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Aviation in Rochester

By HOWARD MASON SHAFER

EDITOR'S NOTE: Howard Mason Shafer, manager of the Municipal Airport at Rochester, N. Y., active in the "Early Birds," an association of air pilots with a membership limited to aviators who learned to fly before the World War, earned his recognition as a commercial flier back in 1911, along with such pioneers as Lincoln Beachey, Charles F. Niles, and Phillips Rader. After flying, from 1911 to 1915, with the Curtiss Exhibition Company, promoters of commercial aviation, Mr. Shafer was made an acceptance engineer for the Royal Naval Air Service at the Curtiss Airplane Company plant in Buffalo, where the British government was purchasing planes for use in the World War. In 1917, when America entered the war, Mr. Shafer secured a transfer to the army of the United States and was assigned to the Aviation Section, U.S. Signal Corps, in which he served at Langley Field, at the mouth of the James River, Virginia, and at McCook Field, Dayton, Ohio, until his discharge from Federal service in 1920. In April, 1919, he was co-pilot with Captain E. F. White in the first non-stop flight from Chicago to New York. Mr. Shafer was made manager of the Municipal Airport at Rochester in April, 1930.

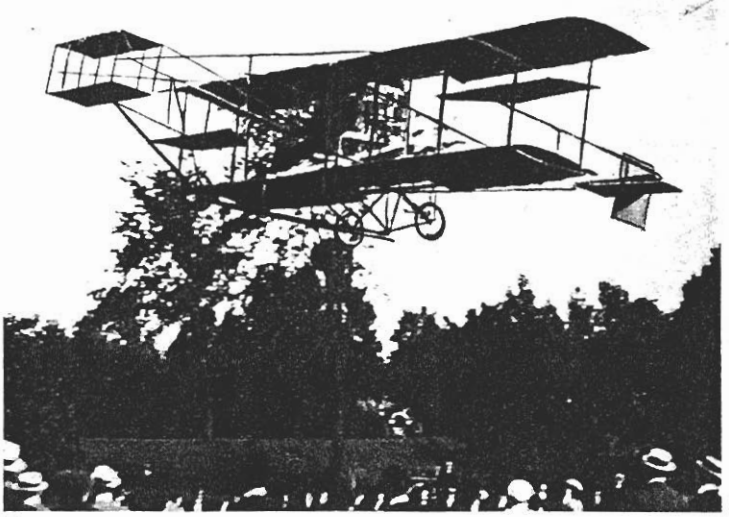
AFTER the Wright brothers, in 1904, proved to the world that the flying-machine tale was not a myth, and after Glenn H. Curtiss proved that planes could make extended trips, and then proceeded to produce a flying boat, Rochester's tide of flying enthusiasm has mounted fairly steadily. Local interest has been spurred, no doubt, by the fact that Hammondsport, close by, was the home of the Curtiss plane, and local fliers, who in 1910 were building planes on Curtiss models, lost none of their enthusiasm when the Curtiss "June Bug" won the flying trophy offered by *The Scientific American*. In 1911 not less than five Rochester planes, all Curtiss models, were presented for flight tests at an air meet held in Rochester. These machines meant to their owners more than a financial investment. Each had been built by hand, slowly and laboriously, with small regard for time and expense. Their construction displayed skill and workmanship to a remarkable degree.

Eugene Ely is credited with being Rochester's first flier, having taken his machine off the ground for an exhibition

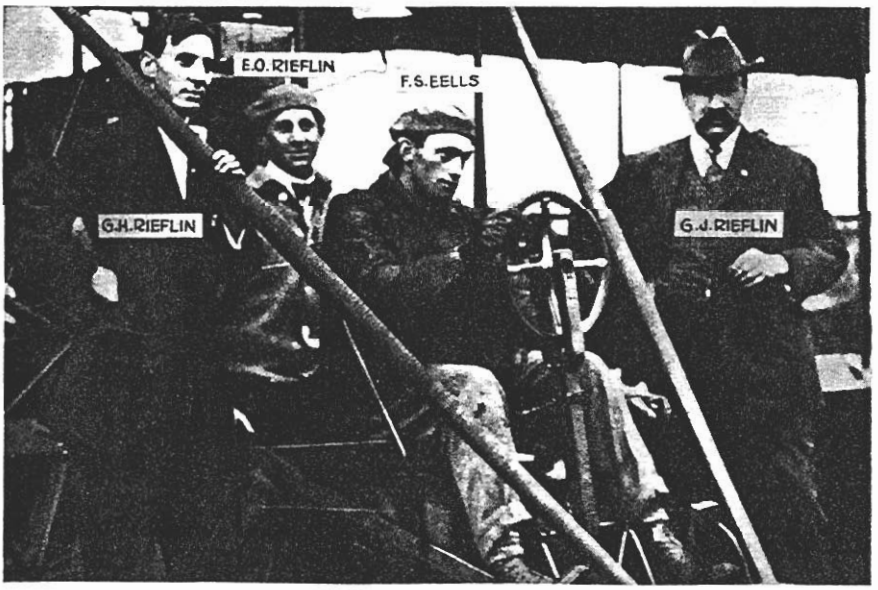
flight of brief duration in the summer of 1910. July 7, 1911, John J. Frisbie, who had already gained some notoriety as a balloonist, climbed into a Curtiss plane, driven by an engine made by the Elbridge Engine Company of Rochester, and made what was then termed an extensive flight, covering the entire distance, from Cobb's Hill northward to the New York Central Railroad tracks and back, without coming to ground. Frisbie's actual start was made from a temporary aviation field lying between Highland and Elmwood Avenues. At no time rising to a height of more than 300 feet, he got past Cobb's Hill and Wide Waters without particular incident; but, as his plane neared the vicinity of East Main Street and Culver Road and attempted a turning movement, his two-cycle engine suddenly faltered and his plane gave strong evidence of being about to descend. The fact that the plane was flying low, and that its gliding angle was perhaps less than "ten to one," coupled with the fact that it was at that moment over a closely built residential section, gave the situation a serious aspect. But Frisbie was equal to the occasion. He nosed his plane down until the engine resumed its roar, and then, straightening out before he hit any of the houses, he flew westward toward the New York Central Depot and circled thence southward to the field on Highland Avenue whence his historic flight had originated.

