National Soaring Museum
Historical Journal

Summer 2023

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Front Cover: *Ralph Barnaby flies the Alfaro LPG-2-30 over Rhodes Farm 1932*

Back Cover: *Alfaro Sailplane*

NSM Journal

Summer 2023

Bertha Ryan, who died in May 2023, discussed her early flying career at MIT in the 1950s; Ira Blieden recorded her comments in 2008 and shared them with Bungee Cord in the Summer 2023 edition. Article courtesy of the Bungee Cord.

AES Memories - *from a talk by Bertha Ryan*

The Aeronautical Engineering Society (AES) was a glider club at the Massachusetts Institute of Technology (MIT) when I arrived to attend graduate school in 1950. I had started working in the Math Department at MIT immediately after graduating from Emmanuel College in June 1950 to begin my graduate studies. As the students returned for the fall semester, the AES had a display in the lobby part of the "infinite corridor" to recruit new members. I had been flying airplanes since high school days in 1945 and thought that flying gliders would be an inexpensive way to keep flying - (Little did I realize)! My log book shows my first glider ride was at Ayer, MA, on 7 October 1950. I had eight winch tows that day, flying the Schweizer 2-22, N91833. The log book was signed by Tom Priestley, but the person giving me my first glider flights was Dick Seaman. It was not unusual in those days to have any available commercial glider pilot sign logs. My first aero tow was at Canton, MA, on June 2, 1951, flying behind the Piper J-3 (exp) with a Lycoming 108 hp engine. This airplane had been donated to the club by Prof. Otto Koppen of MIT and, if I recall correctly, Prof. Lynn Bollinger of Harvard. They had developed the Helioplane and used this J-3 Cub to experiment with various propeller configurations.

Schweizer 2-22 #N91833 currently on display in the Schweizer Gallery at the National Soaring Museum

Piper J-3 Cub

Rose Marie (Pratt) Licher

The Cub at this time had a four-bladed propeller with a belt drive. Rose Marie Pratt (later Licher) did most of the aero towing that first year and I remember her returning from a tow one day with only one of the belts left!

Someone sold an ordinary propeller to the club for the enormous sum of $1. Club members took the old experimental props as souvenirs; I still have one. I started towing with the Cub in 1952.The club went back to winch launching later in 1951 and flew out of Fitchburg, MA, still flying the 2-22. In July 1952, I gave tows in the Cub at Lawrence, MA; they organized a contest, and people came from New York to encourage the new operation.

Editor: The Helio-1 is generally believed to be the first successful attempt at creating a ultra-short-field airplane. Designed to fulfill the post-World War II promise of an airplane in every garage, Otto Koppen and Lynn Bollinger hoped to combine the many advantages of the helicopter with the simplicity, speed, and range of a conventional fixed-wing aircraft. With its first successful flight on April 8, 1949, the Helio-1 demonstrated that a fixed-wing aircraft could be fully controllable at low speeds, making it safe to operate on landing strips roughly the size of a tennis court. However, the market saturation of light planes caused the company to redirect its efforts and other aircraft with more utility and payload were developed for both the civilian and military markets.

https://airandspace.si.edu/collection-objects/helioplane/nasm_A19640010000

Helioplane, Helio-1, currently part of the collection of the National Air and Space Museum

I encountered my first low tow there at Lawrence, MA – when the glider disappeared from my rear-view mirror, I quickly dove back to the airport for the next tow. The glider was still on tow (I think maybe piloted by Ted Pfeiffer). I heard about it later when I got on the ground!

In September 1952 we traveled to Middlebury, VT, with the 2-22 and I had the thrill of towing behind a BT-13. We returned to the two airports at Middlebury in October 1952, now flying the Laister-Kaufmann LK-10A, N58082. Also in October, I was giving and making aero tows in the Cub and flying the LK at Fitchburg. (I only had a private power license, but I think I had a waiver or something.) At Fitchburg, I gave aero tows and also made winch tows. I never drove the winch, because I had not yet learned to drive a car. We continued flying both sailplanes, mostly on aero tow, in 1953. In February 1953, we all assembled at Fitchburg for flight tests. The FAA Examiner (I think Bill Placek) had come from New York to give the flight tests. It was a very windy day, but everyone was anxious to get the tests done. As we left MIT, I noticed even the birds were not flying! I took off in the Cub on an initial non-towing flight, and when I came in for the landing, I had to use full power to get to the runway due to the strong wind. I said to the FAA Inspector, "We are not flying today." He said, "You are right!" But we did fly the next day and I received my Private Glider License, along with other club members.

Vultee BT-13 Valiant - "Vultee Vibrator"


LK-10A


Bertha Ryan

I immediately started giving instruction as things were less formal in those days. We also flew at North Adams, MA, I think for a contest in June 1953, but I only flew the Cub. In July 1953, some of us went to Keene, NH, to put on an air show. I towed the LK with the Cub to Keene and flew the LK back to Fitchburg on tow after the show. In October 1953, our club made an excursion to Wurtsboro, NY, with the 2-22. We had a wonderful time, did many aero tows and I gave lots of instruction.


