

My life in the Air

Early on I commented on my interest in aviation. I built model airplanes, and read stories about flying, especially WW I flying aces. In September, 1941, I wrote to the British Embassy about volunteering for the Royal Air Force. A few days later I received a response saying the RAF could only accept American citizens who were fully trained. They suggested the Royal Canadian Air Force. I didn't follow through on that. Perhaps the RCAF didn't seem as glamorous, or perhaps, as Lou suggests, that was about the time I met her and . . .

I did fly, as an observer, a few times during WW II in light aircraft (I think they were Taylor Crafts). I wrote about one occurrence when I was Survey Officer for the 30th Infantry Division. I also flew a couple of times in combat. This was for the purpose of directing artillery fire. I found it unsatisfactory. It is hard to hold binoculars on a possible target while bobbing about in a small plane. Also, the pilot was reluctant to fly above the front lines. I understood this better one day when I saw one of these planes surrounded by six or more air bursts from German anti-aircraft artillery. From several miles back of the lines, only major columns can be spotted.

My son, Dick, got into the air before I did. He rode a lot with his friend, Jim Dammon, and around 1965 bought, with another friend, Norm Williams, an Aeronca 7AC. This plane was known as the "Champ." It had two seats in tandem, a 65 horsepower engine and a gross weight limitation of about 1200 pounds. It's cruising speed was about 65 mph with redline at 129 mph. It got off the ground in about 250 feet.

The Champ had no electrical system which meant, among other things, that it was started by pulling the propeller rapidly through a cycle by hand. Also it had no lights - hence, no night flying, no radio, and only a magnetic compass for navigation. The Champ was a "Tail Dragger," that is, it had two main wheels in front and a tail wheel. This particular Champ had been built in 1946. I heard somewhere that Niel Armstrong learned to fly in a Champ.

When Norm wanted to sell the Champ to buy a more powerful plane that Dick couldn't afford, Dick talked me into buying Norm's half. Owning half a plane made it almost obligatory that I learn to fly. On November 30, 1966, I took my first lesson at Aretz Airport with Flight Instructor Jack Kennedy (1596030CFI). First lessons involved starting the engine, taxiing, take-offs and

landings, use of carburetor heat when idling, and use of the meager instruments (gas gauge, tachometer, airspeed, oil pressure and temperature, turn and bank indicator, altimeter and magnetic compass).

Several of my early lessons were given by Don Aretz who owned the airport his father had started in the 30s. Don was a big man also. Between us we must have loaded the Champ to near it's maximum!

With instructor Tom Woods' approval, I "soloed" on January 19, 1967 after about 17 hours of dual instruction. My first solo flight was for 15 minutes. Jack Kennedy was also a frequent instructor.

On the ground, the Champ was steered by a combination of toe pressure on the rudder pedals and heel pressure on the brake pedals. In learning to fly, that was the only thing I found any difficulty with. My instructor would frequently find it necessary to take over from the rear seat. Later it was always a mystery to me why I had that problem. In the air, of course, the Champs headings and attitudes were controlled by the "Joy Stick" in combination with the rudder pedals.



Aeronca 7AC N 81630 "Champ"

Lessons leading up to the solo took place during winter months bringing another aspect of the Champ to mind. It was a fabric covered aircraft with no insulation against outside temperature or noise. A muff surrounded the exhaust manifold and conducted heat into the cabin. This entered the cabin through a two inch aperture just in front of the front seat passenger's left foot. That foot stayed somewhat warm. The rest of the front seat passenger and the rear seat passenger got pretty cold. In the Champ, the student sat in the front seat. So I was the one with the warm left foot toes. The front seat was also where the pilot typically sat.