Frisbie had demonstrated to a Rochester audience that airplanes could do more than make mere grasshopper jumps; that they could be made to fly. He admitted, however, that the behavior of his plane during this trip had given him some cause for concern. He said that the vibration caused by his engine and propeller was so great that it affected the entire plane structure, the interplane struts and wires appearing at times many times their actual size, and causing him to wonder if the machine would hold together until he got it back to its hangar.

July 8, the day following Frisbie's over-city flight, a flying team, known as the Moisant International Aviators, gave a flying exhibition at the Rochester field. Frisbie joined this group, which included Rene Barrier, Roland Garros, and Rene Simon, a youth, eighteen years of age. Garros had an imposing list of flights to his credit, and the story prevailed



JOHN J. FRISBIE FLYING AT GENESEE VALLEY PARK DURING THE SUMMER OF 1911.



THE RIEFLIN BIPLANE, MADE IN ROCHESTER AND FLOWN BY A ROCHESTER AVIATOR.

that he had been a professor at the French Institute of Sorbonne. Frisbie flew a Curtiss biplane, while the others flew Bleriot monoplanes, with rotary, Gnome engines. They furnished a fine exhibition, with honors going to Frisbie and young Simon. No aviator had at that time attempted the "loop," but Simon showed his audience some skids, turns and spirals, and even did a few dives and climbing turns. He was given a great ovation at the conclusion of his part of the day's program. The boy was considered a marvel, and made a striking figure, with his swarthy complexion and long black hair. Hundreds of people gathered on Cobb's Hill to witness this exhibition, and the promoters of the air meet, having "passed the hat" for coins to assist with the expenses of the show, felt well rewarded. The following day, July 9, Simon and Frisbie furnished spectators with a demonstration of the use of airplanes in war. With a detachment of Company H, 3rd N. Y. Infantry, National Guard, acting as a defending force, aviators Simon and Frisbie flew over Cobb's Hill, dropping "bombs" made of paper bags filled with flour.

With Rochester builders of airplanes busied in testing their machines at the Highland Avenue field, an exhibition company from the Curtiss plant sent two fliers, Lincoln Beachey and Hugh Robinson, to Crittenden Park, a field near the site of the present Strong Memorial Hospital, where Beachey set tongues to further wagging, as to what might be expected of airplanes, by making safe landings at the conclusion of "hawk dives" from an altitude of 4,000 feet, showing tricks of low flying, and winning a race with an automobile on a half mile track. Hugh Robinson's flying exhibition on this occasion was also well executed, but so daringly, it is said, that Mr. Curtiss, who was present, had Robinson "flagged down" as he thought the exhibition was becoming too dangerous.

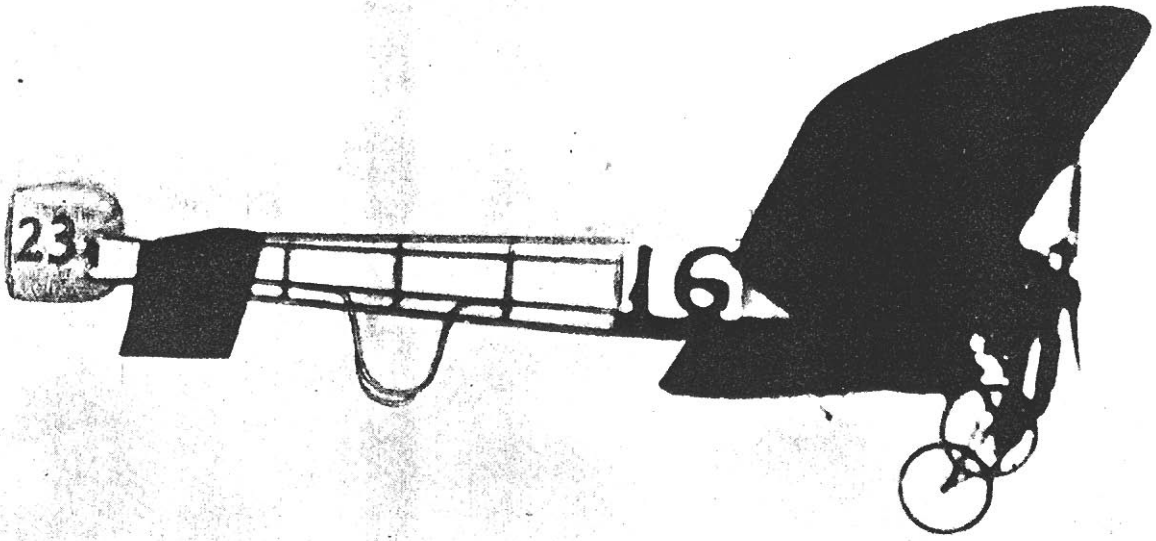
Beginning with the demonstrations by Eugene Ely, in August, 1910, the early flying shows held in Rochester proved great drawing cards and served to interest many persons in the efforts of Rochester plane builders, which group included Tyler Miller, Fred Eells, Chester Kaufman, Clifford Carey and Everett McNabb. Press accounts of these early flights and fliers have come to have historic value, and make interesting reading for modern fliers.

The *Rochester Democrat* of August 11 and 12, 1911, notes that on August 10, 1911, Tyler Miller, a Rochester flying enthusiast who had made his first flight but a week previous, flew a biplane, owned by Charles Urmson, practically the length of the Highland Avenue aviation field, at an altitude of thirty feet, but was forced to land after unsuccessfully negotiating a turn. Making a fresh start, Miller flew some 200 yards before bringing his plane to the ground again at the edge of an irrigation ditch, in which operation a small brace was broken. The brace being patched with a piece of wire, Miller made a third flight, from the hangar tents to the extreme south edge of the field, where he struck an "air pocket" and dropped, twenty feet, to the ground, with no damage other than the buckling of "a front starting wheel so that it will have to be renewed before more flights can be made."

Chester Kaufman, the same paper records, flying his "Belle of Rochester," encountered the same air pocket "and came to the ground so heavily that he broke his front and rear bed rails, a front strut, and a part of his running gear."