Ginny Schweizer

I had met Ginny Bennis (later Schweizer) at the contest in Lawrence the previous year; this time she signed for my "C" badge, which I earned by flying along the ridge over the beautiful fall colors. Sometime around then a lady came to the club and asked if her sons, one of whom was Walter Cannon, could join the club and learn to fly. We welcomed them. Walter has since gone on to be very active in soaring – competition, restoration, etc. – and is currently (in 2008) on the Board of Trustees of the National Soaring Museum. Another member at that time was Bernie Paiewonsky, who now owns a SISU and is also on the Museum Board of Trustees (2008). Still another member was Per Holter-Sorensen, who became a general in the Norwegian Air Force. Dale Hoff went to Merck and Henrik Hagerup is now a professor at Rensselaer Polytechnic Institute. Dick Seaman moved to Colorado and ran Black Forest Gliderport for a while. Rose Marie flew some competition, set some records, retired from Douglas and moved to Sedona, AZ. I saw Ed More at the SSA Convention in Hartford, but lost track of most members except Lloyd Licher, Bernie Paiewonsky and Walter Cannon.

In April 1955, we took the 2-22 to Hiller Airport at Barre, MA, where we flew aero tow although we did have one attempt at auto-pulley tow in September of that year for flight test purposes. We had made some auto tows at Fitchburg with the 2-22, but aero tow was much more convenient.

In July 1955, we went to Elmira, NY, and I flew a Schweizer 1-26 and soon ordered a kit. Still being a "starving" student, I had no financial resources to make this purchase, but Lloyd Licher loaned me the money, which I paid back six months after starting employment in California. Many of our club members had moved to California for the good thermals and the good aero engineering jobs, and I followed.

Bertha's first photo shoot with her new Schweizer 1-26

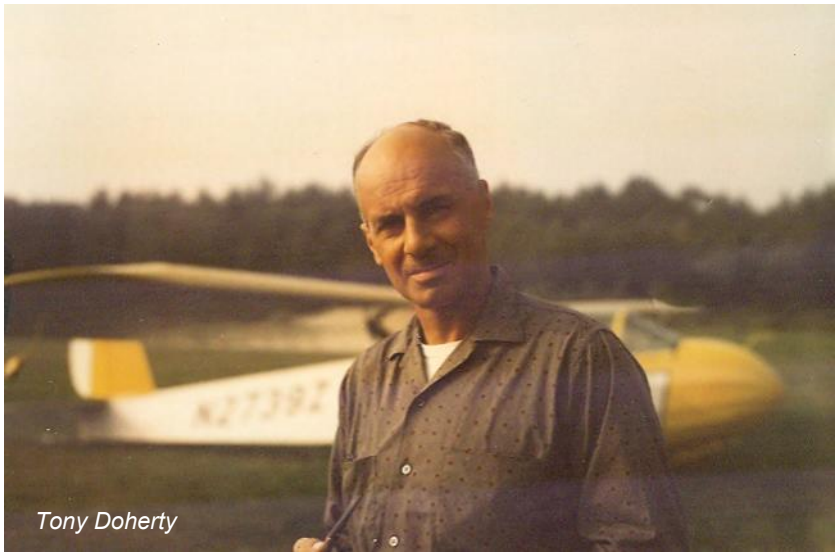
In September 1955, we gathered at Hiller and I received my Commercial Pilot Certificate (at last the instruction I gave was legal!) and the newly created glider flight instructor certificate. My association with AES was not only one of the most enjoyable times of my life but also the most valuable. I was introduced to a sport that I love and that has dominated the rest of my life. I learned enough about caring for gliders, including recovering them, that I was able to build my 1-26 from a kit. I still do not know much about engines.

Lloyd Licher financed Bertha's first sailplane purchase.

Bertha's 1-26 is still being flown today. Currently located at McLean, VA and owned by Bryan Bowlsbey

Drama on Our Flight from Tehachapi 1961 - by Wm. E. "Tony" Doherty

The AOPA (Aircraft Owners and Pilots Association) was going to have a "No Engine Course" at their annual flight safety Fly-in convention at Palm Springs, CA. The Holiday Flying School, operated by Fred and Goldie Harris in Tehachapi, would supply some personnel and aircraft. I, representing Schweizer Soaring School, would give briefings and do whatever else was required.


Tony Doherty

Editors Note: *In 1959, pilot Fred Harris and his wife, Goldie, selected the Tehachapi Valley as a perfect location to open the Holiday Soaring School. It opened in 1961 as one of only two commercial soaring operations in the United States, the Schweizer Soaring School being the other. In the early 1960s, under a contract with NASA, Harris helped develop a prototype for the modern hang-glider. He also worked with the astronaut program, training men such as Neil Armstrong and Edward Aldrin in the art of free soaring, a part of their training before the historic moon flights. The airport was also used for the filming of the 1967 "Walt Disney's Wonderful World of Color" true-life adventure "The Boy Who Flew with Condors. The glider port, known today as Mountain Valley Airport, is located just southeast of Tehachapi. Fred Harris is the uncle of local upstate New York motorcycle guru, Bob Harris.*

The Idea of the No Engine Course was to show power pilots that airplanes don't just fall out of the air when the engine quits; they're both controllable and maneuverable. The course consisted of a lecture and five flights in a sailplane. (It was a nice way to introduce them to soaring, of course.)