I was cleared for cross-country solo flight af-

ter 20 hours of instruction. I completed a mandatory 100 mile cross country flight to Bloomington, Illinois, on September 1, 1967. There was little navigational problem with this flight as there is straight road which leads directly from Lafayette to Bloomington. Some earlier flights had presented more of a challenge. Since the Champ had no navigational electronics, I had been taught that smoke blowing from trash burning and laundry on clothes lines were ways to determine wind direction and force so as to allow for proper heading correction. I quipped that my flying was good for the air quality, because no one burned trash when I was in the air. There wasn't much laundry done either. Another navigational aid for fliers of such primitive airplanes as the Champ, was descending over towns to read the name of water towers. Later experience with planes equipped with more sophisticated electronic gear made all this seem humorous. This is put in perspective by a quip from my Instrument Ground School instructor, Professor Joe Vorbek. When I mentioned that while flying the Champ, I found a road map more useful than navigational charts, he rejoined: "I suppose you carry a calendar for time and distance calculations." The Champ was a "fun" plane to fly!

I enjoyed flying the Champ a lot. On March 15, 1969, a beautiful, clear Sunday afternoon, I climbed the Champ to 10,000 feet over Lafayette. I flew higher in more powerful planes, but that was quite an altitude for the Champ. A constant "nose up" attitude was required to maintain the altitude at that level. Another pastime was chasing cars on the Interstate. I wasn't at their level, of course, but I flew along trying to keep the shadow of the Champ on the car I was pursuing.

I had logged a total of nearly 100 hours, some with instructors to become familiar with other aircraft, before I got my Private Pilot's License. In all, after my first solo flight, I had 24 hours of instruction. It was just fun to be out flying in the Champ so I didn't rush.

To complete the requirements for the Private Pilot's license and to have the capability of longer flights with my family, I joined the Purdue Pilots. This was a club operating out of Aretz Airport and composed mostly of Purdue students. Hourly rates were fairly reasonable. I used their Cessna 172, N5764R, for my test flight. This plane had fixed tricycle landing gear, fixed propeller, 150HP, and could cruise at about 110 MPH.

On October 10, 1967, Francis Halsmer signed my log book: "Passed all standards for Private Pilot Flight Test." Later that day, I took up my

first passengers: Dick, Jim and Lou Fuller and a friend, Harris Lloyd.



Purdue Pilots' Cessna 172

At various times I took colleagues, Merrill Shanks, Bob Zink and Jean Rubin for rides in the Champ. They were all Purdue Mathematics Professors and all became pilots, themselves. Bob went the farthest, becoming a commercial pilot and flight instructor. Jean got an instrument rating.

All light aircraft are mandated to have an airworthiness inspection annually, Dick and I usually had Marvin Higginson perform this inspection. After one inspection, I think this was after Dick had moved, Higginson informed me that he couldn't OK the Champ as the main wing spar was cracked. This was devastating information. I looked at the spar myself and was convinced that there was no crack, there was simply a line where two pieces of Spruce had been glued together. Higginson didn't believe this was ever done. I called Bellanca, which had taken over the remains of the Aeronca factory and spoke to one of the engineers, who has also worked for Aeronca. He assured me that such construction was employed. Higginson accepted this and OK'd the Champ.

The gas tank of the Champ was located just forward of the instrument panel. The fuel level was indicated by a float fastened to a visual indicator. This was just outside the windshield. The gas line ran out from the center of the tank just above the pilot's knees. A leak developed where the tube left the tank. Aviation fuel dripping on your knees is not desirable. So again Champ was grounded. Again from Bellanca I found that there was a supply of old tanks left over from Aeronca days. I bought one, but it just had a float for a gas level indicator, not a sort of meter like the original. I took to a metal shop owned by John Bradshaw, Jim Bradshaw's father, and had the gauge removed from the old tank and attached to

the new one. I was back in the air again!

