1) Fred Crawford (right) presents Thompson Trophy to aviator Roscoe Turner at Cleveland National Air Races 1934(?) (WRHS)
2) National Air Race poster 1947
3) Lewis Research Center sign at entrance Brookpark Road 1962 (CSU)

Cleveland and Aviation History.
What Could Have Been and Why It Didn't

By Michael D. Roberts

Billowy clouds, majestically back-lite by the sun's glow, is the sky above a Cleveland Labor Day. It heralds the coming of fall, the best and most compelling season here. Its arrival is accompanied by a fury of sound as demonstrating air craft roar and roll in the heavens.

The sky holds an important history for Cleveland which for a time was the citadel of the world's aviation achievement and adventure. And then, in later years, it played a key role in America's race to the moon.

However, the fame, glamor and prosperity of aviation eluded Cleveland over the years as the city lost its edge in innovation, partially because of bad politics, a loss of vision, a crippling Depression and the

government's dispersion of industry in World War II. Some say the town never fully recovered from these adversities.

But as World War I drew to a close in 1918, Cleveland's industries thrived and its development of technology continued to be dynamic, an economy driven by steel, electrical machinery, chemicals, paints, machine tools, and automobiles. In 1920, Cuyahoga County ranked as the fourth most productive manufacturing region in the country.

To support this diverse economic base was a financial infrastructure of 38 banks that encouraged the expansion of existing businesses and the development of new ventures. Equally important, was the psychological dynamic that existed in that era's political and business leadership. It embraced the future with a progressive pride that focused on achievement and wealth.

This environment generated opportunity and the greatest source of that ingredient was skyward. World War I was the coming of the airplane and the promise of a whole new industry beckoned irresistibly to visionary entrepreneurs.

Ironically, the development of American aviation had been hindered by the very inventors of the airplane. The Wright brothers, who first few in 1903, claimed they owned patents to virtually every feature that constituted an aircraft. The brothers were litigious in protecting their interests and succeeded in stalling the efforts of others to develop an aviation industry in the United States.

While the air plane's success in World War I foretold its future, not one American- made aircraft flew in that conflict. As a nation, the U.S. was far behind the European countries in flight.

When the United States declared war on Germany April 6, 1917, Cleveland businessman Alva T. Bradley sought a way to take advantage of his avuncular contacts in Washington. The U.S. Secretary of War was Newton D. Baker, a former Cleveland mayor and a friend. Procuring military equipment for the war was in the hands of another Cleveland businessman.

Bradley, through contacts in the sports world--- he was the managing partner of the Cleveland Indians--- met Glenn L. Martin one day in California.

Martin was 31 that fall in 1917, but already was recognized as an aviation pioneer, pilot and inventor. He had just endured an unpleasant business defeat when he met Bradley and was looking for a way to reconstitute his aircraft company. Bradley was searching for ways to take advantage of the war effort and bring a new industry to Cleveland.

Bradley convened Cleveland businessmen Charles Thompson, S. Livingston Mather, A.S. Mather and W.G Mather to raise enough money to lure the young aviator and his ideas to the city. The company was originally located on 9th Street near Chester Avenue.

The five investors raised $2.5 million for a new factory which was relocated at East 162nd Street and St. Clair Avenue, eight miles from downtown. It employed nearly 400. A small landing strip called Martin Field was constructed and used by the postal service as the city had yet to build an airport. When Martin obtained a contract from the army to build bombers for the war, many of his workers from California joined him in Cleveland. The new Martin company was incorporated on September 10, 1917.

Among those joining Martin would be Donald Douglas, Larry Bell, and Dutch Kindleberg who would go on to create such companies as McDonnell Douglas, Bell Helicopter, and Rockwell International.

Martin's company would eventually merge into Martin Marietta. Cleveland was poised at the cutting edge of aviation technology, but its political and business leaders failed to realize it.