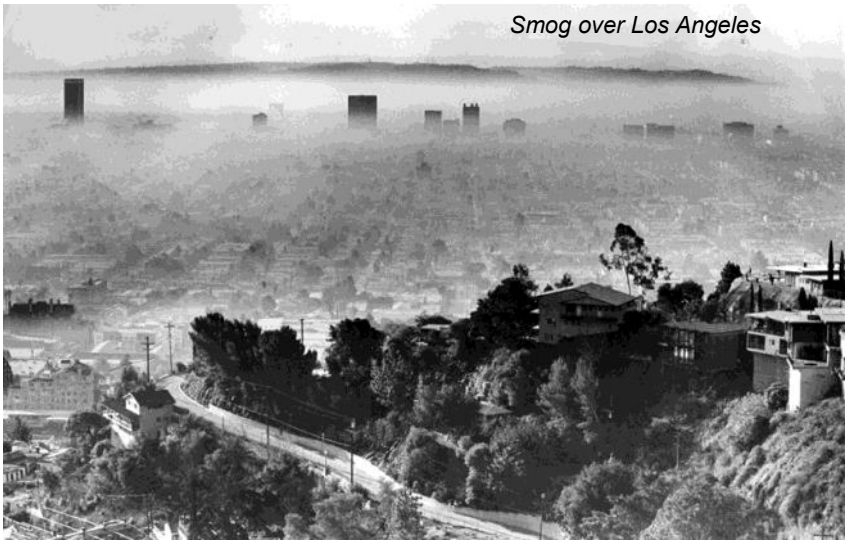
Fred needed some help ferrying aircraft from Tehachapi down to the Springs, and I volunteered. I was to be towed to Palm Springs, 160 miles away, in a Schweizer 2-place trainer, the 2-22. One of Fred's regulars, a meteorologist named Darryl Wilkins, would pilot the Super Cub tow plane.


San Gorgonio Mountains

It was a lovely day for flying - high scattered clouds and excellent visibility - but we wanted to get off as quickly as possible, before the big thermals started developing. We had a fair headwind to start with, and it had begun to pick up. When we passed Gus Breigleb's gliderport operation, our ground speed was practically zero. As we approached the San Gorgonio Mountains, Darryl radioed me that we would have to climb because of the downward flow of the air in the lee of the mountains.

Our route would take us between Lake Arrowhead and Big Bear. We were at about a thousand feet and still climbing. As we approached the southern slope of the mountain, I got my first glimpse of the Los Angeles Basin. It looked like a bowl of dirty whipped cream: the infamous Los Angeles smog. The sheer slopes of the mountains seemed to slide down and disappear into a white void.

The air had grown fairly rough. Then, just as we came nearer the mountain, the tow plane shot up as though it had been fired from a gun. I pulled the stick back in an effort to keep up with it. The next moment the Cub was caught in a downdraft and went plunging down. As I rammed the stick forward, my primary concern was not over-running the tow plane and hitting it - that, and the fact was that neither of us was wearing a parachute.

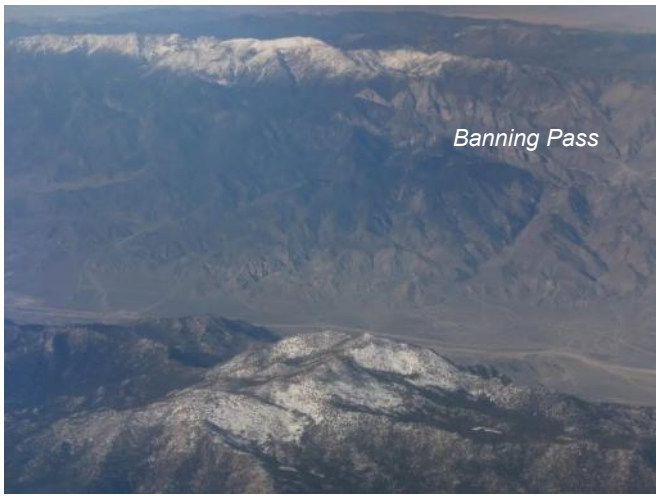


Smog over Los Angeles

With me going up and Darryl going down, it was only a second or two before the towline snapped and I was on my own. It was too turbulent to have any feeling of whether you were going up or down and my variometer wasn't working. There was nothing behind me but rocks and cliffs and I couldn't get back to the airport at Big Bear. There was nothing to do but head into the smog. Fortunately, as I moved away from the face of the mountain, the turbulence subsided, so I continued out and away to where the valley should be. As we moved south, Darryl came on the air and assured me that there were any number of landing strips somewhere below. I said, "Great! Locate one and circle above it." The air was quite calm as I descended. At about 600 feet above ground level, which was the upper reaches of the smog, I could make out roads and buildings below, and wonder of wonders - a crop duster parked alongside a field. I made a circuit and landed. I called Darryl, who had seen me enter the muck. I told him the field was adequate but there was a ditch almost in the middle. He landed without incident, however. We retied the ring and were soon above the smog again and heading for Banning Pass.

When we reached the Pass. The smog ended, and you could see the demarcation line between the smog of the basin and the clear air of the desert. In the distance I could see the green oasis that was the Palm Springs area, all date groves, golf courses and tree-lined streets.

