

February Meeting

Topic: “Light Sport Aircraft (LSA’s) in Canada”

Speaker: Alan C. Dares, B.A., C.T.M., A.T.P.L., assisted by Gary Del Bel Belluz, A.M.E.

Reporter: Gord McNulty

CAHS Toronto Chapter 2nd Vice-President, Secretary, & Archivist Neil McGavock introduced Alan Dares of Toronto. Alan started flying at the old Brampton Flying Cub location in 1965 on 65 horsepower Aeroncas without any electrics or heaters. He then moved to instructing at Toronto Airways, Buttonville, on Cessna 150’s and Piper Cherokees. He later became a bush pilot flying Cessna 180’s, Beavers on floats, Aztecs and DC-3s. Alan obtained a degree at the University of Guelph. He entered corporate flying with Airways Training and Charter at Pearson International Airport on Navajos and Aztecs. Joining Air Canada in 1978, he flew a variety of airliners before retiring as Captain in 2008.

As an author, Alan wrote an article on the Avro Canada Avrocar entitled, “The VZ-9V Avrocar Flying Saucer,” that appeared in the spring 1993 CAHS Journal Volume 31, No. 1. In 2005 Alan wrote and published a book on navigation, entitled “Global Navigation, From Sailing to Space.” Alan currently owns the Canadian distributorship for Savage Aircraft, a division of Zlin Aircraft of the Czech Republic. Models include the Classic, Cruiser and Cub, all classed as Light Sport Aircraft, but certified in Canada as Advanced Ultralight Aircraft and registered as “C-1...” Alan also operates the Savage Bush Flying Academy out of Bradford and Lake Simcoe. Pilots are trained for floats, skis and tailwheel operations.

Alan, in turn, introduced Gary Del Bel Belluz, also of Toronto. Gary had his first encounter with a light aircraft, a Piper Cub, in 1963 at Little Lake near Barrie. An Aircraft Maintenance Engineer (AME), he worked for Lambair in Thompson, Manitoba. He joined the company after Alan left Lambair in the mid-1970s. Gary worked on the DC-3, DHC-6 Twin



Cross Canada Century Flight Savage Cub at Sydney N.S. Airport. *Photo - Alan Dares*



Speaker Alan Dares. *Photo: Neil McGavock*

Otter, and DHC-3 Otter at Lambair. A private pilot, Gary started on traditional small aircraft typically powered by a 65 horsepower Continental engine. He has gone “full circle” to Light Sport Aircraft and Advanced Ultralight Aircraft. Gary is currently finishing his instructor’s rating for the Savage Bush Flying Academy. Keen on radio-controlled models, Gary has a nifty RC Cub which boasts a wing span of about eight feet.

There are three basic types of Savage aircraft: the Classic, the Cruiser, and the Cub. The Savage Cub has a remarkable resemblance to the PA-18 Super Cub. Gary began the presentation with an overview of the history of the Cub, one of the most popular and best-known light aircraft in aviation history. The Cub story began more than 80 years ago when C.G. Taylor designed a small two-seater called the ‘Chummy.’ Taylor was a self-taught engineer who ran a small aircraft factory with his brother, Gordon. C.G. was the inspiration for the operation, while Gordon, a demonstration pilot, handled sales. The Chummy was powered by a 90 hp radial engine, a heavy motor for a small aircraft. It was also quite expensive to produce,

and sold for \$4,000 each. That was a lot of money in 1926!

The Chummy featured side-by-side seating, a parasol wing, and a large windshield. The sides and the back were wide open because of the parasol wing. It flew very well, but sales didn’t materialize. Gordon died in a plane crash. C.G. decided to move the operation to Bradford, Pennsylvania, lured by incentives to set up industry there. Then the stock market crashed in 1929 and the Great Depression ensued. However, one of the investors in Taylor’s company --- oil well executive William Piper --- used an \$800 investment with a friend to become a director of the Taylor company. Piper felt they had to produce a cheaper light aircraft, and he began working with Taylor to achieve that. The result was the Taylor E-2 Cub, a tandem two-seat aircraft, which bore a resemblance to what would become the Piper Cub. The original prototype had only 20 hp, and couldn’t get more than five feet high.



