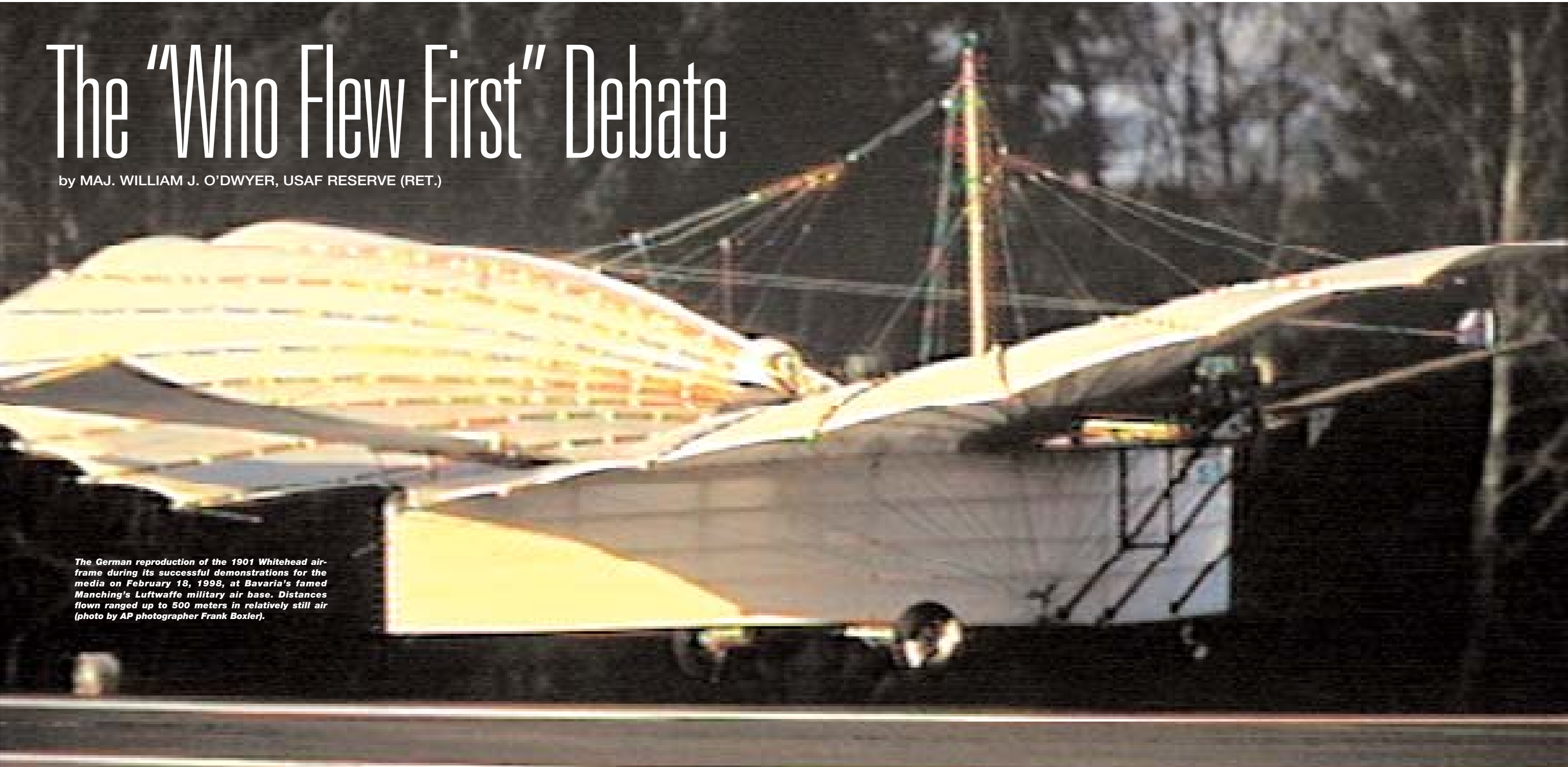


The "Who Flew First" Debate

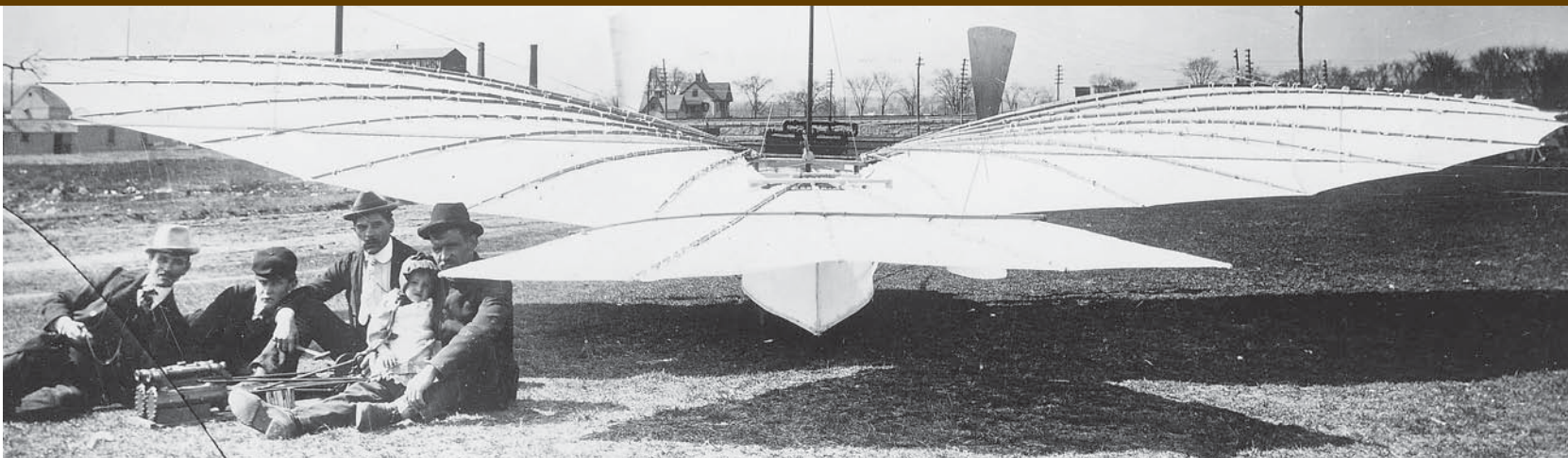
by MAJ. WILLIAM J. O'DWYER, USAF RESERVE (RET.)



The German reproduction of the 1901 Whitehead airframe during its successful demonstrations for the media on February 18, 1998, at Bavaria's famed Manching's Luftwaffe military air base. Distances flown ranged up to 500 meters in relatively still air (photo by AP photographer Frank Boxler).

An original photograph of Whitehead and his 1901 monoplane taken near Whitehead's Pine Street shop. His infant daughter, Rose, sits on her father's lap, and the engine that powers the front landing-gear wheels is on the ground in front of the others.

ORIGINAL 1901 PHOTOS COURTESY OF WILLIAM J. O'DWYER COLLECTION



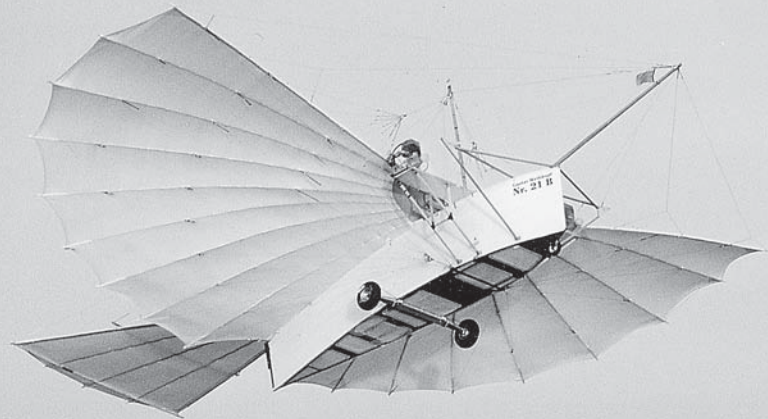
In late 1963, the dilemma of attempting to determine how Gustave A. Whitehead fit into early powered flight history was more or less thrust upon our then very active 9315th USAF Reserve Squadron in Stratford, Connecticut. The question we were to answer was a tough one: did or did not Whitehead fly with power before the December 17, 1903, events at Kitty Hawk?

There had never been a formal inquiry into that matter. At the request of the Connecticut Aeronautical Historical Association's (CAHA) vice president, Harold "Hal"

Dolan, our squadron became the first to embark on that mission. Dolan felt we should dig into the 1901 accounts of flights alleged to have taken place in and around

Investigating Gustave Whitehead and the beginning of powered flight

Bridgeport, Fairfield and Stratford, Connecticut. CAHA (now known as the New England Air Museum) was attempting to chronicle aviation history in Connecticut.