Palm Springs



Banning Pass

Darryl brought me over the center of the field at two thousand feet, where I released and called the tower. I identified myself as a Schweizer sailplane, gave the registration number and requested landing instructions. I was told that the runway was 27 and that I was number four to land, following a Cessna 310. I called the tower back and repeated that I was a sailplane and wanted to land on the ramp. "Negative", the tower said. "The active is 27 and you are now number five! Follow the Bonanza." The top speed of the 2-22 was about the same as the stall speed of a Bonanza. I was now down to about 500 feet! I looked for an off-field alternative, but it was either rough desert or somebody's back yard. The moment of truth arrived and I literally dove into that string of traffic behind a Comanche. I had so much speed that I was still flying when I came to the off ramp. No problem: lift it up a bit then turn the corner and set it down.

A "follow me" Jeep came charging out. "Why didn't you say you were a glider", the driver said. "We thought you were saying 'Cessna'!" Fred operated a soaring school from that airfield, but he called them gliders rather than sailplanes, and that was the term the tower knew!

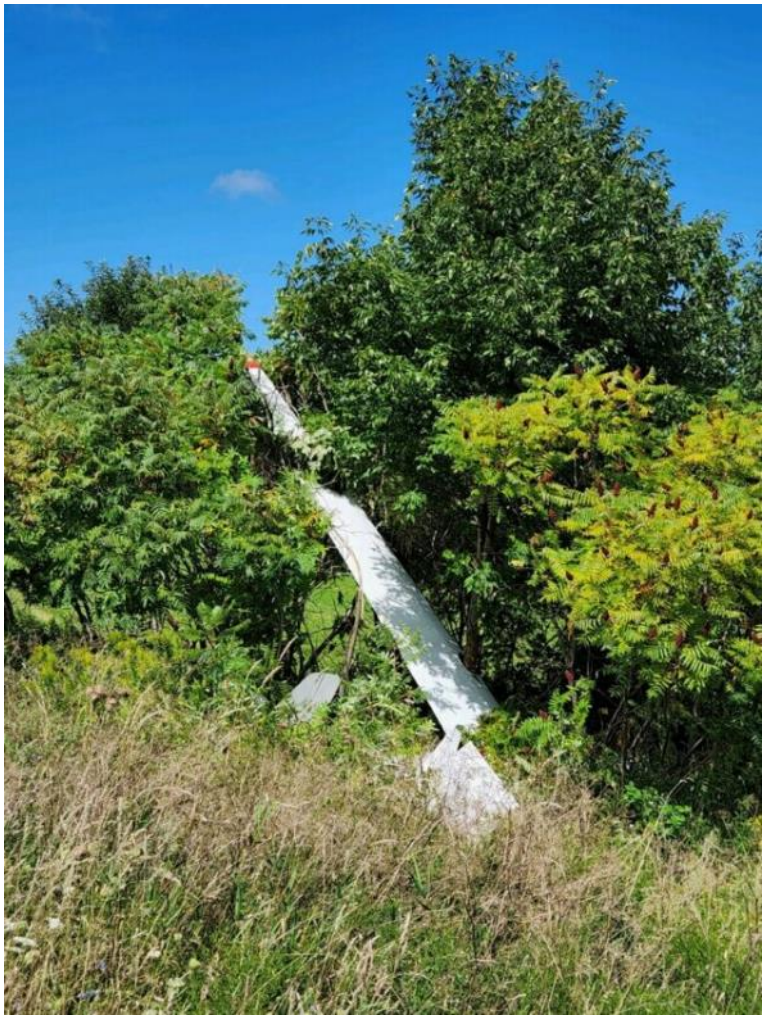
A couple of the pilots complained about the way I had sneaked in front of them, but under the circumstances, I really didn't think apologies were called for.

Thoughts on Sailplane Pilot Training from Gus Briegleb - 1952

Editor's Note: I came across this letter to Soaring Magazine while researching another topic. It's worth the re-print. "Everything old is new again!" This letter was in response to a previous article by Ban Shupack that Gus took exception to.