The following evening, with his damaged landing gear repaired, Miller rose from the same field after a run of seventy-five feet and, at an altitude of fifty feet, flew half a mile and then made a perfect landing. Discovering, to his surprise, that he had landed with all parts of his machine intact, Miller then pointed out a spot at the far end of the field and announced that he would next set his machine down "just there," which he then proceeded to do, bringing the biplane to ground with an easy dip, and halting it within a few feet of the spot indicated.

These press accounts of early flying in Rochester bring the present-day reader to a realization of the fact that the early fliers might, quite properly, have been deemed "foolhardy." But they were in earnest. Having been bitten by the flying bug they were out to show John J. Public that the motor car was by no means the latest thing in transportation. Not one had ever received proper instruction in the art of flying. Their entire knowledge of flying had to be gained without the presence of a co-pilot. Due to the fact that the early airplanes were not equipped with high-powered motors, and were built to carry but one person, it was only possible for an instructor



BLERIOT MONOPLANE AS USED BY MOISANT INTERNATIONAL AVIATORS AT ROCHESTER IN 1911

to explain, as far as possible, to a pupil, the operation of a plane, and then turn the pupil loose for a time and watch him "cut grass." To "cut grass" was to endeavor to operate a plane whose motive power had been reduced so that the machine would taxi along the ground, but could hardly be lifted into the air. When the pupil began to show proficiency in starting, stopping and turning the machine, the motor and wings were adjusted so that he could practice taking off and making landings while completing a series of short, grasshopper jumps about the field. Their first "flights" were straight-away hops. Turns were seldom attempted. But being thus self-taught, the new fliers did exercise a certain degree of caution in getting off the ground, undertaking to fly only in calm airs, and after careful tests of their engines. The usual test of a new plane's ability to climb was to attach a spring-balance to some fixed object and tie the plane to the balance, after which the propeller was set in motion to show, to some extent, the pulling power, or "thrust," as it is more properly called, of the plane. A "thrust" of at least 300 pounds was considered necessary for flying. As most of the planes of that day weighed between 500 and 600 pounds, the power to weight ratio was high, but frequently, due to careless designing, or perhaps to lack of metal structure in some parts of the plane, this high ratio of power did not produce corresponding results. Another factor, not considered at the time the early flights were made, concerned the difference between results shown in thus testing propellers, and the results produced in actual flight. The early idea that high scale readings formed final proofs of efficiency was found to be far from accurate. It was discovered that some of the propellers showing low scale readings could drive planes with higher climb and more speed power than propellers chosen for indicated thrust, or pull. This fact did not become generally known, however, until development in aircraft made progress with the years, and authentic data were established concerning both tests and production.

When the manufacture of propellers was first undertaken they were shaped from single pieces of wood. The present laminated type, formed of thin strips of material pressed closely together, was developed along with the adoption of

more powerful engines for planes, and proved vastly superior to the one-piece propellers, both as to strength and endurance. Neither were the early propellers protected by metal or fabric tips to their blades, it at first being deemed unnecessary to bind the blade tips until they showed signs of becoming nicked, or frayed, from contact with tough grass, or with earth particles.

The success attending the efforts of aviator Fred Eells, of Rochester, is a sample of what a green flier could do if he tried. His plane was a Rieflin, of sound construction. He knew he had plenty to learn about flying machines, and never let his desire to become a crack flier overcome his bump of caution. After learning how to handle planes in his home town he went abroad to gain experience in the French school of flying. Before leaving Rochester he successfully flew a biplane equipped with pontoons, at Glen Haven, on Irondequoit Bay. Returning from France, Eells entered the employ of Glenn H. Curtiss.

The Curtiss Aeroplane Company, of Hammondsport, and its associated corporation, The Curtiss Exhibition Company, had at that time a policy of leasing airplanes on a percentage basis, title to the plane remaining with the company. This was done to protect the company in revenues earned by exhibition flights as well as to remove the possibility of damage suits for alleged infringements of patent rights. As these suits for infringement were often for substantial amounts, purchasers and prospective purchasers were always warned against making themselves liable for such suits that might be charged against them. In the contracts entered into by the Exhibition Company, the flying time per aviator seldom exceeded fifteen minutes.

Until the year 1914, when Pegoud, a famous French flier performed it successfully, the "loop," as an exhibition feature, had been considered merely as a theoretical issue, too dangerous to try. Upon receipt of news that a Frenchman had accomplished the feat Lincoln Beachey went up in his plane to try the trick and was amazed at the ease with which his machine performed it. Thereafter, a loop, or two, became a part of every exhibition flight.

It will be noted, by reference to photographs of the early

airplanes, that the wings were covered on the upper side only, allowing the wing ribs to show on the under side. This early type of construction is now referred to as the "single surface wing," to distinguish it from more recent designs which called for covering on both surfaces of the wing and eventually developed into airfoil contours that decreased wind resistance as well as adding flight advantages previously unknown.

On May 9, 1911, a crowd gathered at a field near the end of the Clifford Avenue street car line to witness the demonstration of a monoplane owned by J. E. Bacheldor, and flown by Wyatt Martin. The plane, patterned after a Bleriot model, did not prove a success, according to records of the event, and was finally taken apart and carted back to a factory where changes in construction might turn it into a good performer.

Mail delivery by airplane was being discussed in Rochester in 1911 and was made a feature of an air meet held at Crittenden Park, October 21. Some loaded mail sacks were placed in Lincoln Beachey's special Curtiss biplane and flown to the adjacent Genesee Valley Park and dropped at a roadside where some awaiting post-office officials loaded them into motor cars and hurried them to the post office in Rochester whence the mail was sorted and sent by train to its various destinations. This mail, consisting mainly of post cards, had been first assembled at a regularly authorized branch post office and marked with a special cancellation stamp, and the 15,000 or more pieces which composed it were successfully delivered and thereafter highly prized by souvenir hunters. Among the Rochester post-office officials assisting in this demonstration were Postmaster Joseph A. Crane, Assistant Postmaster Edward J. Donnelly, Assistant Superintendent of Mails George W. Milby, and Clerk Edward F. Rosenhagen. The attendance at the air meet was reported as fully 35,000 persons, all of whom evidenced great interest in the demonstration pointing to the possibilities of an air mail service, as well as in the exhibitions of trick flying that Mr. Beachey had provided earlier in the afternoon. The success of both the Curtiss and the Wright Exhibition Company as advertising features was also made evident.

