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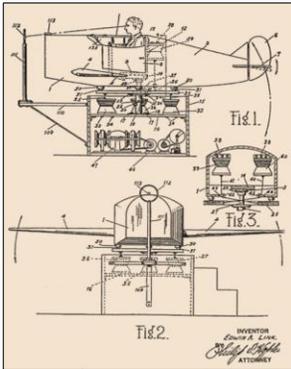
THE EDUCATION COORDINATOR ☯ FEBRUARY 11, 2016

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With its, short, stubby fuselage and wings, the Link Trainer looked more like a toy than an airplane and many of Edward Link's sales were to amusement parks.

By, *Don Uhlenberg*



Things improved when Ed and his brother opened the Link Flying School, operating from the family plant after hours and offered a guaranteed course in flying for \$85. The school did well until the depression that started in 1929 put a damper on people's interest in flying and sales stagnated.

But that was about to change. In 1934, the Army Air Corps was awarded the contract to start carrying the U. S. Mail. While this eventually turned out to be a boon for Link, it was a disaster for the Army pilots flying the mail. While the possibility of flying solely by instruments had been demonstrated a few years back by James Doolittle, Army pilots still learned to fly visually by looking at the ground and were not trained to fly by instruments. Consequently, during the first 78 day period of carrying the mail, 12 pilots were killed attempting to fly in hazardous weather conditions.

The Newark, New Jersey Instrument

The tragic loss of life in such a short period prompted Army officials to take a closer look at solutions including Link's Pilot Trainer. Convincing evidence came one day in 1934 at Newark, New Jersey when a group of Army officers were waiting for Edwin Link to fly in for a meeting. They were about to leave because the weather was foggy and misty when they heard the sound of an aircraft approaching. It was Edwin Link flying on instruments and making a safe landing. As a result, the Air Corps ordered the first six Pilot Trainers at \$3,500 each.

The business began to expand rapidly as word spread regarding the usefulness of Edwin Link's simulator in preparing pilots for instrument flight. Link Aviation Devices Inc. was formed to meet the increase in demand. The initial version known as the C-3 Pilot Trainer, saw several improvements during the 30's and by the time WW II started, it was known as the ANY-18 (Army Navy Trainer model 18) Basic Instrument Trainer and incorporated advanced items such as retractable landing gear, pre-stall buffet, and spin capability.

The ANT-18 became standard equipment



The ANT-18 became standard equipment to every military training school in the U. S. and its' allies introducing tens of thousands of fledgling pilots to the basics of instrument flight. During the war years, Link manufactured over 10,000 units turning out one every 45 minutes.

Link trainers were used well into the sixties as they were quite inexpensive and did a pretty good job of introducing pilots to instrument flying as well as helping them to maintain currency after attaining an instrument rating. The University of Minnesota flight school at the Blaine Airport in the 60's, time in a Link trainer was added as a part of the private pilot course to give students primary training in VOR navigation (Hood UP) as well as an introduction to instrument flying (Hood Down). Many surviving ANT-18's have been restored and are in display in various museums including Golden Wings Museum at Anoka County, Blaine Airport

From its humble beginnings Edwin Link's efforts with the Link Pilot Trainer launched a company that dominated the military and civilian simulation industry into the 80's and 90's. Truly, Edwin Link must be the "Father of Aircraft Simulation."

(Continued Pg.2)

ATTITUDE, ATTITUDE, ATTITUDE...



Don Uhlenberg at the controls of the Elite iGATE G500 G1K at Sim Flite Minnesota

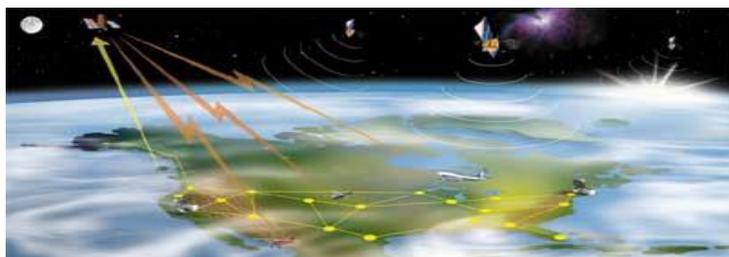
By Stephen J. Thibault Though the Link Trainer may not look like today's flight simulator, and the uses for simulators have evolved with time and technology, there are still some similarities between the two.

In the Link Trainer pilots heard the instructor say "Needle, ball, airspeed,....." while the pilots I train in simulators hear me say "Attitude, attitude, attitude – pitch - attitude, attitude, attitude – bank – attitude, attitude, attitude – speed -....."

ADVANCED AVIATION TRAINING DEVICES

Many pilots working towards an instrument rating use simulators for learning how to scan their instruments, use the navigation equipment, and fly approaches and holding patterns. Other pilots may use a simulator for maintaining their instrument currency and proficiency or to stay sharp at handling an engine failure in a multi-engine airplane.

VOR (a 1950s Air Navigation invention is still used today in the majority of aircraft) and NDB (Air Navigation system based on simple radio navigation) was introduced to pilots in the Link Trainer and this still happens today in simulators, although fewer pilots are learning NDB navigation. ILS (Instrument Landing System) and GPS approaches are the go-to approaches for most pilots today and many simulators are equipped with WAAS (Wide Area Augmentation Systems)



WAAS provides service for all classes of aircraft in all phases of flight including en route navigation, airport departures, and airport arrivals. This includes vertically-guided landing approaches in instrument meteorological conditions at all qualified locations throughout the National Airspace System.

which allow a pilot to fly a precision GPS approach. No more "dive and drive". WAAS GPS approaches allow a pilot to fly down a glide path at a majority of airports in similar fashion to an ILS.

Most new airplanes are equipped with an all glass cockpit and many older airplanes are being retrofitted with glass also. A flight simulator is a wonderful place to learn how to fly with this technology. The 2½" artificial horizon has quadrupled to a 10" horizon giving a pilot the feeling as though they are looking out the front window. This has made flying an airplane easier while in the clouds but has created new challenges such as how to operate the new system, which button to push when, learning the auto pilot and flight director, programming the GPS..... There are electronic pages and pages of information to be found in these systems, all demanding the pilot's attention.

Sim and GPS TRAINING IS A PILOTS PARTNER IN ACHIEVING GOALS AND INCREASED SKILLS

Flying an airplane is fun, challenging, exciting, and satisfying. Some pilots may shy away from simulator training because they just want to fly an airplane. Often, nothing beats a simulator when learning how to fly on instruments or as an effective tool in becoming a more proficient pilot, especially when you remember two very important features of a simulator: 1. *The freeze button.* I have yet to find one of these in an airplane even though every pilot would love to have one. 2. *The ability to "backup" the simulator and redo something you just did incorrectly.* Like number 1, I have yet.....



When comparing the Link Trainer to today's flight simulator one has to wonder what will the flight simulators of 2050 be like.



Inspiration and innovation are the tools that continue to advance the search for new horizons in aviation. Advancements in General Aviation and Aerospace exploration, from the Wright Brothers powered flight in 1903 to mass GPS guided transportation of today provide reminders of the challenges to be met in the next century.