

# **“Navigators of the First Global Air Force”**

From *On Celestial Wings* by Col Ed Whitcomb

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Pages 1 – 11

The University of Miami band blared its music through the majestic Biltmore Hotel as 44 khaki-clad cadets marched onto the stage of the big ballroom. It was a historic occasion because we were first graduating class of professional aerial navigators for the United States’ military services. We were to become known as the Class of 40-A. On stage with the 44 of us were representatives of the University of Miami at Coral Gables, Florida, the United States Army Air Corps, and Pan American Airways – the organizations that had put together America’s first navigation training program. It was among the first programs of World War II in which business, military, and university personnel combined efforts in the interest of national defense.

The date was 12 November 1940. World War II had been raging in Europe for more than a year, and Adolph Hitler had sent his troops into Poland, Norway, Belgium, Luxembourg, and the Netherlands. Fighting, death, and destruction were far away from US shores. America was enjoying peace with a president named Franklin Delano Roosevelt who had vowed that he would never send an American boy to die on foreign soil. Congress had passed laws enacting the draft, but the men on the platform in Coral Gables were not concerned about that. There were all volunteers who anticipated one thing: to fly!

We came in early August 1940 to what became the fountainhead of navigational knowledge. [if !supportFootnotes][1][endif] Few people traveled by commercial airlines in those days. We came by bus, boat, train, and automobile from the crowded streets of New York City, the lonely rangelands of Montana, and the peaceful small towns of the Midwest. Many of my classmates were first and second generation Americans of Serbian, Jewish, Italian, Polish, and English extraction. It was an all-American group including, among others, the family names of Markovich, Berkowitz, Boselli, Vifquain, and Meenagh.

The class members were young men in their early twenties, bright-eyed and eager to succeed in navigation school so they could fly. We had only a vague idea of the complexities of celestial navigation. None of us had ever known an aerial navigator nor could have had any idea of the perils the future held for us. We could not have envisioned that we would be flying courses where no man had ever flown, dropping bombs on civilian cities around the world and seeing our classmates shot out of the sky.

My roommate, Theodore J. Boselli, a former champion bantamweight boxer from

Clemson University, would later navigate the first presidential plane. Walter E. Seamon, son of the mayor of West Jefferson, Ohio, would also be assigned to the president's plane. George Markovich, a brilliant graduate of the University of California at Berkeley, would guide a plane called the *Bataan* for the great Gen Douglas MacArthur in his flights around the Southwest Pacific. Russell M. Vifquain, the blonde-headed son of an Iowa college professor, had led Iowa State University to be runner-up in the National Collegiate Athletic Association (NCAA) gold competition. In the years ahead he would be with Gen Curtis LeMay dropping tons of incendiary bombs into the crowded heart of Tokyo, Japan. Jay Horowitz, a happy Jewish boy from Sweetwater, Tennessee, would suffer more agony as a prisoner at the hands of the Japanese than anyone could have imagined. These and many others were my classmates as we entered into the academic phase of celestial navigation.

But it was 1940, and we were in the city of Coral Gables. The US was at peace and our thoughts were not of war. Our home during the 12-week course of training was the stately San Sebastian Hotel at the corner of Le Jeune and University streets. In our first military formations we wore T-shirts, civilian clothes, and a variety of uniforms from previous military organizations. We were a second "Coxey's Army" ready to be molded into military men and more importantly, celestial navigators.

Capt Norris B. Harbold, a 1928 product of the United States Military Academy at West Point, was in charge of the detachment. He had a history of efforts to promote celestial navigation training in the Air Corps. We conducted close-order drill formations on the streets near the hotel where there was scant vehicular traffic. Coral Gables on the outskirts of Miami was a sleepy and almost desolate city after the big land development boom and later depression of the 1930s. There were dozens of city blocks where streets, sidewalks, curbs, and fire hydrants supported vacant lots overgrown with weeds.

The cadets marched in ragged military formations across the street to the "Cardboard College" – a group of buildings intended to serve the University of Miami until a new campus was established. The university's grandiose plans for new buildings had stopped dead with the advent of the big depression. But the temporary facilities were adequate for our 240 hours of ground training in navigation and meteorology.