We made several trips in Cessna 5764R, the Purdue Pilot's Cessna 172. These included trips to Moline, IL, and Owatonna, MN. On July 5, 1968, I flew this Cessna to Skyway Airport, south of Indianapolis to pick up Dick and Donna and their luggage. It was a very hot day, the runway was short and sodded. Although I ran up the engine to full power before starting my roll-out, the heat, short runway and load gave me one those instructive experiences. These factor combine to produce a near fatal effect. We lifted off near the end of the runway, with stall warning indicator sounding. I had to bank slightly to the left for the right wing to clear a tree, but we made it!

This episode would probably have qualified for an "I learned about flying from that" article in a flying magazine. This take off showed, dramatically, the effect of heat on lift.

In August 1968, Merrill Shanks and two forgotten colleagues from the Krannert School of Business joined with me to buy an old Cessna 182 N2029G. It had a Day-Glow orange vertical stabilizer and fairly antiquated electronics, but was capable of instrument flight rule flying. I flew 29 George, as we called it, about 90 hours. As I recall, 29G was manufactured in the 50s. Cessna 182s had 230 HP, variable pitch propellers, and cruised at about 130 MPH.



Cessna 182 N2029G

In June of 1969 Lou and I took niece Jane Fuller and Jim to visit friends Merton and Joan Pubols, and their children, at Brookhaven, Long Island, New York. I was flying 29G. As we flew east we ran upon clouds. I hadn't expected them and didn't think they extended along our route too far. However, the clouds thickened and I did have to climb to stay clear of them. I was not trained to fly solely by instruments at this time. My plan of escape was that we could fly back if

necessary. About the time for a decision on continuing or turning back was to be made, a large hole in the clouds appeared. I spiraled down through this and landed at University Park in Pennsylvania. I made the descent more rapidly than I should have causing some ear discomfort for my passengers. That's another thing one learns as part of instrument flight training. The clouds were high enough that we could fly under them, so we continued on to New York.

While at Brookhaven I flew to a nearby field to have some work done on the radios. So they could work on the radios, I had to remove some items from the luggage compartment, I laid a suit bag across the fuselage forward of the stabilizers. When I took off I forgot it was there! I realized my error when I landed and went back to search for the bag. I had every expectation that it had fallen off and landed in somebody's yard. Fortunately, it had fallen off at the first turn while taxiing, so I got it back easily.

When we took off to go home, the radios still weren't working to my satisfaction. We returned to Brookhaven so I could take the plane back to the repair facility. That meant another night at Brookhaven with the Pubols. Joan remarked that it was a pretty sneaky way to get clean sheets.

When we did start back to Indiana, we were forced by low clouds to land and wait until they had passed. This landing was on one of several undeveloped airports which the State of Ohio had built. It was just a landing strip with no facilities. Several such experiences wouldn't have happened had I had the instrument training.

In August of 1969, Lou and Jim and I took Ginger Patterson and flew to Denver to visit Dick and Donna. While there, Lou developed a neurological tumor and was seriously ill for about three weeks. Finally, she was well enough for Jim and me to return home. (It was time for his school to start and Ginger had been flown home earlier.) I did the usual preflight inspection except not thoroughly enough on one item. As we ran down the runway for the take off, I noticed that no airspeed was indicated. I aborted the take-off and returned to the hanger area to find out what was the problem. It seem that in the Denver area there is a creature that likes to build cocoons in small passages. One had done this in my pitot tube, a device for measuring the differential between the ambient air pressure and the ram pressure of the plane passing through the air. This difference is what produces the air speed indication.

This was fixed and Jim and I took off about

two hours late. We had just gotten off the ground when Jim said: “Dad, I forgot to go to the bathroom.” There are no lavatories in Cessna 182s. He had to use a cup which we emptied as we taxied in at our first stop, Omaha, Nebraska. The rest of the trip was uneventful.