By most accounts Martin was an odd character, and clearly one that would not fit in with Cleveland's Union Club crowd. He had worked in the circus, flew in early movies, raced automobiles, set flight records and possessed a quirky personality. Even though *The Cleveland Press* cast him as one of the town's most eligible bachelors, he did not date. He preferred the company of his mother, Mina, who was constantly at his side.

A tall, thin man with thick black hair, circular eye glasses, and a bit flamboyant in dress, Martin possessed a strangely aesthetic appearance. One writer noted that he had "prissy" mannerisms and was often critical of the smallest things. One business associate said of him that he was not the kind of man with whom you would want to spend a vacation.

But Martin had a zest for the good life. He drove around town with his mother in an ostentatious Stuz Biarritz automobile with snakeskin trim. They lived in a 19-room, 2.-acre mansion on Lake Shore Boulevard in Bratenahl.

The 61,000 square factory at 16800 St. Clair was completed in April and the first prototype bomber flew on August 17. In October, the army flying service accepted the plane and ordered 50 MB-1s.

The company built 20 bombers before the war ended in November of 1918 and with it the cancellation of the contract for lanes. In 1919, the government continued to order a few MB-1s but the costs of production continued to rise while profits dropped and the Cleveland investors soon lost interest.

Only the intercession of Brigadier General Billy Mitchell, head of army aviation, saved the Martin company from failure. Mitchell was an aviation visionary who sought to prepare the nation for the next war by investing heavily in air power. At risk to his career, he funded Martin toward those ends.

The Martin bomber did not see action in World War I, but it did find its place in aviation history when it sunk an obsolete German battleship in a highly publicized and controversial demonstration of air power promoted by Mitchell.

Throughout his Cleveland years Martin had been active promoting the need for a sizable airport that could meet the future needs of a major city. Martin Field had become a liability of sorts. People complained of crashes in the neighborhood. The bombers could not be flown from the site and had to be transported by rail to the east coast at a cost of $800 per plane at which the government balked.

In January of 1925, William R. Hopkins, the city manager of Cleveland submitted a document to city council that proposed a study of the possibility of constructing a municipal airport. There were no such facilities in existence in the country.

Hopkins assembled a panel of experts with unmatched experience in aviation including Martin along with Billy Mitchell, Captain Eddie Rickenbacker, of World War I fame, and other members of the army and navy air services. They were assembled to select a site for an airport. Martin had hopes that the city would provide land on the site for him to build an aircraft factory. The city dashed those hopes just as the Baltimore Industrial Bureau contacted Martin, urging he move his company to that city. In the meantime, the Navy was advising that Martin move his plant to the East Coast where seaplanes could easily be produced.

An account in the *The Cleveland Press* at the time quoted a business man as saying it was the banks that drove Martin from the town.

"They thought he was a screwball," quoted one businessman.

The refusal to aid Martin was a terrible mistake, one that proved harmful to the future of the city's industrial base. Years later Frederick C. Crawford, a contemporary and himself a significant figure in aviation here, would tell the writer that it was the plain stupidity of public officials here that resulted in Martin's departure.

"To think that at one time we had five aviation pioneers here that would go on to create the biggest aircraft companies in the world and that we lost them is stunning," Crawford said.

Martin would go on to flourish in Baltimore, developing remarkable technology that went into some of the best aircraft in the world. The advancements in aviation created by World II enabled the business to prosper in peacetime. The company eventually grew to be known as Martin-Marietta and employed as many as 50,000 at one point.

Meanwhile, public interest in aviation was stimulated by the airplane's role in World War I which was coming to a close. Surplus planes and trained pilots suddenly became available for commercial enterprise. At first, army pilots flew six-cent air mail on scheduled flights. What is considered to be the first official commercial use of air mail in the U.S. occurred on August 12, 1918 when the Post Office Department initiated the service.

Cleveland was an important way point on those early air mail runs. Located between the busy postal hubs of New York and Chicago, the city was a key link in the emerging system. Cleveland's first flights began in December of 1918 even though the city had no real airport.