The development of the navigation training program had come about in a very unusual way. Gen Delos Emmons, chief of General Headquarters of the US Army Air Corps, had been aboard a giant Pan American clipper on a fact-finding mission to Europe in 1939. All night the big silver clipper lumbered along on its flight from New York to the island of Horta in the Azores. While other passengers dozed, General Emmons observed the plane's navigator industriously plotting his course by celestial navigation. The general stood on the flight deck in awe of the proficiency of the work. Then as the stars faded away in the light of a new day, the navigator pointed to

a dark mound on the distant horizon dead ahead of the aircraft.

“That is the island of Horta,” announced Charles J. Lunn, the navigator.

“Amazing!” exclaimed the general.

“It would be more amazing if it were not there,” replied Lunn matter of factly. [if !supportFootnotes][2][endif]

General Emmons had more than a passing interest in this feat of expertise in celestial navigational. Axis victories in Europe suggested alarming possibilities for US involvement in the European war. The Air Corps urgently needed a lot of well-trained and highly skilled navigators. General Emmons knew that there was no program in the Air Corps to do the job although the Air Corps had tried on several occasions to establish celestial navigation schools. At that time, most military flights were conducted within the continental limits of the United States. Therefore, there was little stimulus for flying officers to do more than make a hobby of celestial navigation. A few officers including Norris B. Harbold, Eugene L. Eubank, Albert F. Hegenberger, Glenn C. Jamison, Lawrence J. Carr and Curtis Le May had taken particular interest in celestial navigation; but by the spring of 1940, the Army Air Corps had only 80 experienced celestial navigators. It would need thousands to man the new bombers on order for the Air Corps. [if !supportFootnotes][3][endif]

“How many men could you teach to do this?” Emmons asked Lunn.

“Just as many as could hear my voice,” was Lunn’s succinct reply.

The conversation planted an idea in the general’s mind. With whatever else he may have learned on his fact-finding mission to Europe, he came back to Washington, D.C., with an idea for training navigators.

Upon his return, he contacted Juan Tripp, president of Pan American Airways and Dr. B.F. Ashe, president of the University of the Miami. Their meetings culminated in an agreement whereby Pan American would provide navigational training with Charles J. Lunn as the chief navigation instructor. The University of Miami would provide food, housing, and classrooms for instruction at the rate of \$12.50 per cadet per week. The cadets were in place, and the program was under way even before the agreement was signed. [if !supportFootnotes][4][endif]

Charlie Lunn seemed the most unlikely person to be teaching a university class. His academic credentials were woefully deficient. He had no college degrees whatsoever. He had never attended a college or university. The fact was Charles J. Lunn, chief navigator instructor at the University of Miami in Coral Gables, Florida, in 1940, had failed his sophomore year at Key West High School. He was a high school dropout.

Charlie and his sister had stood at the head of their classes in grammar school and in high school until Charlie's interests turned to girls and basketball. At 16 years of age, he was a good enough athlete to draw \$10 a game playing for the Key West Athletic Club team. However, as a result of his extracurricular activities, his academic standing declined to the point that he decided to leave school.

Nineteen years later, he found himself standing before a class of college-trained and educated students from all parts of the United States. Many of them had college degrees in engineering, education, and a variety of other fields. It was Charlie's job to train them in the complicated art of celestial navigation.

When Charlie left high school, his father made it clear to him that he was to get himself reinstated in high school or get a job to support himself. Since he had grown weary of dull classroom life, Charlie set out to find a job.

In 1921 there were few employment opportunities in Key West, Florida for a 16 year old school drop out. Sponging (gathering sponges from the sea) and fishing were about the only jobs available on the island and such jobs were not attractive to young Lunn. The 7<sup>th</sup> US Navy Base, where many naval vessels stopped for fuel and water, was one of the chief employers in Key West. Charlie was unable to find a job there because 18 was the minimum age for employment with the government.

Like other boys his age, he was fascinated by the ships which came into the Key West Harbor. He had talked to sailors about their voyages to far away ports and learned that it would be possible to get a job as an oiler on an oceangoing ship.

So at the age of 16, Charlie took his first job oiling the engine on a freighter ship of the P & O Steamship Company plying between Key West, Tampa and Havana. It did not take the lad very long to grow tired of his work in the steaming hot and smelly bowels of the ship. If there was any romance and adventure in that life, it completely escaped him. After a couple of trips he applied for a job working on the top deck where he would have more opportunity to learn about sailing.

