. Howard immediately issued a weather warning notice over the Chapter's Email Directory. This move was unusual in that none of the Chapter Directors could ever recall the cancellation of a March meeting. However, things had not been going well for the Chapter during the week previous as we received news that our scheduled speaker, former WWII Luftwaffe fighter pilot Heinz Brune was having health problems and was unlikely to be able to attend the meeting. Plans were then made to show the UK produced video “Classic Fighters of the Luftwaffe”. The following is a summary of the contents and editorial direction of that video with some additional photo and text material derived from the “Airpower” magazine editions of November 1988 and May 1995. Three piston –engine fighter aircraft were examined, the Messerschmitt Me 109 and Me 110 and the Focke Wulf FW 190.

Messerschmitt Me 109 / Bf 109

The legendary Messerschmitt Me 109 was the definitive German fighter plane that comes to mind for most of us when thinking of WWII.

This rival to the Spitfire and Hurricane in the Battle of Britain served in almost every theatre of war in WWII. First flown in September 1935, the Messerschmitt Me 109 was built in larger numbers than any other fighter in history. Although records are incomplete it is estimated that approximately 35,000 were built with a few thousand extra rebuilt from wrecks. It was designed by Willy Messerschmitt and was Germany's first successful modern, low wing monoplane fighter and originally known as the Bf 109 after the Bavarian Flying Works (*Bayerische Flugzeugwerke*) factory that built it. The Bf 109B-1 model was sent to Spain to fight in the Spanish Civil War in 1937 and was flown by German Legion Condor Volunteers in support of Dictator Franco. The Bf 109 quickly gained air superiority over the Republican Forces (Communist) who were flying Russian-built and supplied I-15 biplanes and I-16 monoplanes. All of these early Bf 109s were powered by the Junkers Jumo 12-cylinder liquid-cooled engine of approximately 700 hp.

In July 1938 Willy Messerschmitt, the company's Chief Designer, was appointed the Chairman and Managing Director. The company name was then changed to Messerschmitt AG. All new designs from that point forward bore the Me designation instead of Bf. One of Willy Messerschmitts first decisions was to only accept the continuing use of the Junkers engine as a stop-gap measure until he could obtain the new liquid-cooled DB 600 from Daimler-Benz. Work had been going forward on this engine since 1932 and by 1938 Daimler-Benz was already phasing out work on the carburetor equipped DB 600 in favour of the fuel injected DB601. The DB 600 was installed on the interim 109D model with a production run of 200 aircraft. The DB 601 at 1,175 hp. was installed in the legendary 109E (Emil) model. “Emil” was the middle name of

Willy Messerschmitt. The “E” model was 400 lbs. heavier, climbed 300 feet per min. faster, had two additional 20 mm cannon but maintained the high cruise and top speeds of 350mph+. The fuel injected DB 601 engine had instant power response and continuous fuel flow during negative “G” maneuvers such as the split “s” where fuel flow to British fighters equipped with carburetors would be interrupted for a few seconds. This feature gave an important edge to the German pilots in some instances during the “Battle of Britain” in 1940. The DB engine also had a relatively small frontal area, thereby reducing drag. The E model also introduced a ventral rack which could be used for a 75 U.S. Gallon drop tank or a 551 lb. bomb.

In 1940 an aerodynamic clean-up and design refinement of the 109 was undertaken by the factory. The armament was reduced by removing the wing guns and having only two cowl mounted 7.92 mm machine guns and a Mauser cannon firing through the propeller shaft. The horizontal stabilizer external braces were removed and replaced by stiffened upper surfaces. The radiator intakes were cleaned-up, the cowling profile smoothed, frise ailerons installed, slotted flaps were replaced by simple flaps and finally the wing tips were rounded. As per all previous models the cockpit remained cramped and tiny with poor rearward vision. An upgraded engine, the DB601E of 1,350 hp. was installed. All of these refinements increased the top speed to 388 mph at 21,000 feet and the aircraft was designated the Me 109F. Although the veteran aces preferred the lighter armed “F” model, the German high command in 1942 decreed that more firepower was required and so was launched the “G” model. The airframe was essentially not changed from the F model, but the cowl mounted machine guns were upgraded from the previous 7.92 mm to 13 mm, the engine changed to the DB 605A type of 1350

hp. with methanol-water injection and special fuels which allowed for higher power output at high altitude. The Me109G became the final major production model with deliveries beginning in 1942. The G model ultimately became the fastest Me 109 with a top speed of 426 mph at 24,000 feet until surpassed by the late war K model, which was the last German production version. Spain continued to build the Hispano version after WWII.