In the summer of 1970 I joined the Purdue Staff Aero Club. This club’s members were either Purdue staffers or local business men. Flying was taken seriously by this group and they had excellent equipment: A Cessna 172, a Cessna 182 and a Cessna 210. I was checked out in the 182, Cessna N2867R on July 10 and two weeks later in the 172 Cessna N84162, I didn’t check out in the 210 until March of 1971. We subsequently made many family trips in these planes and their successors as the Club up-dated its equipment. The Cessna 210 “Centurian” was a much heigher performance airplane. It had 450 HP, variable pitch propeller, retractable landing gear, and cruised at about 200 MPH. All these Staff Aero Club planes had full instrumentation, with the 210 also having an autopilot. The 210 didn’t need a lot of handling, but because of the speed, it required constant monitoring so as not to overfly check points.



The 210, 182 and 172 of the Purdue Staff Aero Club

Bob Zink, whom I had introduced to flying in the Champ in November, 1967, was now a Flight Instructor and verified me qualified to fly this much higher performance airplane, the Cessna 210. Bob also gave me several FAA mandated biennial flight reviews.

A fellow mathematics colleague, Professor Mike Keedy, who was also a pilot and flight instructor, started giving me instrument flight lessons in March of 1971. After several lessons, one on a particular windy day ended with our club’s 172 (Cessna N84162) up on it’s nose and one wingtip. The FAA rated this an “incident” for Mike, who as instructor was pilot in command. Somehow, I didn’t enter it in my log book. For some time after that, I had the feeling of tipping whenever I taxied in a wind. Eventually that passed. Two years later, on March 3, 1973, I began a series of intensive instrument lessons with

John Hyman. Later John flew for Pacific Air, a freight hauling company based at the Purdue Airport. On an instrument approach to the airport, the plane on which he was copilot crashed killing him. I think it was a wind shear problem.

On April 20, 1973, I completed the flight test requirements for an instrument rating on my Private Pilot’s license. I flew to Danville, Illinois, for this test. J.C. Engelhardt, GL-19-16 wrote in my log book: “Instrument Rating Flight Test Approved.” By this time I had amassed almost 500 hours in the air.

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VII. <i>William R. Fuller</i>				VIII. <i>John W. Smith</i>			
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When the Champ came up for an inspection in 1973, Higginson determined that the fabric no longer passed the puncture test. This test is part of the airworthiness examination. I happened to mention this to a colleague, Jim Maris, who was also head of the Aviation Technology Department at Purdue. Jim was the leader of an Explorer Scout Troop in the area. They were looking for a project. Jim proposed to me that I bring the Champ to the Purdue Airport where the scout troop would do the work under his supervision.

On October 5, 1973, I made the fifteen minute flight from Aretz Airport to Purdue. The scout troop stripped the Champ, refinished all wooden stringers, zinc-chromated the metal superstructure and readied it for recovering. The troop members did the tail surfaces and I hired an Av Tech student to finish the job. The Champ resided at the Purdue Airport until April 1, 1975. For those 18 months I didn’t fly the Champ.

On April 1, I used a portable radio owned by the Av Tech school to contact the tower about a test flight. I made five take-off and landings to verify that the balance was OK, and flew the Champ to Halsmer’s Airport which was its home for the next several years.

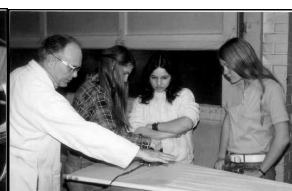
The Champ Project



The Champ arrives at Purdue and goes into the "hole"



Reworking the engine baffles Repainting the metal parts



Revarnishing the spars Jim Maris supervises recovering

I continued to fly the Champ as well as the other planes mentioned. Relating all these trips would be boring as they were mostly routine flights. The ones which weren't are the interesting ones. I've already told of some of them.

On one occasion, American Mathematical Society meetings in Washington, DC, in January, 1975, I flew the Cessna 210 to Dulles International Airport. This was the biggest airport at which I landed. It was uneventful, except for the complicated taxing instructions. Of course the runways were so wide that I could have landed the Champ cross-ways. We also landed, for refueling, a few times at abandoned Strategic Air Command bases in Kansas and Nebraska enroute to and from Denver.