Speaker Gary Del Bel Belluz.
Photo: Neil McGavock

Continental, in Detroit, solved the powerplant problem with the 37 hp A-40 engine. The E-2 sold for about \$1,300. Company brochures touted the ease and romance of flying, being able to go anywhere you want in your small airplane, and how general aviation was in desperate need of a simple-to-operate, inexpensive airplane for the average man. As Gary noted, these points remain very relevant today.

In 1931, the Taylor company went bankrupt and William Piper bought all of the assets at Bradford. Piper took full control of the company in 1934. Taylor left with his share of the money and moved to Ohio, where he formed the Taylorcraft Aviation Company, which became a successful operation. Several hundred E-2 Cubs were built between 1930 and 1936. Most were sold with the 37 hp engine. However, the aircraft was still more expensive than its builders liked. Vibration and reliability issues arose with the engine. The E-2 evolved into the improved J-2 with an enclosed cockpit, new engine, and different tail. In 1937, the Bradford plant burned down. Piper moved the entire operation, including 200 employees and what was left of the manufacturing equipment, to Lock Haven, Penn. He found a bargain in an abandoned old silk mill. Piper, an astute businessman often called the "Henry Ford of Aviation," built no fewer than 687 airplanes in his first year, and the workforce doubled. In 1938, Piper hit a jackpot with engines as three manufacturers --- Continental, Lycoming and Franklin --- all introduced modern, reliable powerplants. The different types were offered as options on the new J-3, a design which established the Cub as a legend. All of the bugs were ironed out. The J-3 was light, comfortable, powerful, reliable and --- most importantly at the time --- was very inexpensive. Piper was still offering it at \$1,300 --- ten years after the E-2 had sold for the same price.

The Civilian Pilot Training Program (CPTP), announced by President Roosevelt on Dec. 27, 1938, was inspired by the European practice of using government money to train civilian pilots.

The idea was to train 20,000 college students per year, with the government paying for 72 hours of ground school and 35 to 50 hours of flight training. When World War II started in September, 1939, there was a huge shortage of military pilots in the U.S. CPTP graduates could go directly into military flight training. At its peak, the program had 2,500 flight schools and colleges across the U.S. The Piper Cub, with its tandem seating, was the trainer aircraft of choice. In total, 435,165 people trained in the CPTP, which ended in 1944, and 80 per cent of American military pilots in World War II learned to fly in a Piper Cub.

The remarkable success story of the Cub continued for more than 60 years until the official end of production in 1994. The design basically stayed the same. It was basically a matter of adding more powerful engines to improve performance. The PA-18 Super Cub became the main production model in the early 1950s. It initially was powered by a 90 hp Continental, upgraded by the mid-1960s to a 150 hp Lycoming. Many models and variants of the Cub are still flying today, and as Gary noted, they are worth big bucks. Almost 20,000 models of the Cub were built at Lock Haven, followed by another 10,000 Super Cubs. The last Super Cub was built at Vero Beach, Florida, in 1994. Interestingly enough, Cubs were built in Canada by the Cub Aircraft Company in Hamilton. Thirty-four were built in 1936. After World War II, Cub Aircraft built 187 examples under licence from Piper. The company introduced a unique Canadian version, the L-4B Prospector, a civil version based on the U.S. military L-4 version of the Cub. It was adapted for prospecting or camping. Gary displayed a photo of a share in the company. He said that 100 shares were worth \$25 when they were on the market. These pieces of paper are now highly collectible documents. In fact, one share is worth \$400 today!