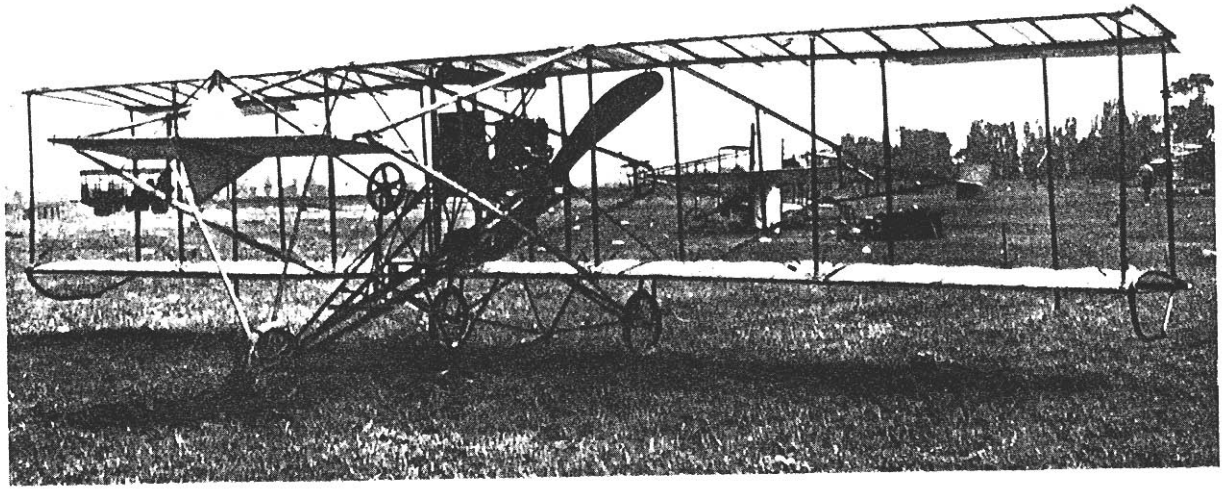
Though these early air meets were proving successful as

promotion schemes, they also occasioned many fatalities. Death seemed ever eager to claim a toll of these enthusiasts who, nevertheless, persisted in their efforts to conquer the air. Poorly designed and crudely constructed planes were ever cracking. It appeared that pilots were being killed in increasing numbers. Not all the victims were of the untrained class. A famed flier, Moisant, driving a Bleriot plane, was killed in making a forced landing in a cornfield near New Orleans; and Archie Hoxie, famous star of the Wright team of aviators, fell to his death on the Pacific coast.

News venders made such an outcry over the mounting list of flying fatalities that, for a time, the airplane business seemed about to take a decided slump. Persons contemplating the purchase of planes and engines, and persons who contemplated financing airplane construction, hastened to cancel existing contracts, avowing that they had come to believe aviation a mere fad and that they could not see how it would ever have a commercial future. Naturally this condition of affairs was fatal to more than one building company. Only a few of the oldest and strongest, and these seriously crippled, managed to survive.

But during these hard years the Curtiss Company seemed particularly fortunate. Not a casualty occurred among their pilots, and their planes performed remarkably well in all competitions. One of their fliers, Hugh Robinson, managed to capture first prize in hydro-airplane competition with European fliers at Monaco, on the Mediterranean shore of France.

Meanwhile, in Rochester, efforts continued toward producing improved designs for airships and engines, and prominent among the local experimenters was Fred G. Eells, with his Rieflin plane, patterned after a Curtiss model. He had fitted the plane with floats and was operating it on Irondequoit Bay. Records show that Eells managed to get this "hydroplane" up to an altitude of 350 feet, taking off from the water, and remained aloft for one hour and twenty-one minutes, during which time he covered a distance of seventy-three miles with a gasoline consumption of seven and one-half gallons. Eells' success was remarkable, considering how little was known at that period (1911) about building and flying airplanes.



EARLY CURTISS BIPLANE, BUILT IN ROCHESTER, AT HIGHLAND AVENUE FIELD IN 1911

But the year 1911 was made a milestone to mark the progress of airplane manufacture. The public, generally, was beginning to realize that flying had come to stay, and that the mechanically driven kite called an airplane bore bright promise of becoming something more than a mere toy. Its possibilities as a military aid, as well as an aid to commerce, were attracting the interest of manufacturers. New features came to be included in airplane construction. Their carrying capacity was enlarged. C. F. Willard, flying a Curtiss plane, established a record by taking up three passengers at one time. The fliers of the Curtiss Exhibition Company showed their audiences what might be done in the shooting line by giving exhibitions of rifle practice from moving planes, and experimented also in sending and receiving wireless messages during flight, the leader in this latter accomplishment having been Pilot J. A. D. McCurdy, during a demonstration at Sheepshead Bay, Long Island.

Up to the year 1914 the majority of makers of airplanes had clung to the "pusher" type, that is, planes with the propellers rigged at the rear of the wings. Planes of the "tractor" type, with the propellers installed at the front of the plane, to pull, instead of push it through the air, had been considered, until then, more or less as "experiments." Work was being pushed, at the Curtiss factory in Hammondsport, on a new type of airship, designed for military service, and to be known later as a "tractor biplane." This factory was also building, at that time, a giant flying boat, in which the late Rodman Wanamaker was planning to fly the Atlantic Ocean. Tests and revisions on this boat, christened *The America*, were continued until the summer of 1914, when the beginning of the World War, together with the sudden illness of Lieutenant Porte of the British Navy, who was to have been the pilot of the big hydroplane when she crossed the Atlantic, put an end to further work on the boat at the Hammondsport plant. It was reported that the craft was dismantled and shipped to England where its parts were reassembled and the boat put to use as a submarine chaser. At any rate, the great hangar, ordered built by Wannamaker to house it, at Newport News, Va., was taken over by the Curtiss people to house their Exhibition Company equipment. Meanwhile, the trac-

tor biplane, on which the Curtiss factory had been spending a lot of energy, successfully passed all the required tests and was accepted by the Aviation Section of the United States Signal Corps, as the army air service of America was then designated.