At first a crude landing strip was established at Woodland Hills Park at East 93rd and Kinsman Avenue. The pilots complained of the location because of the many trees surrounding it. Landing was particular dangerous at night.

When the weather made the park location inoperable, Glen Martin offered the use of his facilities at St. Clair and East 162rd Street. Postal officials informed the city that even Martin Field was inadequate and if the city wished to remain a principle stop in the mail system it needed a real airport. The message was a wake up call for government and business officials.

For those who find government's grind indecisive and slow, the history of Cleveland's airport is refreshing and remarkable. Hopkins presented a plan to city council in January of 1925. The site committee which included Glenn Martin had identified a location on Cleveland's west side that was deemed perfect. The city then promoted a $1,250,000 bond issue to purchase 1,014 acres of land from the city of Brook Park. It was located 1.6 miles from Riverside Drive to the bank of Rocky River and 1.4 miles from Brookpark Road. The original airport used only 100 acres of land and in all some 30,000 trees were cleared for its runways.

The early days at the airport consisted of a cement block building and a hastily cleared field with a 1,400 foot runway in what was then a remote part of town. On May 1, 1925 a east bound flight landed with mail destined for New York. It marked the first takeoff from the field. The airport was officially dedicated on July 1, attracting some 100,000 persons, a testimony to the era's romance with aviation.

The airport was the first municipally owned anywhere and within two years it was deemed the busiest in the world with the traffic of eight planes every 24 hours.

In retrospect the purchase of the land with the anticipation of the growth of aviation was one of the best decisions by a Cleveland government. By 1935 the landing space had been expanded to over a thousand acres making it by far the largest airport in the world. The four largest airports in Europe—Croyden in England, LeBourget in France, and Templehof in Germany could all be placed within the perimeter of Cleveland Municipal Airport with room for yet air field similar in size.

It was not just the size of the airport that drew admiration from the aviation community, it was the technology that Cleveland Municipal Airport brought with it. Claude F. King, who would go on to be the manager of the airport, invented the first lighted night landing system, a blessing for all the aviators who flew the mail. And when then airport commissioner Major Jack Berry returned from a trip to England and witnessed the use of radio in the controlling of aircraft, he found the ubiquitous and ingenious King had already installed a radio which was the first voice two-way radio communication in the world. Now pilots could be advised of weather, field conditions and nearby air traffic.

It was King's conception of a control tower featuring radio communication that was the principle on which every airport in the world would henceforth adopt and adapt to give aviation the global reach we know today. In 1927, plans for a lakefront airport east of the 9th Street pier were first introduced. It took 20 years, and considerable land fill until it was completed as Burke Lakefront Airport.

The world war had glamorized the airplane and the American public could not get enough of it as veteran pilots with surplus planes barnstormed across the county offering rides and entertaining crowds with aerobatics. Youths built models and the movies heightened the interest with films flavored with romance, stunts and dog fighting.

Aviation industries blossomed and developed technology that leap-forged flying forward at a tremendous rate. To test and heighten this technology air races were held and the first official national event took place on Long Island and was sponsored by *The New York World* in 1920.

In Cleveland two men took special interest in the idea of national air races which were circulating through various cities for nine years. Why not host an aviation extravaganza at the biggest airport in the world every year? They reasoned.

Louis W. Greve and Frederick C. Crawford both lead companies that manufactured aircraft parts and had a decided interest in promoting their products while at the same time doing the same for aviation in general. Greve was the president of the Cleveland Pneumatic Tool Company which made hydraulic landing gears. Crawford at that time was general manager of Thompson Products which later would become TRW. Crawford would preside over that company in later years.

Thompson Products had developed a sodium valve for aircraft engines that was used by Charles Lindbergh on his famous 1927 trans-Atlantic flight to Paris. Years later at his 100th birthday party, Crawford told me that the night before the flight he changed the valves in the aviator's plane, the Spirit of Saint Louis, without the Lindbergh's knowledge.

“Lindbergh knew about flying, but not much about engineering,” Crawford said. “If I hadn't changed those valves chances are he would never have made it.” The later publicity that the company received from those valves in that plane proved to be invaluable.