As a deck hand, Charlie was industrious and inquisitive. He asked questions and he studied books until, at the age of 18, he became third mate on his ship.

From childhood, Charlie had heard stories of shipwrecks all along the Florida Keys. Spanish sea captains with millions of dollars in treasure had lost their ships in those waters as they made their way back toward Spain. He also knew the nineteenth century tales of how some Key West natives had ridden mules in the shallow waters along the reefs at night and had held lanterns high on poles to confuse pilots into navigating vessels onto the coral reefs. As a result, many Key West merchants sold a

variety of exotic merchandise from such wrecked ships. Wrecking ships, recovering the cargo, and selling it resulted in a thriving business in old Key West.

These stories gave young Lunn a good sense of the value of accurate navigation. He became obsessed with the importance of being able to navigate by the stars as a means of maintaining an accurate course on the sea. He studied the stars and he studied navigation books until spherical trigonometry became common place as he worked to master his favorite subject. His diligence in learning the ways of the sea qualified him to be captain of his own ship at the age of 26.

In the early 1930s, an important part of the P & O Steamship Company's business was hauling trains from Key West to Havana. Cubans loaded the trains with sugar. P & O ships then transported the railroad cars laden with sugar back to Key West. From there they traveled on the railroad across the Florida Keys to US markets.

In Havana, Charles met two people who changed his life forever. The first was an attractive, green-eyed, blonde English girl who worked as a secretary in the P & O Office in Havana. After a year-long romance with the handsome young sea captain, she became Mrs Charles J. Lunn. The other person to change his life was Patrick Nolan, a captain for the Pan American Airways Company.

When Pan American pilots moored their flying boats in the Havana Harbor, they were generally near the P & O steam ships. It was a custom for the aircrews to go aboard the ships to visit and enjoy good, well prepared American food. It was on such visits that Captain Nolan became acquainted with Charlie Lunn and his expertise as a celestial navigator.

"Why don't you come up to Miami and make application for a job as a navigator with Pan American?" Nolan asked Lunn.

Lunn said he would have to think about that for awhile. He did think about it. In 1935 a disastrous hurricane swept across the Florida Keys destroying the rail line that had previously brought the trains to Key West. The P & O lines moved their operation from Key West to Fort Lauderdale. It was then that Charlie made up his mind to apply for a job as a navigator with the Pan American Airways Company in Miami.

At that time, Pan American was extending its aerial routes to distant cities of the world. Among the first people to navigate their big flying boats were Charlie J. Lunn and Fred Noonan. The latter name is indelibly written in the aviation history as the navigator who accompanied Amelia Earhart on her ill-fated effort to fly around the world. Although Charles J. Lunn is less well known, he had navigated the big Pan American clippers for five years before his fateful meeting with Gen Delos Emmons.

Classes began on Monday, 12 August 1940, with Charlie Lunn as the chief performer. He stood pleading with his fledgling cadets to understand the complicated procedures that he was explaining. There were no teachers' manuals. He was teaching what he had learned at sea and then modified so he could navigate flying machines. Great minds like Nathaniel Bowditch, John Hamilton Moore, Pytheas of Massalia, and many others had unlocked the secrets to using the stars for navigation. Lunn was the link between them and the thousands of young men who would be flying military missions around the world using celestial navigation.

With his fine six-foot physique, Charlie was a handsome figure in his Pan American Airways uniform. However in the classroom at the university, he often appeared in front of his class clad in a round-neck, short-sleeved, knit shirt that exposed the brawny, tattooed arms of a son of the sea.

"Don't write that down," he would plead. "You've got to get it up here in your head. Your notes and papers won't do you any good when you're out over the ocean some night." Navigating over the ocean at night seemed more like a dream than a reality to the cadets. None of us had even been "out over the ocean" in a plane at night. Nevertheless, Charlie doggedly transferred his grasp of celestial navigation to his struggling students. Little by little we became skilled at celestial navigation.