This Curtiss machine was equipped with what is known as "interplane type ailerons," intended to maintain lateral balance. These ailerons were mounted about half way between the upper and lower wings, and at the outer ends and parallel to them, and had constituted one of the feature points of the Curtiss biplanes of the early type. Instead of the interplane ailerons used on the Curtiss machines, the Wright brothers, Wilbur and Orville, used on their models a flexible section of the rear edge of the out ends of the lower wings, for lateral balance effects. On this one statement of plane control the Curtiss and the Wright companies staged a most spectacular legal battle in the patent courts. To prove that these lateral controls were not essential to successful flight, Curtiss took his plane up and brought it down in safety with its ailerons locked in one position. Though he eventually won a legal victory he found it a costly one.

One of the contributing factors to success in flying a quarter of a century ago was the Elbridge engine, built in Rochester. The factory was on Culver Road, half a mile north from the early aviation field. This engine, simply but powerfully built, was of a two-cycle design, water cooled type, and originally designed for a marine engine. From it the Elbridge Engine Company was able to produce one of the first six cylinder engines, and gained national publicity when a plane, equipped with an Elbridge, exceeded an unofficial record for altitude during a test at Kansas City, Mo. An engine known as a "Maximotor," believed to have been a Detroit product, also found favor with Rochester plane builders of those days.

Improvements over the early airplanes, in design and construction, did not all come from long study over drawing boards. It is reported that an improved plane type, known as the "headless," was adopted as standard construction by the Curtiss Company as the result of an accident which happened to one of their biplanes, flown by Lincoln Beachey, which had wrought serious damage to the plane's front ele-

vator structure. Desiring to lose no time in completing his flight schedule by waiting for repairs to be made, Beachey dispensed, temporarily, with his damaged front structure by adding an element to his rear elevator system to replace it, and the temporary adjustment worked so well that it was seized upon as a new idea in design. The first brakes used on landing gear wheels were in the form of a hinged piece of metal or wood that was pressed against the front wheel of the old-fashioned, three-wheeled landing carriage. Abandoned when the tractor type succeeded the "pusher" planes, the use of brakes was not resumed until the year 1928, when they suddenly reappeared on a Ford tri-motor.

It would be impossible, in the space permitted, to mention all the Rochesterians active in aviation at this time when planes were being rapidly improved in design and sales were increasing in numbers. Following, however, are a few of those best known to the writer. Special mention is due to Charles F. Niles, who went from West High School in this city to the Thomas School of Aviation, Bath, N. Y., about 1911, where he secured a flier's certificate after completing but ten lessons, and soon after joined the Curtiss Exhibition Company to enter a team with Lincoln Beachey. On one occasion, while aloft and trying for an endurance record, at Hammondsport, N. Y., Niles battled a gale for four hours and forty-five minutes, only to discover that a crankshaft failure had developed. Chances for a safe landing looked small, but by clever maneuvering Niles managed to volplane to the landing field without further accident. During an exhibition at Hempstead, L. I., Niles was flying upside down at an altitude of 3,000 feet when his engine failed him. Ever cool and confident, Niles swung his plane into a glide, and then spiraled down to a safe landing. At San Francisco Bay, in 1915, Niles narrowly escaped being drowned when his plane plunged into the water, but managed to free himself from his life-belt and climb out of the cockpit to a wing of the slowly submerging plane and was rescued by a lifeboat. Deciding that exhibition flying was not furnishing sufficient thrills, Niles next journeyed to Mexico with the intention of becoming an army flier in the service of Francesca Villa, but after a brief inspection of the situation along the Rio Grande he returned north.

After reaching the American side of the Border he busied himself for a time as an exhibition flier for the Moisant International Aviators, every one of whose fliers was picked for his skill and daring. Niles was soon recalled to Mexico, however, to be made chief of the airmen under Carranza Venustiana, where, he declared, he found flying mixed with plenty of adventure, and quite to his taste. Though the fliers of opposing sides rarely exchanged shots during the early military history of mechanically driven aircraft (in 1912 in the Balkans, and in 1915-1916 in Mexico), their planes, flying low for observation purposes, often met with rough receptions at the hands of an ambushed enemy armed with anti-aircraft guns and rifles. Niles quite often returned to camp with the fuselage of his plane well marked with bullet holes.

Due to rapid changes in Mexican politics at that period, Niles eventually had to leave Mexico, and was next heard from in Japan, where he had gone on a good will flying trip, and there won the title of "The Commodore Perry of the Air." He married soon after his return to America, and, ten days after the wedding, was killed in a crash during an exhibition flight at Oshkosh, Wisconsin. Niles is best known as the inventor of the airplane maneuver known as "the falling leaf," an act he could perform to perfection, allowing his plane to descend from a high altitude in a series of slow glides and aimless rolls that made it seem entirely out of control. It is said that a pilot who flew with the Moisant Exhibition team in America carried this trick to France where a French pilot, LeMaitre, on an occasion where his air patrol suddenly found themselves surrounded by a superior force of the enemy, began a "falling leaf" descent to escape a cross fire. Another French plane, believing the first had been shot down by a nearby German plane, turned, head-on, into this adversary, and the crash sent both down in flames, while LeMaitre, "leveling out" close to the ground, made his escape.

But Niles was not the only American flier to gain military experience in Mexico. Dean Lamb, considered one of the earliest army aviators, and Phillips Rader, a Chicago cartoonist who had turned to aviation, also flew south of the Rio Grande. Rader was also a pilot during the World War, and in 1915 was associated with the writer in the employ of the

Curtiss Exhibition Company at Kenilworth Field, Buffalo, New York.