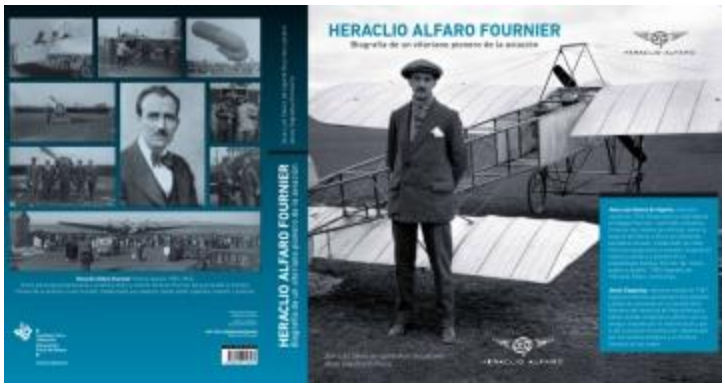
I personally wish to point out that the reason for the suggested stiffening of the flight examination was that anyone with a power rating may carry passengers and instruct with little or no previous experience. For example, any private power pilot who can demonstrate two landings over and within 200' of a line can carry passengers under any condition without aero tow or other similar towing experience. He may demonstrate soaring flight even though he may not know what a thermal is when he sees it and may even take up a ship which is improperly checked or with which he is unfamiliar simply because he has passed two spot landings. He need not know anything about care of tow lines, glider operations, procedures, etc. Also, a commercial power pilot may secure the privileges of instructing and carrying passengers for hire with no more additional knowledge or experience in gliders than two spot landings and demonstration of aero or auto or winch tow. He need not know instruction procedures, soaring, etc. His flight test can be taken in a simple-to-fly glider and I could personally check out some of the commercial pilots I have flown with, to pass his license requirements, in less than 2 hours time. He, therefore, in the eyes of the law, is privileged to instruct in any type of sailplane under any conditions, even though not familiar with many varied problems confronting gliding and soaring pilots. I am undoubtedly and "old croaker", but I would rather be an "old croaker" than a bold, dead glider pilot. Let me point out some facts concerning accidents which have happened in recent months. First, that of Paul Tuntland's was due apparently to structural failure and possible pilotage in a highly experimental glider whereas, that of Kim Scribner's was strictly aerobatics at low altitude. Both of these accidents were outside the realm of instruction or sport. The part that Ben doesn't mention or doesn't know of is: (1) a Baby Bowlus, with an experienced power pilot without sufficient glider instruction, lost its wings on aerotow and under rather hushed-up circumstances. (2) There was the loss of two lives in Colorado due to the spinning in of an LK. I personally don't know the details, but from my experience, spins can be avoided when proper instruction is given. (3) An unlicensed power pilot took up a passenger at the Torrey Pines meet and spun in, killing the pilot and seriously injuring the passenger. Again, not sufficient experience and no right to carry a passenger. (4) two weeks later, for some unknown reason, apparently pilotage or fainting of the pilot caused the death of the pilot and passenger at Warm Springs in an LK. (5) A commercial power pilot with no glider rating carrying a passenger tried to soar his LK in a thermal at 100' and spun in at 29 Palms, completely demolishing the craft with no apparent injury to the pilot or passenger. All of these accidents indicate (1) Lack of respect for sailplanes, (2) violation of what I consider lax regulations, and (3) improper and not sufficient instruction.

Let us not cast suspicion at regulation and do away with it as was done for the private power certificate, which, as a result, added to the number of fatalities and accidents and now a new, increasingly difficult flight exam with added experience requirements is being formulated. One other point that I think should be brought to the attention of the Soaring Society members and that is that the Soaring Society must support all phases of soaring, including the commercial interests. If it were not for the few commercially interested individuals in the soaring fraternity, SOARING magazine would feel the burden from non-existent sources of advertising revenue. If the writer and such other individuals as Joe Steinhauser, the Schweizers, and Salisbury at Warm Springs did not carry on commercial operations, many new members would not be able to join our soaring movement. and yes, even the SSA. In proof of this, the activities at El Mirage Field have aided in the winning of more National and International Records, issued more complete FAI Awards and "legs" and introduced more people to safe instruction practices than any present day club devoted to the same type of work, that is, instruction and soaring for sport. The SSA and the soaring fraternity needs commercial soaring facilities and manufacturers just as the commercial enterprises need the support of the soaring fraternity. Unfortunately, the attitude of many of the old diehards has been that soaring is of an aesthetic nature and should never be commercialized. This is indeed unfortunate since one is necessary unto the other. A healthy commercial soaring activity in this country would do much to aid in the soaring movement, in fact, much more than the so-called sports clubs have been able to do in the past 20 years of soaring in America. Such clubs once took the attitude that anyone could fly a glider. This resulted in everyone getting on the bandwagon, commercial companies springing up overnight, and manufacturing all types of gliders - and last but not least, all types of individuals climbing into them and breaking their necks due to improper supervision. This "old croaker" went through those days and can vividly remember the experienced power pilots causing many of the fatal glider accidents. Are we on the brink of such another cycle? Let us not go over the edge due to our short sightedness. Safety in soaring is a must and can be obtained through safe and sane regulation, experience, and the cooperation of everyone in the soaring fraternity.



Two pilots walked away from this one

Sincerely, "The Old Croaker" GUS BRIEGLEB



Books on Heraclio Alfaro — available on Amazon

← Heraclio Alfaro Fournier, Biography of a Vitorian aviation pioneer. by José Luis Saenz de Ugarte and Jesús Sagastuy.

A 1911 Spanish Pilot by Stephen DuPont →

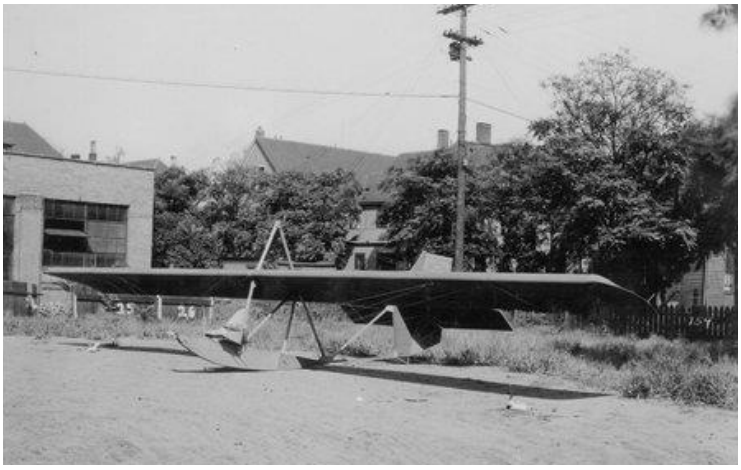
Heraclio Alfaro (1893-1962) - Spanish Aviation Pioneer