Thanks to Crawford and Greve, Cleveland was selected for the 1929 national air races. The town was beside itself as the opening ceremonies were held downtown with a parade comprised of 200 floats, 21 bands and hundreds of marchers attended by an estimated 300,000 spectators. The spectacle shut down Euclid Avenue on a hot day late in August. Three Goodyear blimps patrolled the skies above the celebrants.

The next day more than 100,000 persons attended the first flying events in a sensational display of aviation that was reported world-wide. There were demonstrations of techniques like dead stick landings, parachuting, acrobatics and a Navy team that flew tied together with rope. Charles Lindbergh piloted an open cockpit plane, banking over a standing crowd. Other aviation luminaries like Amelia Earhart appeared and each day there was a set of air races including an all woman's contest known as the "Powder Puff Derby."

But what seemed to seize the crowd's attention the most was the close -course racing which would become a hallmark of the event. The first race was a flight of five laps around a 10-mile circuit marked by pylons with the finish line ending in front of the grandstands. The winner averaged 194.9 miles per hour.

That first race was sponsored by the Thompson Company and its trophy would later become emblematic of aviation's highest achievement. Air racing proved a dangerous pursuit as six pilots lost their lives seeking glory that weekend.

In many ways that August air race was the last good time that the city would experience for years. In two months, the stock market would crash and pitch America into the Great Depression followed by World War II.

In 1930 the races were held in Chicago, but because Cleveland had produced a $90,000 profit the year before the city was awarded the races for the next five years. The races were canceled during World War II, but resumed in 1946. (As a child, the writer witnessed the races that year. It left him with an indelible interest in aviation.) It was a spectacle of flight featuring powerful planes developed during the war along with the first jets. The thousands who witnessed the demonstrations and races were awe struck by the noise, beauty and force of the event.

But it was just that---the speed and power of the whole thing---that would ultimately cause the demise of the aerial extravaganza. Tragedy struck in 1949 when one of the racers missed a pylon and crashed into a house in Berea, killing a mother and child. That effectively ended high-power air racing at the Cleveland airport.

The races were important beyond the entertainment they provided. In the 1930's, suffering from the Depression, the government had little money to spend on research and development of aircraft. The races offered an alternative with its competitive spirit and pilots willing to push the envelope in developing engines and experimenting with fuels.

This also translated to emergence of a substantial aviation industry in and around Cleveland. While there was no company that built an aircraft from the sum of its parts, there were, over the years, ancillary businesses that played a big role in developing those parts that went into flight. For instance, there was the Standard Oil salesman who accidentally discovered the Wright brothers at work in Dayton and recommended the oil that went into the first flight at Kitty Hawk. Standard Oil of Ohio would later become a major sponsor of the air races.

When Lindbergh made his famous flight to Paris, his plane was fueled with Standard Oil gas that ran through tubing made the Parker Appliance Company on Cleveland's west side. Later, after the war, the

company bought the Hannifin Manufacturing Company and it exists today as Parker Hannifin a manufacture of aircraft values, hydraulic supply systems, flight controls and other aviation products.

The company had equipment on NASA's moon landings.

In the late 1930s the federal government, spurred by the dark events in Europe, realized that American aviation was lagging behind that of the major world powers. German, Japan and England were producing the best aircraft based on advanced technology. There was alarm and a sudden need to unlimber the nation's celestial ingenuity.

The National Advisory Committee for Aeronautics (NACA) announced a national competition for an aircraft-engine research laboratory, a venture that would cost an estimated $40,000,000 and be the largest such facility in the world. Some 40 cities applied for the project and the search was reduced to just five finalists, Cleveland being among them. There was plenty of land adjacent to the airport which gave the city somewhat of an edge in the matter.

Fred Crawford, not only a capable engineer, but an astute politician as well, seized on the idea like a man possessed. The laboratory would be a perfect companion for his company which ultimately became TRW. It would also raise Cleveland’s profile in the aviation community.