Another Rochester aviation star was Blanche Stuart Scott, who took up flying in the summer of 1910 after she had won fame as the first woman driver to make a transcontinental trip by motor car. Upon her return to New York from the west coast it was suggested by representatives of the Curtiss Company that she take up flying, and the day following the arrival from Europe of Glenn Curtiss, who had just won the 1910 Gordon Bennett racing trophy for airplanes, Miss Scott's contract was signed and she reported immediately at the Hammondsport flying field to begin training under the personal direction of Mr. Curtiss, who stood by to give instructions in the use of the plane controls as Miss Scott cautiously taxied her "grass-cutter" up and down the far end of the landing field. She proved an apt scholar. Due to some oversight of the mechanic in charge of Miss Scott's plane its motor was not cut low enough to keep the plane from rising into the air on the second trial. Miss Scott stayed by the plane, and brought it safely down after a brief flight. This naturally put an end to her grass-cutting days, and it took but a few weeks more of training to make her capable of being assigned to a group that was appearing in public at Fort Wayne, Indiana, where, teamed with a flier called "Bud" Mars, she appeared, October 22, 1910, in the first exhibition flight ever given by a woman in the United States. Suddenly deciding to give up flying and settle down, Miss Scott went to Dayton, Ohio, to make her home, where she eventually married, but the call of the air proved too strong to allow her to stay on the ground, and by May, 1911, she was off again, to take part in some flight exhibitions on Long Island where, in the fall of that year, she won acclaim by making what was then called a long distance flight for women, a distance of sixty miles, Miss Scott being the first woman to accomplish such a feat. This flight by Miss Scott was looked upon by aviators as more than the mere winning of a prize for women. Excepting for the flight from St. Louis to New York, a long distance record established by Harry Atwood during the summer of 1911, few American aviators, male or female, had attempted any flights that were not confined to the vicinity

of the field from which they took off. Therefore, on account of the publicity she gained by her cross country flight of sixty miles Miss Scott secured a position as a "headliner" in The Great Western Aerial Circus, along with such noted fliers as Lincoln Beachey, Glenn Martin, Philip Parmalee and Tom Gunn, and for the better part of a year took part in exhibition flights in all the coast cities from Seattle, south to San Diego, in which Miss Scott was acclaimed the first woman flier of the Pacific slope. The following year Miss Scott returned to the east coast and made exhibition flights at Squantum Field, near Boston. She was flying a plane near Harriet Quimby's, at Squantum when Miss Quimby, the first woman to fly the English Channel, was killed, her plane having suddenly crashed to the ground. Miss Scott brought her plane to a safe landing and then fainted at the controls. Miss Scott continued giving flying exhibitions, in the Middle West, for nearly a year after Miss Quimby's death, despite injuries she received as the result of a bad fall at Madison, Wisconsin, in 1913. In 1917, when the United States entered the World War, she decided to retire permanently from the flying field.

During these years Rochester had been represented at the Hammondsport flying field by Walter Johnson and Howard Shafer. Johnson had just returned from Russia, where he had been giving demonstrations with Curtiss flying boats for the benefit of prospective buyers connected with the government. Johnson and Shafer were among the Curtiss men assigned to the crew of the historic "Langley Tandem Airdrome," as the tandem monoplane was called that was then being engined, tuned and tested, and fitted with pontoons for water launching, at the Hammondsport plant, before being turned over to the Smithsonian Institute at Washington, D. C.

The instruction courses in flying, by which many of the early fliers gained the title of "aviator," were often brief. Among Rochester amateurs was one Clifford Carey, whose career as a flier had thus far been limited to taxi trips in those practice planes called "grass-cutters," or in a more advanced type of practice plane known as a "penguin," in which flying pupils were permitted to make short, hectic hops about the field, but which could not be made to rise in the air

to any extent. Carey, however, was an enthusiastic beginner, and is alleged to have made the statement that, for a consideration, he was ready to try flying anything that had wings. Upon learning that some foreign built planes were being assembled at Hempstead, Long Island, in preparation for an aviation meet, Carey reported at that field, secured permission to demonstrate his flying ability, and then took one of the strange planes up for a short flight, managing to land it again, in the required spot, without accident. This performance secured him an engagement as an experienced pilot, but after a brief stay at Hempstead he returned to Rochester for further instruction in the flying game and then left the city for parts unknown, having proved to his friends, meanwhile, that courage and caution, backed by theoretical knowledge of the subject, went a long way toward making a real pilot.

A marvel of those early training days is that so many of the beginners in the flying game actually learned to fly, all handicaps considered. But there was one great feature in their favor. Every fledgling present insisted upon sharing with his neighbor each bit of knowledge or experience that he might possess, and so great was their desire to learn how to make emergency repairs that news of a single broken wire or damaged fitting in the fleet of airplanes present was enough to bring together, with offers of assistance, all the mechanics on the field. Percy W. Hodgekinson, an instructor in mechanical design at Mechanics Institute, and the inventor of a governor device for engines for motor vehicles, is remembered for the technical advice he furnished so freely to local aspirants to flying fame.

The World War not only pushed airplanes into prominence as important factors in military operations, but proved their value as commercial aids. Before they were grouped and developed, under World War conditions, into combat units, they had been used by the Madero, Carranza, Diaz and Villa factions in Mexico, as carriers for observation groups and scouting parties, but encounters between opposing air parties had never meant anything worse than unimportant rifle or pistol duels. It is said that even the early World War pilots did not exchange shots, but gaily saluted each other when they met on scouting flights. Later, however, they mounted

machine guns in the cockpits of their planes, and eventually equipped them as "bombers."

Meanwhile the Curtiss Motor Company station at Hammondsport became exclusively a manufacturing plant for airplanes and engines, all training of fliers having been transferred to other points. One of these was the new aviation field at Buffalo, known as Kenilworth Field, and operated by the Curtiss Company, basically as a test field for completed planes, but also as a flying school for the Curtiss Exhibition Company. It was at Kenilworth Field that the original Harvard Flying Club originated, or at least learned to fly. Students flocked to this field from nearly every country on the globe. Between this new field, near Buffalo, and the Hammondsport plant, at the southern end of Keuka Lake, Steuben County, was operated the first commercial air line in the Eastern states. Merchandise transported by its large Curtiss R-4 biplanes consisted mainly of airplane parts.

The demand created by the World War for both airplanes and aircraft personnel caused all makers of airplane parts to call loudly for aid to keep up with the demand. Rochester machine shops, tool and die shops, foundries, and motor car factories rushed production. A Rochester company, under the firm name of Wells and Adams, began building airplane engines.