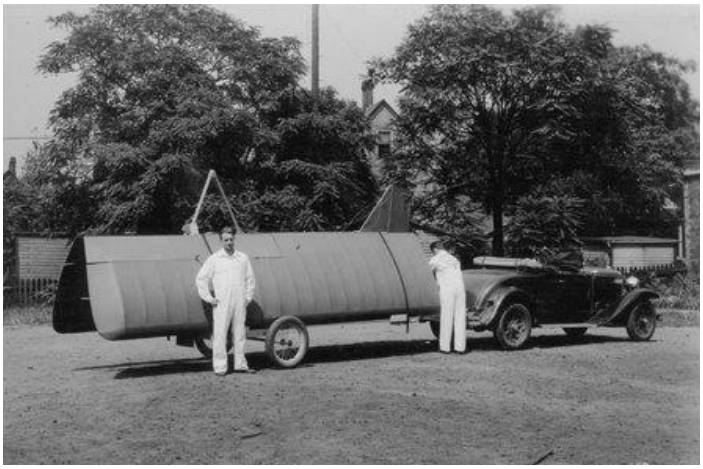
Heraclio Alfaro, also known as Heraclio Alfaro-Fournier (Fournier being his grandfather's name), was born in Vitoria, Spain on September 20th in 1893. At age 17, he went to France to study aeronautical engineering. He returned to Vitoria in 1911 and began designing and building aircraft. In 1913 he designed, built and flew the first airplane in Spain in 1914 for which he was knighted by King Alfonso XIII.

In 1917 he moved to Barcelona to build airplanes for the Spanish Air Corps. In 1920 he travelled to the United States where he worked on many aeronautical projects with several companies such as Harold Pitcairn Co. In 1927 he built the aircraft City of Peoria with which he won the race San Francisco-Honolulu.

Alfaro designed and flew airplanes throughout his life, many of them while he lived in the U.S. His best known airplane is a modification, for the 1927 Dole Trophy Race, of the Air King biplane *City of Peoria* with which he won the race from San Francisco-Honolulu.

Alfaro was an instructor at the Massachusetts Institute of Technology (MIT) for a time and around 1938 developed an axial engine that was produced by the Hendee Manufacturing Company, maker of Indian motorcycles. Little information is available on the Alfaro PTG-2 Primary Glider except that at least five are known to have been registered in the U.S. around 1930. It is likely that the Western Antique Aeroplane & Automobile Museum (WAAAM) PTG-2 is the only one remaining.





The Alfaro PTG-2 Primary Glider - assembled and on its trailer

PTG-2 at WAAAM

City of Peoria

Alfaro was born into a family of great intellectual and creative distinction. His grandfather was the creator of the "Heraclio Fournier" playing cards. Today the combined Fournier and United States Playing Card Company is the world leader in the playing card market.

Armed with the great advantage of family wealth and his own intellect, he studied, first, at the Colegio de los Marianistas de Vitoria, where he had among his teachers Luis Heintz, a great fan of archeology and aviation; and later in France and Liège (Belgium), where he learned French, and with it, the possibility of learning about the rise of French aviation.

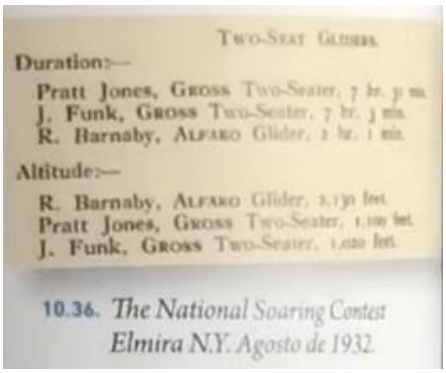
Returning to Spain in 1913, he served as an assistant professor at the recently inaugurated Vitoria Aviation School. There, he worked for its founder, the French pilot, Leonce Garnier, accompanying him on flights and even taking charge of the school during his absence. There, also, in June 1914, he built a device that would end up being a milestone in the history of aviation: the Alfaro I , the first airplane manufactured and piloted by the inventor himself in Spain (it was a torpedo-type monoplane, with a 7-cylinder engine and a speed of more than 100 km/h).

Despite recognizing the advantages offered by the Lakua airfield (possibility of flights, contacts with pilots), the young Alfaro considered the Vitorian experience from an attitude of improvement and learning. The broad echo of the aerial exploits that he already carried out in Madrid and Salamanca served as a contrast to judge more objectively the technical limitations of the Lakua airfield. It is not surprising, therefore, that, in 1915, after several exhibitions at the Cuatro Vientos aerodrome, he moved to the Getafe Flight School, where he worked for three years as Technical Chief, under the orders of the captain and accredited pilot Alfredo. Kindelan. There, in addition to flying, he performed military service, which allowed him to become familiar with military aeronautics. Through Kindelán and several military engineers - with whom he piloted in Cuatro Vientos - Alfaro entered into relationship with the Hereter Workshops in Barcelona, where he began to develop his participation in military aeronautics. During the next three years (1917-1920), he built four airplanes for the Spanish Air Force, while designing the first Pescara helicopter and a fighter plane (in a competition organized by the Ministry of War).