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were: why would anyone, or any museum, make an effort to prevent a study of Whitehead? Shouldn't the world know who he was and what he did or did not achieve? Why was there a “moratorium” when no formal investigation had ever been conducted by any qualified body?”

It appeared the only individual who tried to uncover Whitehead's history was Stella Randolph. Her 1937 book, “Lost Flights of Gustave Whitehead” has long been out of print, so we borrowed a copy from the Bridgeport Public Library. In late 1963, when this scribe located Randolph at her home in Maryland, just outside Washington, D.C., she agreed to be our squadron's guest and to lend us any information not included in her book. We, in turn, would submit whatever we discovered for her upcoming book, “Before the Wrights Flew,” which was destined for publication in 1966 by G.P. Putnam & Sons.

German test pilot Horst Philipp commented that it was “... a good landing because I could walk away from the crash.” This shows the nose-high airframe at 4 meters; it stalled shortly after this was taken. Compare it to the 1901 sketch on the opposite page drawn by eyewitness Dick Howell, sports editor for the Bridgeport Sunday Herald; it is nearly identical except for the landing gear and engines.



A close view of the cockpit and wing-root region of the German reproduction. The forward ends of bamboo-cane ribs swivel on bolts that are fastened through the rib tray.

In the early spring of 1963, Dolan's interest was sparked by aviation writer Ted Basche, who wrote a feature article for the *Bridgeport Sunday Post*. Basche described the account of the August 14, 1901, “Whitehead half mile flight” as told by eyewitness sports editor, Dick Howell in the August 18, 1901, *Bridgeport Sunday Herald*. Unfortunately, “Hal” Dolan told us he was forbidden to pursue research into Whitehead shortly after he began his probe and asked us to continue instead. He said a moratorium was called for by the chairman of the CAHA board of directors. The chairman had been taught to fly by Orville Wright, and he insisted that Dolan's Whitehead research “... could be viewed as an effort to denigrate the Wrights.” He was said to be adamant.

To make matters much worse, most CAHA founders worked for United Aircraft Corp., and the CAHA board chairman was the CEO of one of their divisions. “If I went against him,” Dolan remarked the night we first met at the *Bridgeport Post* editors' offices, “I'd lose my job.”

This scribe had just found a number of photos of a 1910 Beach/Whitehead biplane in an old album; under one photo, the words “Whitehead's Effort” had been penned. This album, along with four others, was found in the attic of a house I was renovating at the time that belonged to a Mrs. Alice Watson Armitage. Apparently, her brother, Arthur Kent Lyon Watson, took these photos, and she said that he helped Whitehead out financially. After seeing those, Basche organized a midnight meeting with Dolan to view photos from the albums that spanned from 1898 to 1916. The historical investigation was taking on the aura of a White House scandal probe.

It was during those early meetings that we began to learn of the controversial issues involving Whitehead's history as an early air pioneer. We were also surprised to find many recognized experts and institutions thought that investigations into Whitehead's efforts were a wasted effort and should be ceased. The first questions to arise

Within a few months, we discovered enough to prove Whitehead was a bona fide air pioneer of merit, and the moratorium at CAHA was lifted. CAHA's president, the late Harvey H. Lippincott, submitted our evidence to the head of the Connecticut Dept. of Aeronautics and to the governor of our state. It was enough to have Whitehead recognized as the “Father of Connecticut Aviation,” regardless of whether he flew with power or not. He was the first in Connecticut to seriously investigate manned flight at an

impressive level (considering the state of the art for that period). We were, however, stunned to learn that a number of articles and books condemned Whitehead as a “fraud” and “hoaxer” with little or no factual information to back up those claims.

There is, for instance, a photo of Whitehead and his 1901 powered monoplane on exhibit at the Smithsonian NASM, and the caption reads “... none of his aircraft ever flew.” Who established that fact? How? When? On what scientific grounds?

The most often quoted reference that would answer these questions, touted as “reliable,” is the unsigned statement by Stanley Yale Beach that surfaced in 1939. Beach was the aeronautical editor for his grandfather's prestigious magazine, *Scientific American*.

