

February Meeting

Topic: WW I Aerial Warfare
Speaker: Earl Smith, President, The Great War Flying Museum
Video Presentation: "The Fight for the Skies – the role of aircraft in WWI"
Reporter: Gord McNulty

Everyone enjoyed another successful meeting despite a change of venue after our regular auditorium was taken over by the army. As Chapter Volunteer Bob Winson jokingly noted, "They have weapons and we don't," so we relocated to an auditorium upstairs. Chapter President Sheldon Benner welcomed attendees and special guests, a contingent from the Great War Flying Museum (www.greatwarflyingmuseum.com) based at Brampton-Caledon Airport. The group included our speaker Earl Smith, his wife Sylvia, Natalie McHaffie, museum Curator, and her partner, Dave, together with other stalwarts including Ed Soye and John Weatherseed. Some Chapter members will recall a presentation on the GWFM in May, 2005, by Bill Batter (*Flypast*, Volume 39, Number 8).



Speaker Earl Smith
Photo Credit - Neil McGavock



Curtiss OX-5 V-8 Liquid Cooled Engine -
Leavens Family Collection Photo - R. Winson



Sopwith 1 1-2 Strutter Photo - Eric Dumigan

Earl's PowerPoint presentation featured outstanding images of GWFM aircraft in action by Eric Dumigan. Earl began by showing a Curtiss JN-4 Jenny and sharing a personal story. When Earl was a preschooler, his father built three plastic aircraft models: a Sopwith Camel, for Earl; a Curtiss P-6 Hawk, for Earl's brother; and a model of the Jenny, for himself. The boys could play with their models, but were not allowed to touch dad's Jenny. Earl didn't know if it was because of the Jenny's staggered biplane wing arrangement of unequal span and parallel struts with a double-bay configuration that required extra wires, but it "was definitely not to be touched." In the wee hours of one morning, Earl was awakened to the smell of nicotine and alcohol by his father. He asked Earl if he wanted to fly the Jenny. Earl tumbled out of his bunkbed, straightened his pyjamas and found the Jenny sitting on the arborite table in the kitchen. Earl knew exactly what to do as he had already received a checkout on the Camel. So he grabbed the little plastic model, switched it on, spun the little propeller, and did his best to simulate the sound of an OX-5 engine. He let it warm up and set up the model to take off across the table. He lifted the tail, so the undercarriage wouldn't snag the cracks in the table, and flew the model

around, landing it back in the kitchen. His father had sown the seeds of what became Earl's lifelong interest in First World War aviation. Although the GWFM doesn't have a Jenny, it does have a Curtiss OX-5 engine. That engine, as donated by the Leavens family, is on display in the Brampton Flying Club's building adjacent to the museum.

Earl noted humankind has always wanted to fly, really since the beginning of time. The years 1903 and 1909 were milestones in aviation history with the historic flights by the Wright Brothers and J.A.D. McCurdy respectively. However, there wasn't a lot of progress in North America before the outbreak of war in 1914. In Europe, legendary Dutch aviation pioneer and aircraft manufacturer Anthony Fokker had offered his services to the British, without success. Fokker remained with the Germans and the rest is history. Military aircraft were flown by the army primarily for artillery spotting, dropping messages to soldiers in the trenches, and other reconnaissance. Fighter aircraft, known as scouts, were developed to keep the reconnaissance aircraft away from the lines. Earl noted it is an unfortunate fact of life that technological developments are often created by warfare. Still, in the span of one human lifetime, we have progressed from not being to fly an aircraft to putting a man on the moon.

The GWFM is focused on the 1914-1918 period and the technological leap that it involved. At the outbreak of WWI, Canada's population was less than eight million people. We didn't have a standing army, only a poorly-equipped militia. Yet, Canada became internationally recognized as a military force, especially after the Battle of Vimy Ridge in April, 1917. Four of the top 10 Allied scoring aces in WWI --- W.A."Billy" Bishop, Raymond Collishaw, Donald MacLaren and W.G. "Billy" Barker, were Canadian. That's something to be proud of. Some have suggested Canada's primarily rural population at the time, with people more accustomed to hunting, firing guns, riding horses and a rugged frontier lifestyle, might have helped to explain the aerial achievements. Canada's airmen won many honours, exemplified by the Victoria Cross for Bishop, Barker and Alan McLeod, and the Distinguished Flying Cross for Collishaw and MacLaren.