Of all the variants of the Me 109, the “F” model was the one most liked by Luftwaffe pilots for its handling qualities. It had well harmonized controls, climbed well and maneuvered easily, particularly at low speeds. It turned tightly when the pilot “pulled hard” with the leading edge slots deploying automatically. It still could not turn as quickly as a Spitfire, unless it was flown precisely, but it could outclimb and outdive the Spitfire. However, all of the controls tended to “stiffen up” at higher speeds. The late model machines were sometimes unwieldy and less controllable with maneuverability suffering severely due to the heavy loads imposed by wing mounted gun gondolas. The gondolas were installed to have greater firepower available for attacks on Allied bomber formations. Realistic range was a constant drawback of the 109 design since only internal standard fuel capacity of 100 U.S. Gallons was ever installed. By comparison the P-51B Mustang carried 260 U.S. Gallons internally. However, a bright spot was the Daimler-Benz engine which along with the British Rolls-Royce Merlin were the best liquid-cooled powerplants of WWII. The DB Series of engines were exemplary in their ability to deliver excellent altitude performance. The basic DB engine had a remarkable “stretch” ability in being able to grow in power from under 1000 hp to 2000 hp. In review the Messerschmitt Me 109 was the longest serving

interceptor of the Luftwaffe's fighter arm throughout WWII and was credited with more air victories than any other fighter in the history of aerial warfare, unfortunately all at the service of a madman.

Messerschmitt Me 110 / Bf 110



In the mid-1930s the build-up of the Luftwaffe was well underway with factory competitions for new types of warplanes. The Me 110 was the Messerschmitt submission for a twin engine fighter for which Focke-Wulf and Henschel had also prepared designs. The proposed aircraft were to be heavy fighters with the capability of being deployed as high-speed bombers. Changes in requirements for the fighter left Messerschmitt as the only candidate with the first prototype flying on May 12, 1936. Optimistically this twin-engined fighter-bomber was given the nickname of "The Destroyer", which despite early success failed to live up to its promise. Powered by two Daimler-Benz engines of the same type used in the Me109, the Me110 proved itself in the Polish campaign of 1939 and was later successful in intercepting RAF bombers. Its shortcomings became obvious when it encountered single-engine fighter opposition. Despite the fact of its very heavy nose mounted armament of two 20 mm cannon and four machine guns and a reasonable speed of 300 mph+ it could not defend itself against the much more maneuverable Hurricanes and Spitfires in the Battle of Britain. The type was withdrawn from forward fighting areas and with the addition of specialized radar gear to its

relatively large fuselage it was eventually transformed into an excellent nightfighter.

Focke-Wulf 190 / FW 190



The FW190 is widely regarded by aviation historians around the world as the greatest fighter aircraft of WWII. The FW190 was designed by legendary German aircraft designer Kurt Tank, who joined Focke-Wulf in 1931 as head of the design and flight test department. The FW190 from the outset was designed and developed to outfly and outfight anything in the sky over Europe. It soon earned itself the menacing title of "The Butcher Bird", after demonstrating its effectiveness and devastating toll that it inflicted on Allied bomber formations. The FW190 was developed under a contract placed by the German government in the fall of 1937. Kurt Tank proposed two different engined versions of the fighter, one powered by the liquid-cooled Daimler-Benz DB 601 and the other by the then-new air-cooled BMW 139 radial. The radial engine configuration was chosen, since the Daimler-Benz engine was in short supply being used for both of the Messerschmitt fighters and the Heinkel bomber. The BMW radial offered more power than the inline Daimler and was also less vulnerable to battle damage. Designed as a cantilevered low wing monoplane of stressed skin metal construction with a BMW 801 1700 horsepower 14 cylinder radial engine and an extremely wide track conventional main landing gear the prototype

