



Victor Comptometer



Boeing 737 MAX

Long Island Early Fliers Education Foundation

Long Island Early Fliers Club

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Editor: Fred Coste Volume 5, Issue 1

Editor's Note:

It was about 1970 when I bought my first electronic calculator. Ultra-modern for its time: a product of the Victor Comptometer Corporation sporting a '70's off white plastic shell with bright orange buttons. The device was the size of a portable typewriter. Multiply two numbers, press the equal sign and you would watch it pound away several times in an impressive demonstration of electronic wizardry that printed out the answer on a little roll of paper. Within a year Sony had replaced that impressive machine with an electronic device that was about the size of two VHS tapes. It was quiet, worked on battery power, you could carry it with you and the numbers were illuminated across the top of the unit. I never would have guessed that landing on the moon would change the way I could figure out mathematical problems. I used to race those devices by doing the problem in my head. I could often beat the Victor to the right answer, but not the little Sony.

I remember walking into Comp USA and being approached by a guy who wanted to show me a PDA. I asked: "OK, what's a PDA?" "Personal Digital Assistant," he said – "Now you can keep track of all the things you need to do on an electronic device." I told him that I keep a list in my head; for the stuff that's a few days out, I write in my pocket calendar, and I don't have to wait for it to warm up.

I remember thinking, if people start doing things like that, they'll lose the ability to think!

Progress continued, and I knew that someday electronics would work its way into an airplane; however, I did see some usefulness for it in the cockpit. I wondered if you could make something like that to bring up an approach plate so you wouldn't have to grope through the bulky Jepp binders that were loaded with what seemed like tissue paper. Now that would be useful!

Automation in the cockpit could be very useful and even save lives, provided, of course, that we stayed up on our stick and rudder skills.

Early aviators needed to be exceptional at what we call multi-tasking, today. The faster the airplane, the faster the pilot had to think. The more complex the airframe the higher the skill level needed to be. The inability to keep up often meant a natural culling of the pilot community, but stick and rudder skills could almost always save the day.

Wartime caused more reliance on airpower; the demand for pilots became overwhelming. Initially there was no formal pilot training program and the statistical data proved to be quite scary. During World War II, there were more than 15,000 fatalities during

pilot training in the United States. These were lives lost before ever seeing the first day of combat overseas. They simply never got that far. More than 7,100 aircraft were destroyed, that's about 40 airplanes per day having never left the U.S. to fight anyone!

Some accidents were because of poor and difficult to handle aircraft designs; however, most were the result of pilot error; stupid mistakes and a lack of standardized training.



One thing was certain; we had to develop a system to train pilots as the possibility of war grew ever closer.

The U.S. Army Air Corps developed three divisions: Primary, Basic and Advanced training. The only problem was that each time a class moved from

level to level, the fatality rate doubled! Some of this was attributed to overconfidence; pilots being emboldened by moving to the next level, but being unable to cope with more complex systems and faster aircraft.

It was also a time of setting new records and trying new techniques.



Feeling the pressure to develop qualified pilots and aircrews, Hap Arnold, realized that the approach was wrong.

In 1941, General Arnold realized that screening potential pilots based upon whether or not they had a college education would not provide an ample supply of pilots for the Army Air Corps. Instead, they started screening applicants based upon a standardized testing system.

This simple change in approach opened the opportunity to become a pilot to people who did not go to college. The

Air Corps also opened the program to enlisted men, which gave Chuck Yeager the opportunity to become a pilot. The program gained momentum when the New York Daily News ran an article entitled: "Rickenbacker Didn't Go to College."

The flight physical was considered the toughest part of the screening process; a situation that seemed to continue into the early days of the space program. Most of the applicants who were rejected were not able to pass the physical. Oddly enough, the physical exam had nothing to do with being physically fit!

Applicants went through nine weeks of training before they could start actual flight training. The flight portion took an intense 7 to 9 months.

Primary instruction was done at civilian flight schools, often in Piper Cubs, because there were not enough aircraft nor instructors in the Army. The instruction staff ranged from retired Army pilots to barnstormers.