During Instrument Flight Training it had been emphasized that the main purpose of such expertise was to avoid problems with the weather. For the typical low-time pilot, charging off into bad weather is not recommended, even with an instrument rating. The training did give valuable skills that could help in flying in general and is an essential if one gets into actual instrument conditions. On only a few occasions did I actually need it.

On October 24, 1976, a fellow member of the Purdue Staff Aero Club called me to say that an-

other member had flown our Cessna 172 to French Lick, Indiana, and because of bad weather and lack of instrument rating could not get back. A dentist who had to get back was with him. Would I go with him in our 182 to fly the 172 back? We were off and made an uneventful instrument approach to French Lick.

As we deplaned, the grounded pilot rushed up to asked: "Did you bring the charts?" In order to allow more space for luggage, he had left, in the hanger at Purdue, the charts necessary for instrument flight! The operator of the French Lick airport had some old charts, but they were by a private manufacturer, while I was familiar with the government charts. A comparison of these with current government charts showed them to have all needed information. I elected to use them for the return trip. At this point, the dentist, who, with his wife, was going to be my passenger, seemed a little concerned. I light-heartedly told him: "More than 50% of the flights that start out this way end up OK." I don't think he was much relieved!

Clearance had to be secured by radio from the Indianapolis Center. Having that, I took off first in the Cessna 172. We were soon in the clouds - I loved to fly in the clouds - and climbed out into brilliant sunshine at about 5,000 feet. At this point my passengers, the dentist and his wife seemed relieved, but said: "You mean you do this for fun?" At Purdue an instrument approach was required, but was uneventful. This was one of my more interesting flights!

One of the nice things about this flight was that somebody paid for the time. I had only one other occasion like that. In July 1974, a friend and fellow Club member, Byron Meade, was temporarily grounded but wanted to take his wife and sons to Milwaukee for lunch with one set of grandparents. He asked me if I would fly them up there, I did. We used the Cessna 210 because of six place seating. It was made on an instrument flight plan for Byron's benefit but was uneventful. Had a nice lunch.

Another instrument occasion was in December, 1979, when Lou and Jim and I flew to Denver for Christmas. When we were ready to come home, we found the plane, which we had asked to be defrosted, covered with ice. The airport personnel had put the wrong plane in the hanger. The next day, New Year's Eve, we got underway. Although it was a beautiful day, we were flying on an instrument flight plan. I usually did this so FAA would know where we were. Over central Nebraska, Denver Control Center called me and said

to switch to Minneapolis Center. I acknowledged and called Minneapolis. They did not respond so I switched back to Denver to tell them that. When I tuned to their frequency, I heard them calling me; they had not heard my previous response; nor did they hear me now. I looked at my gauges. The navigational needles were centered – excellent pilotage, I thought. However, all the other gauges were pinned at their zero positions. The center is the zero position for the navigational meters – I had not necessarily been doing a great job of holding my course – I had no electricity. The alternator had failed. There was enough power for the radios to receive, but not transmit.

The protocol in such situations is to leave the instrument flight level to which you are assigned and proceed on VFR (Visual Flight Rules) at a 500 foot lower altitude. I knew I was not far from the Platte River and probably near Grand Island. I found the river and flew along it until I sighted Grand Island. I circled the field hoping for a green light to land. When none was given I landed anyway and reported my problem. They were expecting us as Denver Center had told them of losing contact with me. We were lucky to find a mechanic to fix the alternator. As it was we spent New Year's Eve at the Holiday Inn in Grand Island.

The next day an instrument approach to Des Moines did not seem right. Apparently the new alternator caused the magnetic compass to be somewhat off. The following day there was snow. The forecast was not good. We left the plane and drove home in a rented car. It was the only time I had to resort to such measures. I flew back with another pilot a few days later and retrieved the plane. On the way back to Des Moines, I flew "under the hood" gaining some valuable instrument flying experience.