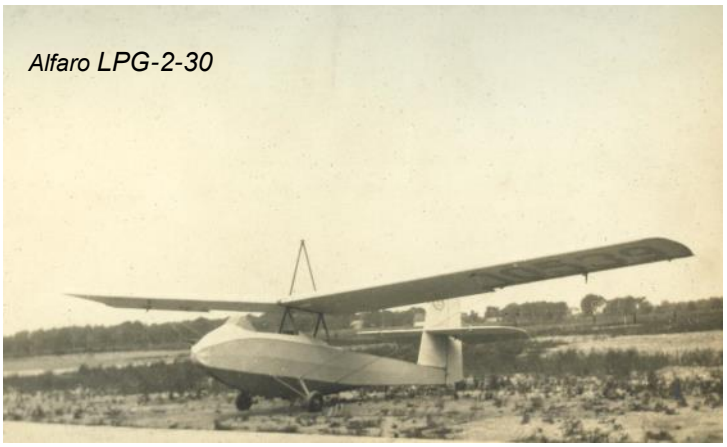
In October 1920, he went to Ohio; He studied production methods in Cincinnati and later designed a fighter aircraft for the Dayton Wright Co. (for which he won a $3,000 prize). After a stay of just two years, he returned to Spain, although as a representative of several American aeronautical companies. He settled in Madrid and continued building airplanes, such as the Alfaro 11, a single-seat biplane. In 1924, however, undoubtedly moved by the contrasts experienced in both countries, he returned to the United States, where he would reside until 1945.

This is a later glider designed by Alfaro when he was in the United States, called LPG-2-30, registered #10539 in the US. This photo was taken on Rhodes Farm, where Ralph Barnaby was flying it in the 3rd National Soaring Contest in 1932.

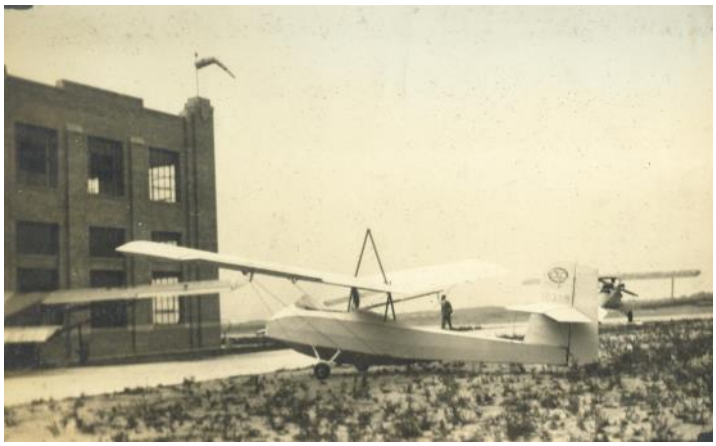
Ralph Barnaby flies the Alfaro LPG-2-30 over Rhodes Farm 1932



Back in the States, Alfaro's first position was as a design engineer at the Glenn L. Martin Co. of Cleveland. Since his work obligations were not excessive, he was able to combine them with his studies.