FW190 rolled out in May of 1939. The first flight followed the next month and the aircraft then entered an extensive test program. Flight controls were electrically powered and supported by an armoured battery located behind the pilot. The prototype featured a large low-drag ducted spinner for engine cooling but engine overheating occurred and this design was soon discarded. The next design featured an NACA type engine cowling with a geared cooling fan for the cylinders that turned at three times the propeller speed. The armoured oil tank and oil cooler were built into the nose bowl and drag reduction was further achieved by providing cooling louvers on each side of the nose in place of cowl flaps. A considerable amount of horsepower was therefore available in a very small package. The engine and propeller were controlled by an incredibly technically advanced single power lever which astounded American engineers.



The producers of the video state that Kurt Tank was influenced and impressed by the overall design and performance of Howard Hughes one-of-a-kind custom built racing monoplane, the H1 Racer. Howard Hughes had his engineers build a scale model of the racer and test it in the California Institute of Technology wind tunnel. The final design was that of a long sleek, tightly cowled radial-engined airplane with a wide track landing gear and short wings of 25 foot span. With a Pratt and Whitney Twin Wasp Jr. engine of 700 hp. (1000 hp. for racing) installed

in the H1, Howard Hughes set a new world's landplane speed record of 352.36 mph at Santa Ana, California in September of 1935. Tank was also supposedly keenly interested in the design of the famous Japanese Mitsubishi A6M Zero, the radial-engined, NACA cowled fighter aircraft that first flew in 1937. The amazing design similarities of the H1 and Zero vs. the FW190 are extremely noticeable (see photos) and it would appear at face value that Kurt Tank drew considerable inspiration from these two aircraft.



The first combat encounters with the Spitfire V occurred during the fall of 1941 when RAF squadrons battled with early versions of the FW190. The aerial battles showed that the FW190 was markedly superior to the Spitfire V, but lacked firepower having only four machine guns. An RCAF pilot, Omer Lesveque, from the famous 401 squadron flying a Spitfire V became the first person to shoot down this new and unknown German fighter on November 22, 1941. The German high command subsequently withdrew the undergunned early models and replaced them with the FW190A-2 model which was armed with a combination of machine guns and 20mm cannon. Production was also stepped up with additional factories being opened, with the result that the Luftwaffe was able to field 200 FW190's to the Channel area. Unknown to the RAF, a further improved model, the FW190A-4, with a water-injected 2100 horsepower

engine was also provided for service by the Channel based squadrons. During the ill-fated Dieppe landings in August of 1942 the RAF lost 106 aircraft, 97 of which were downed by FW190's. The Luftwaffe became so confident of the 190's capabilities that they started daylight low level bombing runs across the Channel to cities and ports in southern England. The Luftwaffe was also gaining numerical superiority during 1942 as it took delivery of 1900 FW190's compared to the RAF receiving only 500 Typhoons and Spitfire IX's. However, as history would prove the tide of war would shortly change to the Allies favour.

Allied pilots that flew captured FW190's found that the fighter had excellent all-round flight characteristics combined with a roll rate exceeding that of any other fighter in the European Theatre. Landing and ground handling safety was superior to the Me109, due primarily to the wide track landing gear. Its speed was 382 mph at 20,000 feet and it could exceed 400 mph at 25,000 with emergency power use. Above 25,000 feet its performance fell off affecting the high altitude use capabilities. A few high altitude versions with extended wingspans and more powerful superchargers were developed. The initial rate of climb for the FW190 was slower than the Me109, however the service ceiling for some models was slightly higher at 37,400 feet. Range for the FW190 was adequate for the point defense missions and most ground support action. A standard 75 U.S. gallon fuselage mounted drop tank was used for range extension.