Beach said he knew Whitehead personally. On April 10, 1939, he wrote in *Scientific American*, “I was with him frequently from 1901 to 1910 and at no time did he ever say that he had flown, even though he built several machines after the date on which he was supposed to have flown ... I met him in May 1901, photographed his machine and described it in an illustrated article [Looking at the bare trees and

the way people are dressed, I would say these photos have to be March 1901 photos—not May! These photos were used in Beach's *Scientific American* article of June 8, 1901.]... I found that he had built an aeroplane that was inherently stable and also was building engines. He built one of 20 horsepower to drive the two propellers of his monoplane and one of ten horsepower to propel it on the ground.” Later in that seven-page statement, Beach writes, “I saw no 10 H.P. engine for ground propulsion.” Then, in the same breath, it reads: “The Whitehead aeroplane had many interesting features. It was inherently stable and could be flown safely, always ‘pancaking’ and landing on a level keel.”

Note the contradictions: how can you not fly, yet have an “inherently stable” design that could be “flown safely” and land “on a level keel”? Beach claims he was the closest person to that subject, yet he contradicts himself repeatedly.

By 1939, the aviation world had forgotten about Whitehead, and it was politically correct to join the ranks of those hailing the history of the Wrights. Beach's denial of any knowledge Whitehead ever flew came 12 years after Whitehead's death, so he wasn't able to defend himself. But Beach's

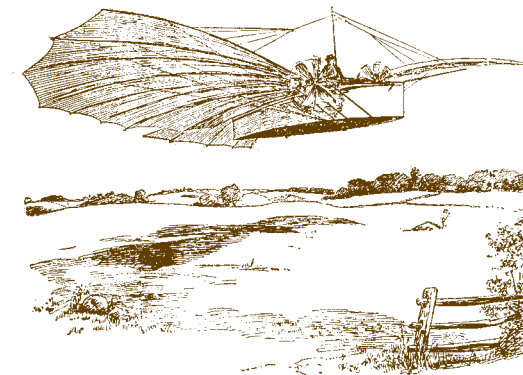
unsigned, contradictory statement was enough to convince Orville Wright. Orville quoted Beach, as have all other Whitehead detractors since.

We might have easily been led to believe Beach's 1939 statement had we not located what he originally published for his *Scientific American* readers between 1901 and 1908. Those reports belie what he wrote three decades later.

In the June 8, 1901, edition of *Scientific American*, Stanley Yale Beach described Whitehead's 1901 high-wing monoplane and gave the airframe and the engine specifications. He started with:

“A novel flying machine has just been completed by Mr. Gustave Whitehead, of Bridgeport, Conn., and is now ready for the preliminary trials. Several experiments have been made, but as yet no free flights have been attempted. The machine is built after the model of a bird or bat. The front wheels are connected to a 10-

horsepower engine to get up speed on the ground, and the rear wheels are mounted like casters so that they can be steered by the aeronaut. On either side of the body are large aeroplanes, covered with silk and concave on the underside, which give the machine the appearance of a bird



This woodblock print is from the original sketch made by sports editor Dick Howell; it accompanied the full-page August 18, 1901, feature report of his claimed eyewitness account of Whitehead flying with power for a distance of “one half mile” on August 14, 1901. Howell never used photos. He was an art purist who rendered other featured Bridgeport Sunday Herald reports with sketches.



Right: this 1901 original photo was taken just south of the then New York/New Haven railroad tracks near Whitehead's Pine Street shop. Posing with his powered monoplane, Whitehead holds his ground engine, which was used to drive the front wheels of the landing gear. He drove his machine along the road with the wings and tail folded, and then he used that engine to assist in overcoming ground drag during the takeoff roll. It is interesting to note that at this early date, Whitehead understood the need for propeller-blade pitch.

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in flight. The ribs are bamboo poles and are braced with steel wires. The wings are so arranged they can be folded up. The 10-foot rudder, which corresponds to the tail of a bird, can also be folded up and can be moved up and down, so as to steer the machine on its horizontal course. A mast and bowsprit serve to hold all the parts in their proper relation. In front of the wings and across the body is a double compound engine of 20 horsepower, which drives a pair of propellers in opposite directions, the idea being to run the machine on the ground by means of the lower motor until it has the necessary speed to rise from the ground. Then the upper engine actuates the propellers so as to cause the machine to progress through the air to make it rise on its aeroplanes. The wings are immovable and resemble the outstretched wings of a soaring bird. The steering will be done by running one propeller faster than the other"

Of special interest is where Beach states in his 1939 remarks that he never saw the ground engine that drove the front wheels, yet he claims he took the photos he used in his June 8, 1901, *Scientific American* report (page 357). The front-view-photo caption reads: "Whitehead's Flying Machine, Showing Engine and Propellers."