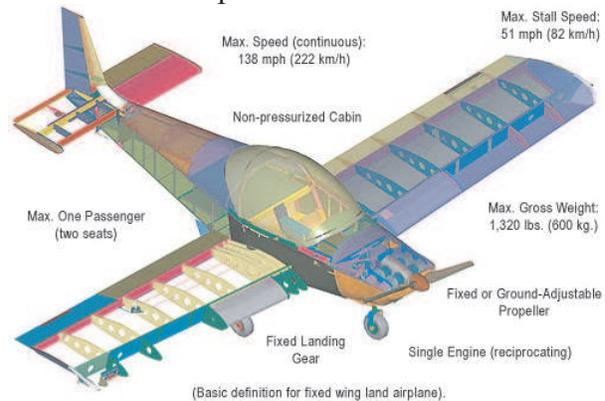
Gary noted the airfoil which C.G. Taylor originally chose for the E-2 Cub was so good that it continued to be used on every Cub until the last Super Cub rolled off the production line.

The same airfoil was used on other Piper aircraft such as the Aztec and the Pawnee. Today, all kinds of new manufacturers are building variants of the Cub. Gary said he was surprised that Piper didn't patent the Cub name, as it seems anyone can name their airplane a Cub. In the United States, there is the Legend Cub, the Wag-Aero Cubby, the Cub Crafters Carbon Cub (an extremely light aircraft, using a lot of carbon fibre in the airframe) and of course Alan's favourite, the previously mentioned Zlin Savage Cub. One advantage that the old Cub had over the modern versions was its ability to land really slowly --- 26 miles per hour.

Alan then took the microphone. He shared his enthusiasm about the experience of flying a taildragger, as taught at the Savage Bush Flying Academy. The Academy is a dedicated and unique flight school, specializing in back-country training and teaching pilots how to maximize the capability and performance of their Savage aircraft. Would-be pilots are recruited off the street. Those who have never flown before are given a 30-minute familiarization flight. If they decide to pursue it, they can do a two-hour flight or a complete flight course, which takes 20 hours. Alan said that pilots who have flown a tricycle gear aircraft such as the Piper Cherokee face an adjustment. An eight- to 10-hour course is required to make the transition to tailwheel aircraft. The Academy is open to aircraft owners, beginners and seasoned veterans. Interestingly, Alan noted that some beginners, after mastering solo flight, quit rather than finish the program. "We're trying to solve some of these problems and reduce the attrition in the flying clubs," he said.

The Academy, just 45 minutes away from Toronto, provides bush flying training for southern Ontario pilots who would otherwise have to train in the Far North at places such as Red Lake and Sioux Lookout. Training is provided for skis, floats, and wheels, from snow, lakes and grass strips. Seaplane operations are done from Lake Simcoe and the Holland River. Another Savage Classic aircraft will be arriving shortly, equipped with big 29-

inch tires. It will be the Academy's fifth aircraft and Alan expects that it will be a lot of fun. It has flown in the Czech Republic and it will just be a matter of assembling the parts after it is delivered. The assembly job will take about 2 ½ days. As Alan said with a bit of dry humour, you won't have to spend seven years in your basement. The powerplant of the Savage Classic is a 100 hp Rotax 912S.



USA Light Sport Aircraft Components & Basic Definition - Similar to Canadian rules.

Photo - EAA

Alan outlined the differences between Light Sport Aircraft and Advanced Ultralight Aircraft in Canada and the United States. Canada has Basic Ultralight and Advanced Ultralight categories, while the U.S. has a Microlight category. In Canada, a pilot receives an Advanced Ultralight permit, while in the U.S. a pilot is given a Sport Pilot Licence. Alan noted that "ultralight" is a bit of a misnomer, in that people still envision ultralight aircraft as what he called "a lawnchair with a wing attached to it and a bunch of aluminum tubes." That kind of thinking, he said, goes back to when the concept of very lightweight, slow flying 1- or 2-person aircraft started to become popular around 1973. Today's aircraft, however, have advanced well beyond that.