Long before the United States entered the World War the youth of Rochester had, in growing numbers, begun enlisting in the armies of the Allies, and especially did they respond to Europe's demand for trained fliers. The Canadian army proved a great drawing card for Rochester aviators, the Royal Canadian Flying Corps gladly accepting enlistments of local fliers. French flying units also proved attractive to Rochester men, among the first of whom to enlist for European service were William C. Dugan and Edward Coapman.

Dugan, who had entered the French Foreign Legion (Infantry) at the outbreak of the World War, in 1914, was soon transferred to the air service and eventually became a member of the famous Lafayette Escadrille. He won promotion to the grade of first lieutenant and was awarded a medal of the Legion of Honor, the Croix de Guerre, and several citations. He came through the war safely, but died at Patchogue, Long Island, September 15, 1924.

William S. Calkins, another Rochesterian, who trained at the United States Army School of Aeronautics at Cornell University, and at Mt. Clemens, Michigan, and Mineola, N. Y., was assigned, September 12, 1917, to the 763rd U. S. Aero Squadron, 2nd Army, and, besides winning promotion to the grade of captain, was awarded the French Croix de Guerre, with palms, and cited for exceptional bravery in action. Returning to Rochester after the war Captain Calkins became active, locally, in the development of aviation, and was for several years chairman of the Rochester Chamber of Commerce aviation committee.

Francis Patrick Mulcahy of Rochester joined the U. S. Marine Corps in May, 1917, and during his service in France rose to the grade of captain in Squadron A, 1st Marine Aviation Force, and was awarded the Distinguished Service Medal for exceptional gallantry in action.

Kenneth M. Cunningham also attended the army school for aviators at Cornell University, gained the grade of first lieutenant, was sent overseas, September 1, 1917, was in action at the bombing of Cologne, Coblenz and Mayens, and did not leave the service until April 12, 1919.

William Smith Ely, another Rochester aviator, enlisted for service in the World War in May, 1917, and was assigned to the Aviation Section, U. S. Signal Corps, as our army air service was called at that time. He was sent to France, July 9, 1917, and soon after was promoted to the grade of first lieutenant, but came to an early death, January 2, 1918, near Oxford, England. Another Rochester flier, killed while on training duty, was Vincent Calvin Dunham, who died in a plane collision near San Antonio, Texas, January 21, 1918. William E. Sloan, Jr., of Rochester enlisted in the U. S. Navy and was assigned for duty in the aviation section, May 7, 1917. Following a course of training at Bay Shore, Long Island, he was commissioned an ensign in the navy and assigned for duty to the Naval Air Station, Pensacola, Florida.

One of the most famous of Rochester's aviators is William Mitchell, brigadier-general, U. S. Army, A. C., retired, who resided at 68 South Washington Street. As a young man he saw active service in the Spanish-American War and the Philippine Insurrection, and at the time of the Mexican

Border campaign, in 1915-1916, held the grade of major, Aviation Section, U. S. Signal Corps. Sent to France in March, 1917, as an aviation expert, he was returned to this country in 1919 and placed in command of the U. S. Air Service with the grade of brigadier-general. During his service in France he was awarded the French Croix de Guerre, the American Distinguished Service Cross, and citations for repeated acts of heroism in the line of air scouting which furnished valuable aid to the Allied Armies. With his knowledge of flying, backed by his long and active service in the regular army, General Mitchell was a man well fitted for the position he held, and worked hard, during his term of office, not only for the enlargement of the army air service but to procure improved equipment for it. He is the author of several books on aviation, and his military hobby is to demonstrate the possibilities of aerial attack and defense.

Colonel Byron Q. Jones, U. S. Army, entered the U. S. Signal Corps, at Rochester, N. Y., July 12, 1912, and was assigned for duty to the aviation branch where he rapidly rose to the grade of lieutenant-colonel. During the World War he became an instructor in aviation, serving overseas from April, 1918, to June, 1919. He is the author of several books on flying and has served on the faculty of the Army War College at Washington, D. C.

Earl Beers, a skilled Rochester pilot, secured his early training at the Curtiss School at Hammondsport, later going to fly for Robert Glendenning, a Philadelphia banker, at Essington, Pennsylvania, where he became associated with Major William C. Ocker, of "blind flying" fame. Beers was eventually killed in a crash on the Atlantic coast while flying a large seaplane.

Glenn Poyser, another Curtiss School graduate, trained at Kenilworth Field and served for a time as civilian instructor in aviation at various Texas flying ports. He was active also in Rochester as a representative of the Davis Aircraft Company.

In January, 1921, the city of Rochester acquired for an airport a tract known as Britton Field, adjoining Scottsville Road, to the south of the city, but allowed it to remain in an unimproved state for many years. In 1927, following the lone

trans-Atlantic flight by Charles A. Lindbergh, which did much to restore general confidence in flying as a successful commercial venture, numerous corporations were formed to promote business in aerial transportation. When Colonel Lindbergh later visited Rochester he aroused tremendous enthusiasm, and Rochester airport officials began to give serious thought to the establishment of a permanent air service for mail, merchandise, and even for passengers. In 1928 a hangar was erected at Britton Field, now dignified by the name, "Rochester Municipal Airport," runways were constructed and signal apparatus installed, and Rochester became a real airport, known as "C. A. M. 20," on the air mail route between Cleveland, Ohio, and Albany, New York. This route is also known as "the lake level," because it follows, generally, a comparatively level region along the line of the south shores of Lakes Erie and Ontario and crosses near the region of the New York Finger Lakes.

With the rapid increase in interest in air transportation the one hangar at the Rochester airport soon proved too small for the growing demand, and Gareth Clark, its manager, was successful in securing the promise of a second building. Before this was erected Mr. Clark resigned his position as manager to accept a proposition offered him by an air express company, and in April, 1930, management of the Rochester airport was assumed by Howard M. Shafer. The new hangar was completed and opened for business, and other improvements begun. The port's parking area for motor cars was enlarged and improved, more flood-lights installed, and new equipment purchased.