The GWFM was created in 1970 by three members of the Brampton Flying Club. One was a lawyer who set things up for non-profit status and incorporation as a charitable organization. The original name was to be the Canadian Aviation Historical Society, already taken of course. So they were incorporated as the Ontario Aviation Historical Society. The group soon settled on World War I as their theme and created the GWFM as a subset of the OAHS. "We're really the only group in North America that combines a museum of artifacts and flying replicas of First World War airplanes," Earl said. GWFM aircraft are not perfect reproductions, but the goal has always been to fly and display them at air shows beyond Brampton. That requires certain compromises in constructing the aircraft. For example, tail wheels are installed to replace the tail skids of WWI vintage. Tail wheels are essential for directional control on the ground. While WWI planes were flown from grass, the GWFM operates from modern runways. Tail wheels, and brakes on the main gear, ensure safety. Purists will recognize these subtle differences immediately, but the GWFM just couldn't operate as it does if it built the airplanes absolutely "pure." That said, John Weatherseed is constructing a Fokker D.VII that is much more authentic than what the GWFM normally builds. Almost all GWFM aircraft are equipped with electric starters.

The GWFM is all-volunteer and doesn't have a payroll. The museum has two buildings, an aircraft hangar and a separate, smaller building that contains period artifacts from WWI. Many items have been donated for display, including a good collection of uniforms. There is also a rotary engine from WWI, recovered from a rum-running boat in the Detroit River, and propellers. The GWFM closes in the winter for aircraft maintenance. Earl would like to see the museum offer an educational program to schools to increase its appeal to youth. Expanded facilities would be needed in order to accommodate 50 kids at a time. Natalie, as Curator, has led renovation efforts that have entailed foundation and structural repairs to the building, new electrical installation, new drywall to the walls and roof. She accessed a Trillium grant of \$74,900. Earl said that once finished, the refurbished building will be a spectacular place to display the exhibits.

Earl has flown all of the GWFM aircraft. A couple of years ago, he had the pleasure of taking Hon. Col. Gerald Haddon, grandson of J.A.D. McCurdy, flying in the museum's replica Sopwith 1½ Strutter. It has the same dimensions as an original but structurally it differs, with the brakes, tail wheel, and a fuselage constructed of welded steel tube rather than braces, wire and wood. To the average person, it certainly looks like an excellent representation of the original two-seat fighter/observation aircraft, complete with a rear seat facing rearward to allow the gunner to operate the Scarff ring-mounted Lewis gun. The Strutter also had a Vickers machine gun that fired through the propeller. In fact, the Strutter was the first British plane to have a synchronized machine gun that allowed bullets to pass through the propeller arc without striking the prop. All of the aircraft are painted in the scheme of a particular distinguished pilot. The Strutter shows the colours of 9739 of Flight Sub-Lieutenant R.F. Redpath of the Royal Naval Air Service.



A close-up view showing the Scarff ring-mounted Lewis gun
Photo - Eric Dumigan



S.E.5a - 80% Scale Replica Photo - Eric Dumigan

Each aircraft has its unique flight characteristics, and is more challenging to fly than the average modern basic training aircraft. They are far less stable than something like a Cessna 150 or 172, for example, but as Earl said, they were designed to be less stable. "Stability is the enemy of a fighter aircraft," he noted. Pilots needed to change the attitude of a fighter quickly and had to overcome the inherent stability to do that. The Royal Aircraft Factory S.E.5, for example, had a lot of wing dihedral and a great deal of lateral stability when it arrived at the front. The problem was rapidly corrected by lowering

the dihedral and readjusting all of the flying and landing wires. A small-scale S.E.5a was the museum's first replica aircraft. It still flies with the GWFM and is the aircraft that everyone checks out on and flies at the beginning of the season. The next aircraft was a replica Nieuport 17, which the museum no longer has. The Nieuport was lost in an accident due to mechanical failure at an air show in North Bay. Pilot Bill McVean, an early GWFM member, was injured when the Nieuport stalled at about 300 feet and went down hard. Earl recalled listening to Bill, a CFRB announcer, on a broadcast discussing the mishap while he was recuperating at his home in Oakville.



Full Scale S.E.5a Painted in the colours of Billy Bishop at #85 Squadron RFC
Photo - Eric Dumigan



Nieuport 28 in 94th Aero Squadron Colours
Photo - Eric Dumigan

The museum's second S.E.5a, a full-size replica, was completed and first flown in 1991. The dihedral on it is quite high, and representative of what it might have looked like coming out of the factory. It was originally equipped with a Ford V6 automotive engine, later replaced by a more practical, 200 horsepower Ranger aircraft engine. The aircraft is painted in the colours and markings of "Billy" Bishop at #85 Squadron RFC, 1918. This aircraft is currently being rebuilt after a landing accident at Peterborough. The museum's Nieuport 28 was acquired and first flown in 1995. The Nieuport became unpopular because of its reputation for shredding fabric from the top wing in a dive and the French offered the type to the United States when it entered the war. The GWFM's Nieuport is painted in the striking "hat in the ring" colours of the 94th Aero Squadron, representing aircraft 6159 as flown by Eddie Rickenbacker.