Basic and advanced flight training was the responsibility of the Army Air Force, because the student pilot started flying faster and more complex airplanes. The training was now much more serious as

students started cross country flights at night, as well as learning combat maneuvers.

The final phase of flight training was the transition to the plane to be flown in combat. These aircraft were the fastest and most complex aircraft in the Army Air Forces. This was also the phase in which the pilot was at his peak in training and confidence. He had survived a very grueling process and was about to become a combat pilot.

By the time the student pilot reached this point in his training, he had seen up to nearly half of his class eliminated through academic failure, lack of flying ability, or death.

Accidents had always been part of Air Corps life. As a result, it was of extreme importance to develop methods to investigate and mitigate the number and severity of aircraft accidents.

The Office of Flying Safety attributed over half of all accidents in the continental United States to pilot error. This was a wide-ranging category covering everything from lack of familiarity with an aircraft to a pilot with more guts than brains.



The Army Air Corps took many steps to address the increasing number of accidents. The first was to establish the Office of Flying Safety in 1942. This office was the umbrella headquarters for safety procedures, education, and training.

Although the Office was initially undermanned and underfunded, its staff almost immediately began issuing guidance for the investigation of accidents. The primary purpose of these investigations was to discover the cause of the accident. The Office of Flying Safety began collating the data in order to begin prescribing steps to prevent or mitigate future accidents. The next logical step was to educate the Army Air Forces about safety.



After 1947, the emphasis on safety became part of the Air Force's campaign to enhance its image as a professional force. In a postwar study, Army Air Forces' wartime experience with accidents was the driving force behind stricter standards in safety. In addition, the study noted that flight safety had also become an issue of national security as a means of reassuring the public about the professionalism of the newly independent Air Force.

Combat flying was still a dangerous business and, in that respect, the Air Force needed pilots whose attitude was not that much different from that of the prewar pilots. What had changed was the overall culture of the Air Force as it transitioned from the prewar "club like" organization, as Curtis LeMay described it, to a professional force with a major role in national defense.

These traits and attitudes began to define the culture of the Air Service and the Army Air Forces throughout World War II. In the early stages of flight discovery, new records were being set

and broken on a regular basis. It was a new frontier that required risk takers to test the limits of what was possible with new machines. Additionally, these bold pilots were becoming heroes to the public, with the adulation encouraging them to greater feats of daring.

The culture of the early Air Service evolved into one in which taking risks was not only acceptable, but expected in order to meet the challenges of flying. They were growing up in a society that cheered their risk taking.



Thomas Selfridge

The Air Service's experience with risk and accidents began when Lieutenant Thomas Selfridge strapped into the seat next to Orville Wright on 17 September 1908 for a demonstration flight. The ensuing flight ended when Orville

crashed the plane, severely injuring himself and killing Lieutenant Selfridge. Despite the accident, the Army was still interested in pursuing aviation.



Wright fatal plane crash

Two years after the accident in which Lieutenant Selfridge died, Lieutenant Benjamin Foulois was sent to Fort Sam Houston with the Army's only airplane, under orders to *teach himself* to fly. Foulois began corresponding with the Wright brothers. After each mishap, Foulois would write to Orville and Wilbur for advice, and he would then wait for their reply before going back up to put their advice into practice. Foulois eventually became the first pilot licensed by the U. S. Army.

By the start of WW I, General Arnold recalled that 10 of 30 rated pilots had died in accidents; twelve quit flying, of their own accord, within a few months of earning their wings; two quit after they "flew themselves out" and four died of natural causes. Many of the

early pilots developed an almost fatalistic outlook about flying and accepted that accidents were inevitable.

Early pilots learned "seat of the pants" flying by trial and error. Early pilots were test pilots as they grappled with learning the cause and effect of control inputs as well as the theoretical side of adapting this new technology to warfare.

In 1913 Orville Wright attributed 90 percent of all airplanes accidents to the plane losing speed and stalling. In a letter to the Army's chief of aeronautics he wrote, "Many of these dives [caused by the stall] would not result seriously if the aviator had but the courage to cause the machine to make an even more fearful dive till it recovers its normal speed..."