Structurally, the FW190 was extremely strong and had a good weapons load carrying ability with a maximum overload capability of five tons. A standard bomb load for the fighter / bomber was typically 1100 pounds. The FW190G1, a specialist fighter / bomber version

with strengthened landing gear could carry a 3968 pound (1800 kg.) bomb and two 75 U.S. Gallon drop tanks. The fighter-bomber role is one in which the FW190 excelled in, far surpassing the capability of the Messerschmitt Me109. Standard armament was two 13 mm cowl guns, two inboard 20 mm cannon, and two 20mm outboard cannon. With the use of field conversion kits the fighter's wing could be quickly modified to carry another pair of cannon under each wing, a 30 mm cannon, rocket tube launchers and a variety of bombs. The FW190 became the Luftwaffe's premier ground attack machine with over 40% of the aircraft been used for that purpose.

In 1943 in order to improve the high altitude capability of the FW 190, a few 190A-7 models were fitted with a Junkers Jumo 213A 12 cylinder inverted vee engine with emergency power of 2240 hp. This heavier engine necessitated lengthening the nose and inserting a fuselage plug behind the wing and enlarging the fin area. Thus was derived the FW 190D-9 production version known as the long nose 190 or "Dora 9". The engine cowling retained its rounded shape from its previous radial engine. Maximum speed increased to 426 mph at 21,000 feet and service ceiling increased to 39,370 feet. This respected superior fighter did not enter large scale service until early 1945, at a point when the Luftwaffe was desperately short of aviation fuel, ammunition and spares so it did not reach its service performance potential. The FW190 was built by Focke-Wulf and others at twenty-four dispersed plants in Germany. Amazingly production numbers actually increased during 1944 with Allied forces on the ground in mainland Europe. In the summer of 1944 an incredible 1000 FW190's a month were being built. No accurate total production figures exist for the FW190, but the Allies estimated that total production of the FW190 in all its variants was

about 19,500 aircraft. Following its introduction in the fall of 1941, the FW190 was continuously developed and refined, providing a formidable foe to the Allied forces until Germany surrendered in May of 1945.

Hopefully, the Chapter can schedule a future meeting to examine the characteristics of the revolutionary German jet and rocket powered fighter aircraft of WWII. Aside from the brutal aspects of war, the supporting aviation technology will always be a source of extreme interest to historians.

Chapter News – March 2008

Folded Wings

We have received a note from Mary Collins that her husband, **Michael Collins** (CAHS #3672) passed away January 27th. Michael had not been in good health for some time.

Michael was also a longtime member of Toronto Chapter. Both Michael and Mary had served in the wartime R.C.A.F. Our sympathies go out to Mary and her family.

UK & France Air Tour

The Chapter has been advised by **CWT Victor Travel** of a **Canadian Aviation Enthusiasts Tour of the UK & France** during July 12 – 20th. 2008. The tour will visit historic Duxford Airfield home of the Imperial War Museum. The tour continues with a visit and grandstand seating at the Farnborough Air Show. You then fly to the AirBus Factory in France where you will view the assembly lines of all the Airbus products including the Super-Jumbo A380. The tour will be lead by David W. Lee, IWM Duxford Tour Organizer, Aviation Historian, Author & Commentator. Air transport will be provided by Air Canada & Air France. For bookings and information please contact Risa at CWT Victor Travel: Telephone (416) 736-6010

ext. 247 or email risa@victortravel.ca

Check your records!!

A review of the Chapter membership records has revealed that some of you have not **yet** paid your 2008 dues. Please correct this oversight as we cannot expect the other members to carry all of the freight.

Chapter Elections

Elections will be held as part of the May 10th meeting . To survive and prosper the chapter needs a fresh inflow of Director candidates. The work is not hard but it does require a firm commitment to attend regular meetings and the 2-3 Executive Committee meetings per year. Please forward your nominations to the Secretary-Treasurer. An election committee will be formed from members-at-large.

Remaining Meeting Dates

The final meeting 2007-2008 Winter / Spring Season is May 10. Our Annual Chapter General Meeting & Elections will be held at that meeting.