Actually, this was my last flight in a Purdue Staff Aero Club plane. I wasn't flying much anyway and shortly thereafter resigned from the Club.

One memorable Cessna 210 flight was a trip to the Anoka County Airport in the Minneapolis area on August 1978. I was to pick up Jim who had been visiting cousins and my brother Bob and his wife Rhoda. I was flying by Instrument Flight Rules. As I approached the Minneapolis area the weather closed in more and more. Minneapolis Center told me of an opening enroute to Anoka airport and gave me vectors to fly, saying "I think I can get you through." I assured him that I hoped so. Soon I encountered what I considered extreme turbulence. Cans of oil, which we

carried with us to save money, were flying about the cockpit. This was when my training was especially valuable. John Hyman's words echoed in my ears. "Fly attitude." That is don't worry about the bouncing around just keep the plane level and on the correct heading. I reported my plight to Center. When I inadvertently called him Denver Center, he knew I was under some stress and gave me alternate vectors around the cities to the south. This allowed me to arrive at my destination by a some longer, but smoother route. As I approached Anoka, Center said "Your wheels should be down." Further evidence that he had sensed my stress.

During my first year at Purdue North Central (1978) (See *My life on the Road*), I frequently flew up there. There was an orthodontic laboratory just across U.S. Highway 421 from the campus. They maintained a runway for dentists who flew in for seminars and to learn new techniques. With their permission, I landed there, parked at the end of the runway and walked across to my office. There were no instrument approaches at Orthodontic, so, occasionally, I had to file an instrument flight plan for Michigan City airport, complete the approach, usually from out over Lake Michigan, until I was under the clouds and then fly out to Orthodontic. While this was a fun, and even glamorous, way to go to work, it really wasn't efficient. Driving to the airport, getting weather briefings, waiting for clearances, the extra flight time when instruments were required, made it actually quicker to drive.

I logged this trip to the North Central Campus forty-four times by air. From mid November until March, lake snow effect made flying too uncertain. Sometimes it wasn't even possible to drive. I only flew there in the Cessna 210 twice. It was too fast a plane for the length of the Orthodontic runway. The second occasion was a dewy morning. I feared I would slide off the far end of the runway as I made the approach at too high a rate of speed. I didn't use this plane for that purpose anymore!

Pilots sometimes quip: "Don't fly unless you can afford the time!" Several of our experiences illustrated this. Weather ahead once caused us to spend a night in Lincoln, NE. An added problem to this was that there was a Morticians Convention in town and very few motel rooms were available. The FBO at Lincoln helped us find a place to stay. On a return from Denver on one trip, weather forced us south trying to circumnavigate clouds. When we saw that we couldn't make

it that day we spent a night in Cape Girardeau, MO.

A flying magazine used to carry a monthly article: "I learned about flying from that" in which pilots related how unforgiving the air can be. My story about picking Dick and Donna up on a hot day belongs in that category. Another, less dangerous, event occurred on a landing at Laramie, WY. As I rolled out from the landing, the airplane's wheels rattled as if they would fall off. I asked the FBO to look into them while I was at the Math meetings there. He asked: "Is this your first landing at this altitude, sir?" I had neglected to take into account the much higher ground speed associated with air speed at that altitude!

I found flying to be a relaxing and safe way to travel. Of course, the weather or mechanical problems sometimes forced delays or interruptions in cross-country trips. These were a few "interesting" experiences.

Altogether, I logged about 1100 hours. The last logged flight was a "biennial flight review" administered by Bob Zink on June 20, 1984. I think I flew once after that to take Kara and Karla for rides in the Champ.

There are more stories. Maybe I'll review my log books and tell more of them someday.



Me, about to make a "three point" landing in the recovered, repainted Champ. The landing field was Halsmer's airport.