The advantage of the Advanced Ultralight category in Canada and the Sport Pilot Licence in the U.S. is that it reduces the instruction time that is required in comparison to a private pilot's course. Alan noted that an Academy trainee can complete 27 hours of ground school training, then 20 hours in the airplane. At this time of

year, the 20 hours can be completed on a ski-equipped aircraft. The 27 hours of ground school training is similar to the recreational flying ground school course. It is a challenge to teach student pilots everything they need to know in just 27 hours, so lots of homework time is required.

The J-3 was a beautiful aircraft to fly, but it had one disadvantage. An aspiring pilot had to solo in the back seat, making it more difficult to read the instrument panel, because the fuel tank was located in the cowl. With modern versions of the Cub, all of the fuel has been located in the wings. The Savage Cub, for example, has 18 gallons of fuel in aluminum tanks in the wings. A pilot can solo in the front, see all of the instruments, easily reach all the controls, and see over the nose of the aircraft while taxiing. The other plus is that the cruising speed of the Savage Cub is 45 miles per hour faster. "Instead of sitting there flying around all day at 75 mph, we cruise at 105," Alan noted. The aircraft is much more suitable for cross-country flying. In fact, Alan flew the Academy's Savage Classic across the country with the Cross-Canada Century Flight, organized by John Lovelace, in July, 2009 to celebrate the 100th anniversary of powered flight in Canada. More than 100 aircraft participated. The Academy was fortunate to have received many sponsors to cover expenses for the flight, all the way from B.C. to Nova Scotia.

The need to find more affordable aircraft is an issue. In the U.S., some of the popular choices for sport aircraft cost around \$160,000. In comparison, a nice, used J-3 Cub can be found for \$45,000. The Sea-Rey amphibious LSA, an excellent aircraft, also powered by the Rotax 912, costs around \$110,000. A good LSA trainer is the Evektor SportStar, another product of the Czech Republic. It has a low-wing, excellent visibility, tricycle gear and is powered by the Rotax 912 as well. The Challenger is a popular and versatile advanced ultralight. The airframe is made by Quad City Ultralight Aircraft Corp. in Moline, IL, and distributed by National Ultralight in Canada. An annual winter fly-in of Challengers is held at Montebello,

Quebec.

Alan encouraged everyone to visit the Academy and try a 30-minute flight. The trip would start from the base in Bradford, with a stop for lunch at Agnes' restaurant, then ice fishing for perch on Lake Simcoe, and returning to the base. It's a lot of fun. Alan noted that Transport Canada basically leaves the Academy alone. The Academy administers the exams, does the flight training and its own maintenance. The operation is basically self-policing, as are all of the flight training schools across Canada. In comparison, the U.S. has more complex, tightly-regulated LSA requirements. The U.S. requires a Certificate of Airworthiness, while Canada doesn't. Fire extinguishers are required in the U.S. They are not mandatory in Canada but Alan noted that the Academy uses them in the aircraft. The U.S. also requires Electronic Locator Transmitters, while Canada does not. The Academy uses Personal Locator Beacons to send messages to 911 or search and rescue. As for the aircraft itself, the manufacturer has the final say in terms of the aerodynamics. The Academy doesn't make any modifications to the aircraft, which are treated as certified, when they arrive for assembly. They are put together with a laser gun, and once assembled, fly just fine out of the box. Alan said the aircraft are so docile and stable that you could teach your grandmother how to fly one. Our speaker answered a variety of questions. He noted the Academy can make changes to the interior of the aircraft, tie-downs, and winter gear --- as long as they don't affect the aerodynamics.

Everyone enjoyed the presentation. Chapter Treasurer Bob Winson, who started on 65 hp Aeroncas recalled having "nearly frozen to death about three times" while flying in the drafty little airplane to Muskoka, presented Alan with a gift in appreciation. Bob referred the audience to one of the Toronto Chapter websites, www.torontoaviationhistory.com > go to "Aero Galleries", then "Piston Engines", and you will find a six minute video on the Rotax engine. The Savage Bush Flying Academy website will be added.