We received 50 hours of in-flight navigation training flying from the Pan American seaplane base at Dinner Key. The base was located on the coast five miles from the university. There Pan American converted five of its twin-engine Sikorsky and Consolidated flying boats into flying classrooms for day and night training missions. There were 10 large tables in each plane with maps of the Caribbean Sea area. Each table contained an altimeter, a compass, and an airspeed indicator. A large hatch open to the sky was used for taking celestial observations.

It was said that the ancient flying boats would take off at 115 miles per hour, cruise at 115 miles per hour, and land at 115 miles per hour. Cadet Harold McAuliff described the noise the clipper made in landing as being like the sound of a truck dumping a load of gravel on a tin roof. Antiquated as they were, the planes provided a real-life environment for practicing celestial navigation.

Before a cadet set foot in the big clipper training ships, he had to spend many hours atop the San Sebastian Hotel at night. There he got acquainted with the best friends he would ever had - the stars and planets. Cadets learned the names and the relative locations of the 50 brightest stars and the planets. Betelgeuse, Arcturus and Canopus became as familiar as the names of the streets back in their hometowns.

In the classrooms, there were "dry runs" across the Atlantic Ocean from Miami to Lisbon and from Lisbon, Portugal, and from Lisbon to New York. These were routes which Charlie Lunn had flown many times. Charlie provided columns of

figures representing the altitudes of given stars in degrees, minutes, and seconds. He also provided columns of figures representing the hour, minute, and seconds of each observation. These were to be added and averaged manually before using the almanac and tables to establish celestial fixes along the course. Neither averaging devices nor computers were in use at the time. Navigation was an exercise in mental gymnastics that seemed to have no ending.

Academic training quickly revealed that the plane's airspeed indicator did not really measure how fast the plane was traveling. The compass did not tell the exact direction the plane was traveling, and the altimeter did not mark the actual altitude of the aircraft. As an aircraft moves through the air, navigators have to make corrections for such things as temperature, atmospheric pressure, magnetic variation, deviation, precession, and refraction. These were things that Charlie Lunn had learned for himself when he left marine navigation and took to the air.

Days and nights of work and study filled the cadets' lives. As busy as they were the cadets found time for recreation at the beautiful Venetian Swimming Pool and the then uncrowded and uncluttered Miami beach. There were University of Miami football games at the Orange Bowl and dances under the stars at the Coral Gables Country Club. In addition there were many attractive coeds on the campus to keep company with the cadets in their various activities.

Then after 12 short weeks of Charlie Lunn's intensified navigation training, there came the November graduation exercises held at the stately Biltmore Hotel in Coral Gables. Forty-four cadets sat on the stage at the graduation exercises. We listened to speeches by Dr Ashe, Pan American Capt Carl Dewey, and Gen Davenport Johnson. The general, resplendent in his dress blue uniform, spoke for the US Army Air Corps. Several hundred invited guests attended the ceremonies, but few family members of the cadets were present. The country was still in the grips of the depression. Few people could afford the trip from remote parts of the country even for such an important affair.

Gen Davenport Johnson, in his wisdom, spoke of the future and of our mission. "Time is of the essence," he said. "Our Air Force will be called upon to operate over much larger ranges than is the case in European operation today. If the United States should be become involved in the present world turmoil and be forced to defend the Western Hemisphere, we must be able to reach out from our coastal frontiers to discover, locate, and destroy the enemy before he can get in striking distance of vital objectives within the United States."<sup>[if !supportFootnotes][5][endif]</sup>

On that happy and peaceful night in Florida surrounded by the luxury and grandeur of the stately Biltmore Hotel and the music of the university band, General Johnson, even with a prophet's mind, could not have understood the significance of the event. In the months ahead, Charlie Lunn's 44 cadets would be navigating

missions of inestimable significance. Passengers on their planes would include such luminaries as Sir Winston Churchill, Madame and Generalissimo Chiang-Kai-shek, Presidents Herbert Hoover, Franklin D. Roosevelt, Harry S. Truman, Dwight Eisenhower, and Lyndon Johnson and Generals Douglas MacArthur, George C. Marshall, and Curtis E. LeMay.