Hoyt Vandenberg, for whom the AFB was named, was a young pilot with the 90th Attack Squadron, when he witnessed four of his fellow pilots die testing out new maneuvers proposed by Billy Mitchell. Philip Meilinger summarized in his biography of Vandenberg, "Air power at that time [the late 1920s] was 'sensed' rather than demonstrated." In other words, this early testing and experimentation was necessary in

order to develop how best to safely fly airplanes.

Eventually, automation would slip into existence in the form of mechanical devices designed to lessen the pilot's workload as aircraft became more complex and could fly greater distances.

The Sperry Corporation developed a basic autopilot in 1912 using a directional gyro and attitude indicator they coupled hydraulically to the elevator and rudder. This mechanical system helped keep the airplane straight and level.

The concept inspired many in the ensuing years. In 1930, the "Royal Aircraft Establishment" (*what a great name! -ed.*) developed what they called a "Pilot's assister" (*what a dumb name! -ed.*) that used pneumatics to move the flight controls.

The first complete autopilot flight from takeoff to landing was accomplished in 1947 in a USAF C-54. Then Bill Lear developed a system called the F-5 that had an automatic approach control system, for which he was awarded the Collier Trophy in 1949.

The turning point for the pneumatic-electro-mechanical flight control system arrived with the development

of the first digital autopilot. Its first use was in the lunar module for the Apollo program.

As with most digital automation, autopilots have been a double-edged sword within the aviation industry. The real question is: Where does one draw the line between making flying safer and the loss of pilot competence?

Pilot training in the United States has not changed a great deal over the last 100 years, except for the misconception that playing a video game on your home computer is a pilot training tool. It is not! I have encountered many student pilots who have told me before entering the cockpit for the first time that they already know how to fly. It was always good to start the day with a chuckle.

I went on to explain that they still needed to follow the curriculum and demonstrate mastery of the stick and rudder skills they would be shown in stages during each lesson in the airplane.

While somewhat amusing, it did point out a serious shortcoming in the training available in other parts of the world; places that do not follow a "U.S./FAA style" curriculum.

For example, I googled flight training in Europe. Here is one example of what I got:



EUROPEAN PILOT ACADEMY
MALTA

WHO WE ARE

European Pilot Academy is an internationally known academy, accredited by the JAA/EASA – Civil Aviation Directorate – Transport Malta. European Pilot Academy has expertise and experience in various aspects within the professional pilot education. This training prepares graduates to fly with regional and international airlines within Continental Europe, Africa the Middle and Far East.

WHAT WE DO

European Pilot Academy provides students with the knowledge and skills critical to their success as industry leaders. Based on our past experience, EPA delivers content that is not only current, but also forward looking allowing students to develop an awareness of the aviation industry. *Our training is delivered through various media, lectures, and flight simulation.* (emphasis added – ed.)

Apparently, they do not train in actual aircraft! Absent any discussion or criticism of hourly experience requirements in actual aircraft, it is obvious that pilot training in other parts of the world is not the same as the stick

and rudder skills FAA tends to emphasize in U.S. pilot training.

It appears economics has played a detrimental role in pilot training over the years, as a result of automation. Understandably, it is less costly to learn to manage the electronics that can control an aircraft in flight, rather than using an actual airplane. When parts of the automation fail, however, wouldn't it be nice to have a pilot with the stick and rudder skills to take the automation off line and fly the plane manually, just like in the old days?

This seems to be precisely what has turned the world aviation community against Boeing's 737 MAX. Both crashes of this wonderfully designed airplane took place in daytime, visual flight conditions. Why didn't anyone think to turn off the autopilot and fly the airplane? Perhaps they just were not taught how.....



*******LIEFC News*******

2020 Dues invoices have been mailed!

Our President, Sal Vitale sent a letter with the invoices recapping much of what has taken place in the past year.