Fokker Dr.1 Painted in Baron Manfred von Richthofen Colours
Photo - Eric Dumigan



The Fokker D.VII *Photo - Eric Dumigan*

The museum's all-red Fokker Dr.1 triplane, in the "Red Baron" colours of Manfred von Richthofen, is easily its most recognized aircraft. The triplane has an all-flying rudder, and without a fixed fin, it is directionally "entirely unstable" in Earl's words. The museum's Dr.1 is powered by a 165 horsepower Warner Super Scarab engine. A second, also very impressive, Dr.1 was acquired, and equipped with a more powerful engine, but it was heavily damaged in an accident at the Geneseo, NY air show in July, 2011. The aircraft was flying in a mock dogfight when it had a sudden engine failure and cartwheeled through a cornfield but fortunately the pilot walked away.

The museum's Fokker D.VII was completed and first flown in 1977. The D.VII was considered among the most formidable fighters of the war. It was specifically named in the Armistice requiring Germany to surrender all they had and further prohibiting the Germans from ever building

another one. A feature of Fokker's designs was the building of the wings in a large box spar, taking the entire load and eliminating the need for wires to hold the wings together. It resulted in much lower drag and higher speed. The wing itself had thick airfoil and the aircraft had phenomenal stall characteristics. Earl said the D.VII can fly forever and when it does stall, it's a "non-event." Unfortunately, the GWFM also had an accident with the D.VII at Geneseo in July, 2007, when the aircraft lost engine power on takeoff. The pilot almost made it over the trees but, alas, not quite. He wasn't hurt, fortunately. Earl said the rebuild is coming along quite nicely and with any luck, the D.VII might be seen in the air this year. It will appear in new markings, those of Jasta 63's Richard Kraut. The GWFM's projects include a Sopwith Camel, to be painted in the colours of W.G. "Billy" Barker. The museum also has an Airco DH2, a longer-term project.



GWFM aircraft escorting the Vimy Bomber over Toronto May, 2005

Photo - R. Winson

The GWFM's participation in the 2005 stopover at Downsview of the replica Vickers Vimy, flown by Steve Fossett and Mark Rebholz, to recreate the first trans-Atlantic flight of Alcock and Brown in 1919, was a major highlight. In an unforgettable event, GWFM aircraft accompanied the Vimy as it left for Ottawa. What an incredible formation

of famous aircraft! On another occasion, GWFM pilot Jerry Fotheringham flew a Dr.1 replica as a towplane for glider pilot Oscar Boesch in his ASW-15 at Geneseo. There was Jerry, a former RAF pilot, pulling a former German Luftwaffe pilot airborne. Who would ever have thought?

The GWFM holds a popular open house/fly-in every September, demonstrating the aircraft, re-enacting the shooting down of the Red Baron, and showing the collection. Currently, the museum has four aircraft in flyable condition. The aircraft are equipped with smoke systems, injecting oil into the exhaust, to simulate a real dogfight. "Our members are our biggest asset," Earl noted. He's enjoyed a great time with the GWFM as a member since 1989. "It has allowed me to do things and meet people that I never would have imagined I could ever meet." Membership is \$160 a year. For \$200, members can enjoy a flight in the Strutter. This year, the museum's popular fundraising hangar dinner dance is set for June 25. Tickets are \$40. The event includes a silent auction and cash bar.

Earl closed an excellent presentation by expressing his appreciation to the CAHS Toronto Chapter for its financial support. Bob Winson assured the museum of continued support, presenting Earl with a cheque to help with ongoing restoration. Our first donation of the year was indeed a worthy one. We look forward to the future success of this fine, much-respected museum which we are fortunate to have on our doorstep.



WWI RFC Pilot in Flying Garb *Photo Courtesy -
The Winson Collection*

Elaborating on the WWI theme, Bob showed an hour-long DVD, “The Fight for the Skies: The Role of Aircraft in World War I.” A graphic and sombre British production with extensive coverage of the attrition and carnage of the Great War, the DVD also featured rare footage of aircraft such as the Royal Aircraft Factory F.E.2 and the 1½ Strutter. It underlined how the warplane quickly evolved from slow and vulnerable reconnaissance biplanes to deadly Camels and D.VIIs by war’s end. Aerial reconnaissance was vital, first with observation balloons and then aircraft fitted with lightweight radio sets. Germany responded with the first fighter with a forward firing capability, the Fokker Eindecker (monoplane). It was fitted with synchronization gear that assured German dominance in the air by the end of 1915. Germany also had a fine reconnaissance aircraft, the Rumpler C.IV, which in fact was faster than the Eindecker. By 1916, the war was being fought as savagely and desperately in the air as on the ground. The Royal Flying Corps gradually clawed back under the command of Hugh Trenchard, with the 1½ Strutter rushed into service and making a major contribution for the Allies.