Within one year, instead of defending our shores, many of us would be navigating across the world to “locate and destroy the enemy.” Classmates would fly combat missions on every battlefield in World War II: in the frigid Aleutian Islands, across the sand-blown deserts of North Africa, in distant Rangoon, Saipan, and Germany. They would navigate on the first aerial attack on Japan and later with the B-29s burn Japanese cities. They would “seek out and destroy” V-1 and V-2 launching pads and submarine pens on the continent of Europe and help soften up the beaches of Normandy for the D day invasion. They would be prisoners of the Japanese and the Germans, and internees of the Turks. They would help in the project to dig the tunnel for the great escape from Stalag Luft III in Germany. They would travel the brutal Bataan Death March and lose classmates in the horrible Japanese prison camps.

At the commencement exercises of the celestial navigators of the Class of 40-A, General Johnson could have said, “These navigators will follow the stars on a path of tragedy and glory unique in the annals of American military history.”

Coxey’s Army refers to a group of about 500 unemployed persons who marched from Ohio to Washington, D.C., in the spring of 1894 to petition Congress for work on public works projects. The organizer of the march was Jacob S. Coxey.

By way of contrast, in the mid-1990s fledgling US Air Force navigators selected for the “bomber track: acquire approximately 150 hours of in-flight navigation training by the time they report to their first operational unit.

*[if !supportFootnotes] [1][endif] The Pan American-run school at Coral Gables was a short-run solution to the sudden and massive growth of demand for trained navigators in the Army Air Corps (AAC) (known after July 1941 as the Army Air Forces [AAF]). By late 1941, the AAF was meeting that demand with graduates from three navigation schools of its own located at Kelly Field, San Antonio, Texas; Mather Field, Sacramento, California; and Turner Field, Albany, Georgia. By the time the Japanese attacked Pearl Harbor, the Pan American facility at Coral Gables was largely given over to training fledgling navigation for the Royal Air Force. The best scholarly account of aerial navigation down to World War II is Monte D. Wright, *Most Probable Position: A History of Aerial Navigation to 1941* (Lawrence, Kansas: University Press of Kansas, 1972). The relatively brief existence of the Pan American facility as a training school for ACC navigators is noted on page 189.*

*[if !supportFootnotes] [2][endif] Army Air Forces. “Flying Training Command Historical Reviews,”*

1 January 1939-30 June 1946, held by Historical Research Agency, Maxwell AFB, Alabama.

*[if !supportFootnotes] [3][endif] Ibid. Prior to World War II, the Army Air Corps had no school dedicated to training aerial navigators and Monte Wright in Most Probable Position, 175, describes pre-World War II navigation training in the AAC as “neither lengthy nor rigorous.” In fact, specialized officer aircrew members were unknown in the prewar ACC and navigators, as a distinct group of rated aviators, simply did not exist. All flying officers were pilots, some of whom might be called upon to perform navigator functions. Aerial navigation was considered just another flying skill that some pilots were expected to master. The most ambitious AAC training program for pilot-navigators was instituted in 1933 when the 2d Bomb Group at Langley Field, Virginia, and the 7<sup>th</sup> Bomb Group at Rockwell Field, California, offered standardized navigation courses to pilots drawn from units across the Air Corps. The program was cancelled the following year, a casualty of limited resources and the Air Corps’ costly involvement in government airmail operations. From 1934 until the establishment of the Pan American school at Coral Gables, navigation training reverted to individual units where it was conducted on a limited and more or less haphazard basis to meet local requirements.*

*[if !supportFootnotes] [4][endif] Charles J. Lunn, interview with author, 1980; and Officer of the Chief of the Air Corps to Dr. B.F. Ashe, letter, subject: Pan American Navigation School, 24 July 1940.*

*[if !supportFootnotes] [5][endif] Pan American Airways, Inc., New Horizons, New York, December 1940, 11.*

The Pan American Navigation School at Coral Gables closed unceremoniously in October 1944, almost a year before the end of WWII. The cadets had gone and the University of Miami was back to normal as if the cadets had never been there. All that remained of the navigation school was in the minds and memories of those who had been part of it. Officials of the Army Air Corps decided that the old Sikorsku and Consolidated flying boats had outlived their usefulness as navigation training planes. They said that there were too slow, there were not enough of them, and they did not afford an adequate amount of overland training, a requisite for Air Corps navigators. The truth was that the Air Corps had in-service schools geared to meet all of the needs of the military for the duration of the war.