Dues revenue is the main source of income for our organization and we very much appreciate our renewing members. 100% of the money we collect goes toward supporting our activities, including:

- 1). Land lease for our museum hangar
- 2). Heat, water and electric utilities
- 3). Insurance
- 4). Construction/refurbishment of museum displays.

Member Donations:

We gratefully acknowledge the generosity of the following members:

Jerry Monacchio	\$50.00
Pat & Lenny Ohlsson	\$50.00
Val & Bill King	\$25.00
John Mulenburg	\$ 5.00

Sal Urciuoli has also donated a German Blohm & Voss P-206 in .25 scale as well as a Japanese Zero, also in .25 scale. We

are presently getting ready to hang these enormous models from the ceiling of the hangar. (Don't know what a Blohm & Voss looks like? Come see us!)

2019 Holiday Party was a great success!

Our 60 + guests seemed very pleased with the flowing refreshments and delicious food. The time seemed to go by very quickly for another great party!



Our thanks to all who made it a special day!

Under Construction:

We are presently building a new display dedicated to Charles Lindbergh and the Spirit of St. Louis.

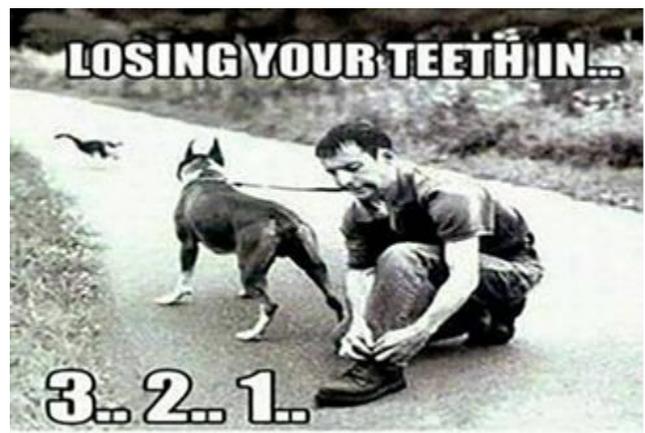
The new display will be located on the north wall of the hangar, above the model showcase.