Crawford slyly pointed out to the search committee during hearings that Cleveland was beyond the range of German bombers and the Nazis undoubtedly would soon have aircraft that could threaten any East Coast sites that were proposed for the laboratory.

The big obstacle facing the city was electrical power. The Cleveland Electrical Illuminating Company did not have the capacity to produce the needed power to run the gigantic wind tunnel which was the soul of the laboratory. But at the last minute, Crawford hit on a plan that would solve the problem.

The wind tunnel would only be employed at night when the city's electrical grids were in moderate use and with that ingenious stroke the huge laboratory found its home.

The laboratory was dedicated on May 20, 1943 and consisted if 12 buildings and wind tunnels able to produce winds of five hundred miles per hour. The facility was able to test aircraft engines at 67 degrees below zero.

It should be noted how prescient the city's leadership was in those days. The acquisition of an immense acreage of land in the anticipation of the future of aviation lead to the development of an aircraft industry that then attracted the NACA laboratory which would later become NASA Lewis and play an important role in the Apollo program and the landing of a man on the moon.

In many ways the work at the laboratory was vital, but esoteric in that it did not yield itself to interesting publicity, leaving the public uninformed as to what took place within its sprawling confines. Added to that, much of the work was cloaked in secrecy. It played a major role in developing the engines and fuel that enabled B-29 bombers to fly at heights that Japanese defenders could not reach resulting in an end to that terrible conflict.

With the end of World War II, aviation entered a new era with the introduction of jet engines and research on fuels that would produce supersonic speeds. In 1950 the Lewis laboratory began to experiment with liquid hydrogen, a light explosive fuel that was difficult to manage but offered the ingredients that would propel heavy loads at high speeds.

As the cold war began to grip the world, a lonely black B-57 could be seen by fishermen on Lake Erie as it scooted across summer skies, a curious sight that was shrugged off as an aerial oddity. What few knew was that the jet was was equipped with one engine that was fueled by liquid hydrogen. The engineers at Lewis were in the process of taming the volatile gas.

On October 4, 1957, the American public awoke to the stunning news that the Russians had sent a satellite into space. A sense of palatable panic seized the nation which prompted President Dwight Eisenhower to create a civilian organization that would shepherd all projects related to space into a single entity known as the National Aeronautics and Space Administration. It would initially be organized and lead by the leadership of the Lewis Laboratory which was converted into a NASA installation.

On May 25, 1961, President John F. Kennedy made a dramatic speech to a joint session of Congress announcing a plan to put a man on the moon before the end of the decade. The mission was to became known as the Apollo project and its embryonic beginnings would be found in the Cleveland scientific community.

T. Keith Glennan, president of Case Institute of Technology (now Case Western Reserve University) was NASA's first administrator and the first leader of the Apollo program was Abe Silverstein, the director of the Lewis Research Center.

The real story of the moon landing on July 20, 1969 was liquid hydrogen. The Russians were never able to develop a powerful enough fuel to duplicate the feat, a crowning achievement for the

scientific team at the laboratory which is now known as NASA Glenn after astronaut John Glenn, the first American to orbit the earth.

But the sad addendum to this story rested in the politics connected to the establishment of NASA. Despite all of Cleveland's contributions to the success of space flight, it was overlooked when it came to the creation of the agency headquarters.

President Kennedy had put the space program in the hands of then Vice President Lyndon Johnson of Texas who was the masterful politician of his time. Glennan learned this early in the project.

According to his diary, Glennan received a call from Congressman Albert Thomas, a Texas Democrat, who headed the appropriations committee reviewing the NASA budget. The call dealt with where the headquarters of the Manned Space Center would be established.

“Now look here, Doctor, let's cut the bull, Thomas says. “Your budget calls for $14 million and I am telling you that you won't get a god-damned cent unless that laboratory is moved to Houston.”

Later Lyndon Johnson would quip that Houston was closer to the moon than Cleveland. It was a cruel demonstration of the lack of political clout that Ohio possessed in Washington.