On August 16 and 17, 1930, the new airport was formally dedicated. The ceremonies were under the direction of the Monroe County American Legion and featured one of the largest and most successful air meets ever held in this part of the country, nationally famed pilots participating. A squadron of U. S. Army airplanes from Mitchell Field, L. I., commanded by Major William Ord Ryan, made the trip from their base to Rochester through storms and over fog-covered hills and valleys. They arrived in perfect formation and thrilled an audience (estimated at 100,000) with a display of formation flying by the Ninth Observation Group. Following

a program of races and "stunt flying," a group of sixty airplanes (other than the Army ships) including one giant Ford tri-motor took up passengers or flew about the neighborhood for amusement, and the entertainment closed with an exhibition drill by Company C, U. S. Marine Corps Reserves, and a sham battle by the Howitzer Company and Companies A, G and H, all of the 108th Infantry.

In May, 1931, in connection with the mass concentration flight of the U. S. Air Corps, to the east coast, the Rochester Airport was called upon to handle the largest section of the flight enroute, which included the 27th, 17th, and 94th squadrons of the First Pursuit group. This group began arriving by three's at 9:12 a.m., and were soon all on the ground and taxiing into formation for refueling, for which three hours were allowed. The pilots having rested and lunched, they resumed their flight, equalling a National record for take-offs, the entire eighty-four ships present leaving the ground in a few seconds less than fifteen minutes.

Activity at the Rochester Airport continued to increase during 1931 and 1932. On November 22, Mrs. Amelia Earhart Putnam visited Rochester and gave an address at the Lyceum Theatre, which was very interesting as, having previously flown the Atlantic Ocean, she related her experience during her trans-Atlantic flight. The next year, 1933, the American Air Aces, Inc., of Chicago, Illinois, presented a two-day Air Circus, September 23 and 24, in Rochester. Again, nationally famous pilots participated, among whom were Bennett Griffin, New York to Berlin flier; Captain Arthur Davis of Lansing, Michigan; Roy Hunt of Oklahoma City, Oklahoma, transcontinental air race winner; Harold Neuman, of Moline, Illinois, famous speed flyer; Richard Granere, Royal Canadian Flying Corps ace; George T. Burrell, Jr., who "stunted" a tri-motored Ford plane; Len Povey, later active in the air service in South America; Lee Haynes, of Texas, racing pilot; and Clarence McArthur of Tampa, Florida. With this talented group was also Clemence Sohn who made parachute jumps from 15,000 to 20,000 foot altitudes. The performance of these stars in the Rochester program, sponsored by the Monroe County American Legion, was broadcasted by "Jack" Storey of Ponca City, Oklahoma,

who was also the announcer at the National Air Races at Cleveland, Ohio.

As a precaution against auto accidents during the "stunt" flying, all roads in the vicinity of the Rochester Airport were closed to the public during the exhibition. The officials in charge of the events were Robert J. Murphy, Legion Chairman of Rochester Air Races; Clement J. Lanni, County Commander, American Legion; and Howard M. Shafer, Manager, Municipal Airport. This air exhibition attracted record crowds and was received enthusiastically.

The round-the-world flight by Wiley Post, to his destination in New York, was another thrilling event in the year 1933. Great crowds flocked to the Rochester Airport with the hope of seeing his ship as it passed, but as he flew with his position lights unlighted, his ship was not visible at the Rochester Airport. Mr. Post later visited Rochester, August 29, 1933, where he was welcomed by a crowd of 30,000 people, and during his two-day visit in the city was guest of honor at a Rotary Club luncheon. After attending a baseball game, and a dinner at Brook Lea Country Club, he left this city to visit Binghamton, August 30. Wiley Post and his famous Lockheed Vega plane, the "Winnie Mae," visited one hundred five American cities during the tour he made following his famous solo flight.

During 1934, Rochester Centennial year, requirements for plane storage became so great at the Rochester Airport that plans were considered to take advantage of all available building space. These plans called for a new hangar; an administration building, large enough to house an airline staff, with teletypes, map printers, and a complete aerological station; waiting rooms and all facilities of an air terminal, besides the operation and executive offices of the airport. The landing area was to be enlarged; an additional runway built; lighting arrangements to be completed, and a two-way radio installed.

On July 21, 1934, with a good part of these proposed improvements completed as additional attractions, another air show was given with Erickson Perkins, Jr., as general chairman. The exhibition featured such stars as Clemence Sohn, Captain Earl Eckel, Arthur Davis, Harvey Mummert and R. C. Havens, and drew merited attention.

Late in 1934 the Cunningham-Hall Company of Rochester, which already had produced several new types of aircraft, completed another which was sent to the Rochester Airport for testing, where it was flown by Guy R. Stratton to the satisfaction of all present. The plane then proceeded to the Army Air Corps test field at Dayton, Ohio, for inspection. This airplane had several features of design that were original and exclusive.

On December 9, 1934, Mr. and Mrs. Martin Johnson, famous explorers, arrived in Rochester in their Sikorsky amphibian airplane which they had used in Africa. While in this city they presented at the Eastman Theatre a film picturing their exploits and travels.

In 1935, work was begun on the enlarged landing area at the Rochester Airport and proceeded through the winter, as the weather permitted. This work included considerable grading with an enlarged system of drainage. May 1, of the same year, marked the organization of the New York State Airport Managers' Association, of which Howard M. Shafer of Rochester was elected treasurer, and thus Rochester came to be represented in the planning and execution of the national aeronautical programs. At the National Aeronautical Chamber of Commerce, in session at Washington, D. C., Mr. Shafer was made chairman of the National Conference, and, at a following regional meeting at Birmingham, Alabama, he presided in conjunction with Steadman Acker, regional chairman.

On August 28, 1935, Colonel and Mrs. Lindbergh landed at the Rochester Airport and refueled for a western trip. This was Colonel Lindbergh's second visit to this city.

The year 1936 continued to bring increased business to the Airport. The construction program continued with field improvements, and, as normal activities have tended to overtax the storage facilities, plans have been prepared for building expansion. Airline schedules have been increased to six daily, and a new direct service to New York started, via Elmira, New York, and Scranton, Pennsylvania, thus reducing to two hours and eleven minutes the flying time to New York City.