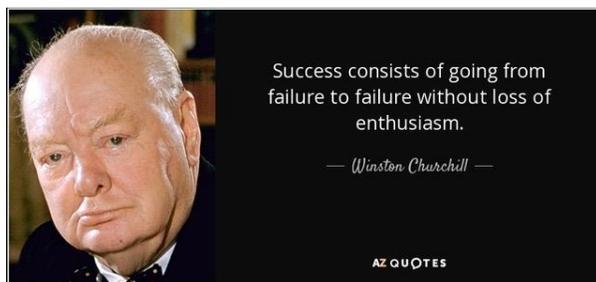
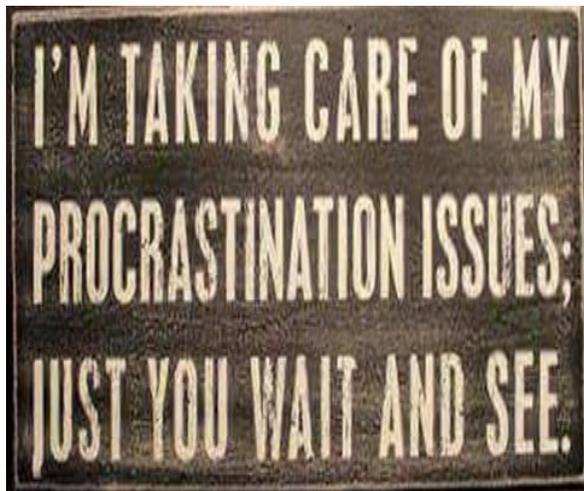
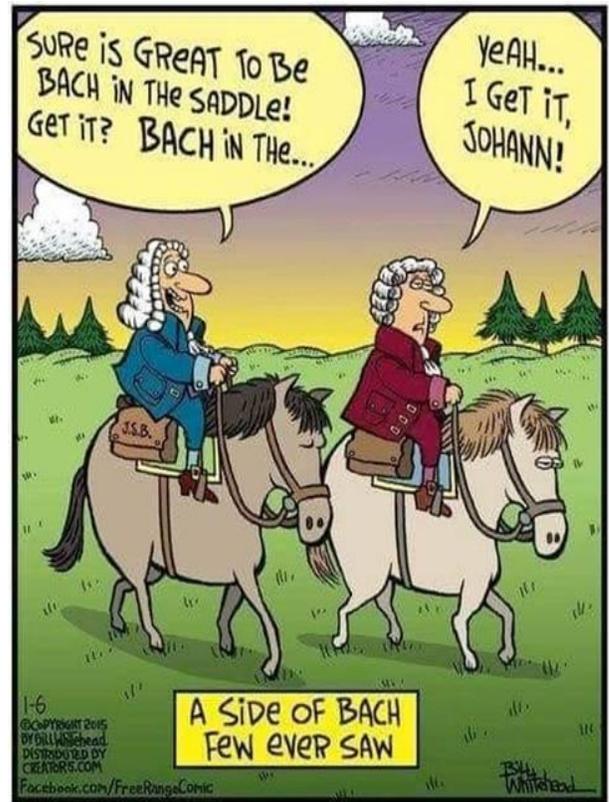
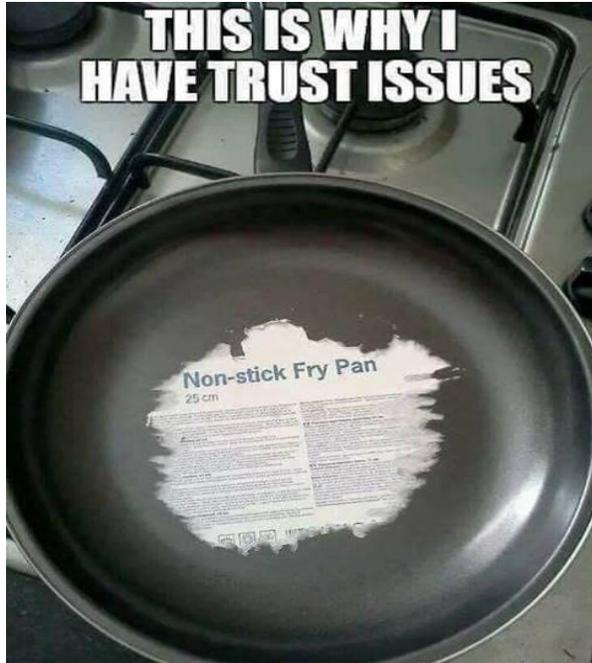
Thanks to the generosity of A.J. Manfredi, we have been able to restore and have framed, an original "Spirit of St. Louis" movie poster, which will be at the center of the new display, along with an original "Welcome Home" pennant that was given to Mark Loiacono when he was 13 years old.

Donations of life size mannequins needed.

We have many uniforms, both military and civilian that we would like to place on public display. It would be best to use full body mannequins, including heads, that we can place helmets or hats on, however partial body forms could also be useful. Can you help us with this request? Think of it as a great way to clean out the basement or attic!

Time to smile.....





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The **LONG ISLAND**
Early Fliers Club

Long Island Early Fliers Club, Inc. is a non-profit organization founded in 1956 and Chartered by the New York State Education Department. We are dedicated to aviation education and preserving Long Island's aviation heritage. Volunteers who want to help educate and preserve our history are always welcome. Annual Membership in our organization is \$35.00 for individuals; \$50.00 for families.

Donations of aviation memorabilia, aircraft and aircraft parts, aviation clothing, display quality models and items of historic significance are always welcome and greatly appreciated. Cash donations, as well as artifact donations are tax deductible. You may visit our facility at Bayport Aerodrome, Vitamin Drive, Bayport New York most Wednesdays between the hours of 9:00 a.m. and 1:00 p.m. Appointments are necessary as airports are secure locations and can also be arranged at other times for your convenience. Contact us at: L.I.E.F.C., P.O. Box 43, Holbrook, NY, 11741 or call (631)-523-5407 (Fred Coste) or fax: 631-588-2147

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