Alfaro LPG-2-30



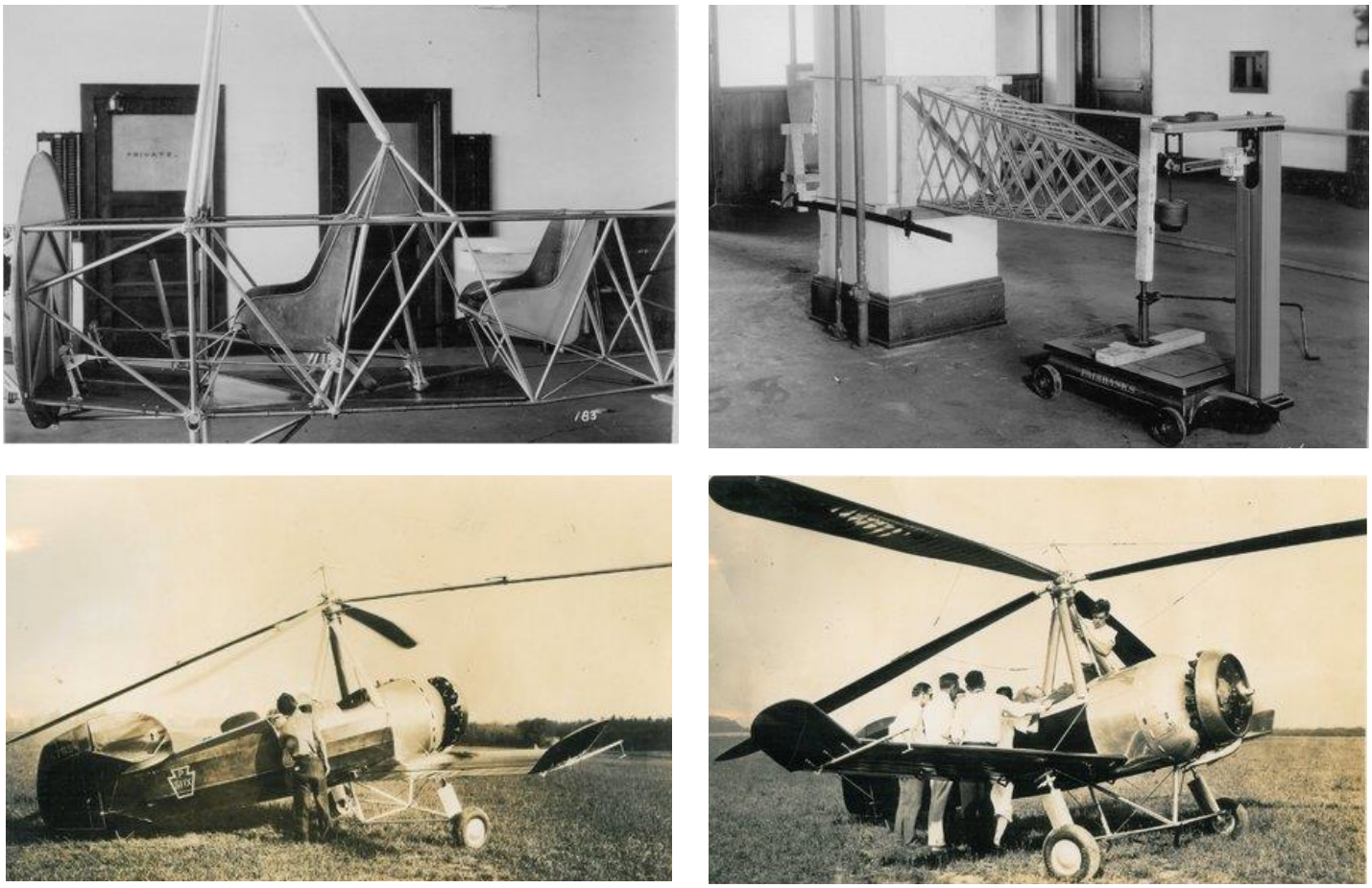
In 1926 he graduated in aeronautical engineering from the Massachusetts Institute of Technology.

During those years he moved the center of his activities from design to specific engineering problems (for example, flap ailerons; a model of his would still be used half a century later). This change is evident in the projection of four aircraft; one of them (a biplane with a Warner Scarab engine, designed for a safety contest) had advanced features. Experienced in airplane design, he was able to design and build an airplane (the *City of Peoria* , equipped with a Wright engine; commissioned by National Airways, in 1927) in the record time of 23 days, a job that led him to appear on the front pages of the local press and to reach - in the field of public opinion - the peak of his North American stage.

Alfaro with his "Baby" engine

The originality and fame of his models allowed Alfaro to occupy the aeronautics chair at two prestigious universities: Western Reserve University, in 1929, and the Massachusetts Institute of Technology, in 1932. He continued his airplane projects (presenting, for example, the Guggenheim competition with a prize of $100,000), also founding the company Aircraft Developments Inc., a firm that built up to twelve different types of engines. Trying to reduce the weight of the engines, he realized that the newest materials in aviation allowed him to build an engine of great significance for North American aeronautics: the Baby engine. Nobody before Alfaro had built a tiny and powerful engine, weighing 50 lb. , 24 horsepower and 3000 rpms, like he did.

Perhaps less impressive, but in no way less important, is the spectacular progress experienced by the embryo of the current helicopter - the **autogyro**. Throughout the first quarter of the 20th century, an extraordinary invention took place that was the protagonist of a Murcian engineer of the same age, Juan de la Cierva. An ingenuity that, at that time, was in a poorly developed engineering state, in addition to being almost unknown in many countries, including the United States. In 1928, reaching an agreement with Harold Pitcairn (director of the Pitcairn Aircraft Co.) and with La Cierva himself, Alfaro introduced the autogyro in the United States. For several years he shifted the object of his research from the airplane to the autogyro. He realized that the mechanical starter transmission technique was practically in an embryonic phase and managed to design - and improve - the mechanical starter for the rotor, achieving takeoff in a jump. From these achievements arose, in 1930, his association with the Autogyro Co. of America, with which he designed a new model that significantly improved the La Cierva prototype in all its parts (fuselage, rotor, thinner propellers, fixed wings, etc. .). Later, new models and more technical improvements would come, in specific aspects such as vertical descent, air resistance and rotor startup.



*The **Autogyro** 1930 with 110hp Warner, built by Alfaro under contract from Pitcairn, and was also known as the **Pitcairn-Cierva PCA-2-30**.*

However, when both his research work and his inventive activities were at their peak, he returned to his homeland, suffering from Parkinson's. He spent the seventeen remaining years of his life in Madrid, San Sebastián and Vitoria, maintaining abundant correspondence and collaborating with North American and Spanish companies. The Aero Club of Vitoria, which was founded in 1953, is named after him.

https://aunamendi.eusko-ikaskuntza.eus/en/alfaro-fournier-heraclio/ar-8472/

https://www.homepokerinfo.com/fournier-playing-cards/

http://www.aerofiles.com/regs-10.html

AEROCLUB DE VITORIA

HERACLIO ALFARO

E-ATO-066

Alfaro LPG-2-30

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