The greatest single air power advantage for the Allies, however, was numerical might rather than technical superiority. When the Battle of the Somme began in 1916, Allied warplanes outnumbered their opponents by three to one. The disparity became greater as the war dragged on. Nevertheless, the Germans pioneered new, aggressive methods of aerial combat under the leadership of Max Immelman. The first German flying ace, Immelman achieved wide renown before his death in 1916. Oswald Boelcke, another ace and superb tactician, was the acknowledged “father of air combat.” He promoted the concept that fighters should be grouped into squadrons, operating as pairs. The Albatross D.III emerged as a fast, high-performance biplane with two synchronized machine guns. It swung air superiority in favour of Germany. Of 426 RFC pilots available for service on July 1, three-quarters were either dead, wounded or missing by the end of the battle in November. Replacement pilots were rushed into action with only rudimentary training and many lasted only a few hours. The appalling waste resulted in a wholesale upgrading of flight training, but at every turn the airman’s life was made more difficult and precarious. Planes were fired upon from the ground by various weapons including specialized anti-aircraft guns.



Lieutenant-Colonel William George Barker VC with a Sopwith Camel
Photo Courtesy - Library & Archives Canada

Bombers became a threat by 1917 as calibrated bomb sights were introduced to improve accuracy. The Breguet 14 was the workhorse of the French bombing offensive. Remarkably fast, it could carry up to 700 pounds of bombs. By the war's end, more than 5,500 Br. 14s had been built. The British Short Bros. Type 184 bomber was built in conventional and seaplane variants, assigned to carriers. In 1915, a Short seaplane sank a Turkish merchant ship in the Dardanelles. The German Gotha G.V heavy bomber brought a potent new dimension to the war. A twin-engined, pusher aircraft, the Gotha was fast, rugged and well-armed. In 1917, it took over a role pioneered by the Zeppelins, bombing Britain intermittently until the end of the war. Although damage from bombing was relatively marginal, the psychological effects were often profound. Bombers brought total war to civilians for the first time, ending Britain's traditional isolation from the immediate hardships of continental warfare. In Britain and France, German bombing ensured a mood of revenge would prevail over any more enlightened efforts to secure a just and stable peace. The Germans expanded their air arm as an independent service after the Somme and established large, mobile fighter squadrons. The most famous, the Flying Circus, was commanded by Manfred von Richthofen, a protégé of Boecker. It contained the cream of Germany's aviators.

In 1917, the RFC received three new fighters. The large and powerful two-seat Bristol Fighter, with a flexible rear machine gun and a synchronized forward firing gun, was among the best general purpose planes of the war. The S.E.5 and the improved S.E.5a was one of the fastest aircraft and was well-armed with one synchronized gun firing through the propeller and one firing over the top. The superlative Sopwith Camel became the most famous British fighter of the war. Although not as fast as the S.E.5, it was far more agile and excelled in close combat and ground attack. Twin synchronized machine guns made it the most heavily armed British fighter. The Allies enjoyed numerical superiority and more formidable aircraft to regain air supremacy.



War Trophy Fokker D.VII at Leaside Aerodrome 1920's *Photo Courtesy - City of Toronto Archives*

The Germans concentrated on downing reconnaissance machines, avoiding contact with Allied fighters. Airstrips were sited in the rear of battlefields, beyond the range of enemy guns, with airmen enjoying a lifestyle that was the envy of every other service. Their relatively comfortable quarters and amenities contrasted with those of the men at the front. However, the air war raged almost continuously without a lull as many airmen died in action. Germany introduced the Fokker Dr.1 Triplane. While slower than almost any other comparable fighter, it had startling agility and superb rate of climb. The Dr.1 was ideal for interception and close combat. In the hands of elite pilots, the Dr.1 proved to be a terrible scourge to the Allies. One of the most pivotal episodes, however, occurred on Apr. 21, 1918, when Manfred von Richthofen was shot down and killed over the Somme. With 80 air combat victories, the Red Baron was the ace of aces. His funeral was a testament to the abiding bonds of airmen of all nations. The great aviator was buried with full military honours not by his comrades, but by his Allied enemies.

Richthofen's death coincided with the arrival of the Fokker D.VII, the culmination of German technology. It had a better rate of climb and a higher operational ceiling than the best Allied fighters. Although not quite as fast, it outperformed Allied fighters. However, it came too late to substantially affect the outcome. Germany, increasingly afflicted by chronic shortages, had hardly the fuel to maintain its fighter squadrons and finally requested an armistice. The German air force was disbanded completely and every Fokker D.VII was handed over intact to the Allies. In four years, aviation had come of age and the terrible power of the warplane was acknowledged by the world.