Gustave is seated on the ground under the right wing holding his daughter, Rose, on his lap. Immediately in front of them we can easily see and examine the ground motor used to propel the front wheels via a bicycle sprocket and chain.

Scientific American, pages 93 and 94, January 27, 1906, carries an extremely important report by Stanley Beach. He attended the first exhibit held by the newly founded Aero Club of America, of which he was one of the original members. It was a stepchild organization of the Automobile Club of America and was held with the Sixth Annual Automobile Show in New York City's 69th Regiment Armory. In the report, Beach mentions Whitehead twice! "This exhibit," he wrote, "was the most complete of its kind ever held in any part of the world, for all types of flying machines, balloons and airships were represented"



The German team (left to right): Hermann Betscher, director of the Gustav Weisskopf Museum and Flughistorische Forschungsgemeinschaft Gustav Weisskopf (FFGW) research; Heinz Wellhöfer, former Bürgermeister and the FFGW member who initiated Leutershausen's 1966 gathering of our squadron's research findings; Gerhard Ossiander, aero engineer; Fritz Bruder, mechanical engineer and builder of the airframe; Martin Jendretzke, FFGW; Matthias Lechner, FFGW assistant director; Heinz Langhammer, engineer; Horst Philipp, aero engineer and retired Luftwaffe test pilot who headed the technical studies and flight-test operations.

substantially rewritten. In 1981, we found a photo at NASM containing the location where Whitehead exhibited his photos. In the background of that photo was a picture of Whitehead's machine in flight. Unfortunately, the non-clarity of the photo rendered it useless.

The Wrights did not produce their December 17, 1903, photos until 1908; that irked publishers and fellow inventors both here and abroad. They held back their famous 1903 photos in an understandable effort to first obtain a patent for their design.

On page 379 of the *Scientific American* November 24, 1906, issue, Beach wound up his report about "Santos Dumont's Latest Flight" begun on page 378. Beach wrote:

"... In his enthusiasm, the Brazilian aeronaut forgets also that at least three experimenters in America (Herring in 1898, Whitehead in 1901 and the Wright brothers in 1903), Maxim in England (1896), and Ader in France (1897) have already flown for short distances with motor-driven aeroplanes, and yet no really practical machine of the kind has as yet been produced and demonstrated"

Of course, Whitehead is quoted often saying that his machine was anything but practical. The dawn of "a practical flying machine" did not occur at Kitty Hawk in December 1903 either. Flight at that time

Besides these very complete exhibits of apparatus, the walls of the room were covered with a large collection of photographs showing the machines of other inventors, such as Whitehead, Berliner and Santos-Dumont; and other photographs showing airships and balloons in flight A single blurred photograph of a large birdlike machine propelled by compressed air and which was constructed by Whitehead in 1901 was the only other photograph besides that of Langley's [scale model] machines of a motor-driven aeroplane in successful flight. In order at least partially to substantiate their claims, it would seem as if aeroplane inventors would show photographs of their machines in flight" If the photo Beach mentions as showing Whitehead in flight were to surface, much of aviation history would be

PHOTO COURTESY OF FFGW



An original 1901 overhead view of Gustave Whitehead's powered monoplane. In 1986, by underexposing prints during the construction of the first reproduction, we were able to see where the ground engine was installed (pushrods and their shadow show in cockpit-area floorboards behind the mast). What looks to be the top of his generator is behind the ground engine in the dark, shadowed region. No detail of its design can be determined. Numerous persons, including Whitehead's associates, recalled seeing the generator working the "steam-type" engine while on a test block and when the airframe was making short hops along the dirt roads near Whitehead's shop before and after the claimed August 14, 1901, events.

was made possible only by the 25 to 27mph headwind that aided in overcoming the ground drag the Wrights' underpowered aircraft of 1903 could not have otherwise overcome. Their Kitty Hawk Flyer would never rise from the ground in winds under 20mph. The four liftoffs from their rail on December 17, 1903, were not achieved "by its own power." In fact, many subsequent flights relied upon a weight-driven catapult. To this date, no exact replica of their 1903 Flyer has ever rotated in still air or light headwinds.

Not until the Wrights increased the power of the engine and added a catapult to replace the missing 25mph headwinds did they get to fly their biplanes in and around Dayton during the years that followed. If we are to debate who may have flown "first," let's argue that game on a level playing field.

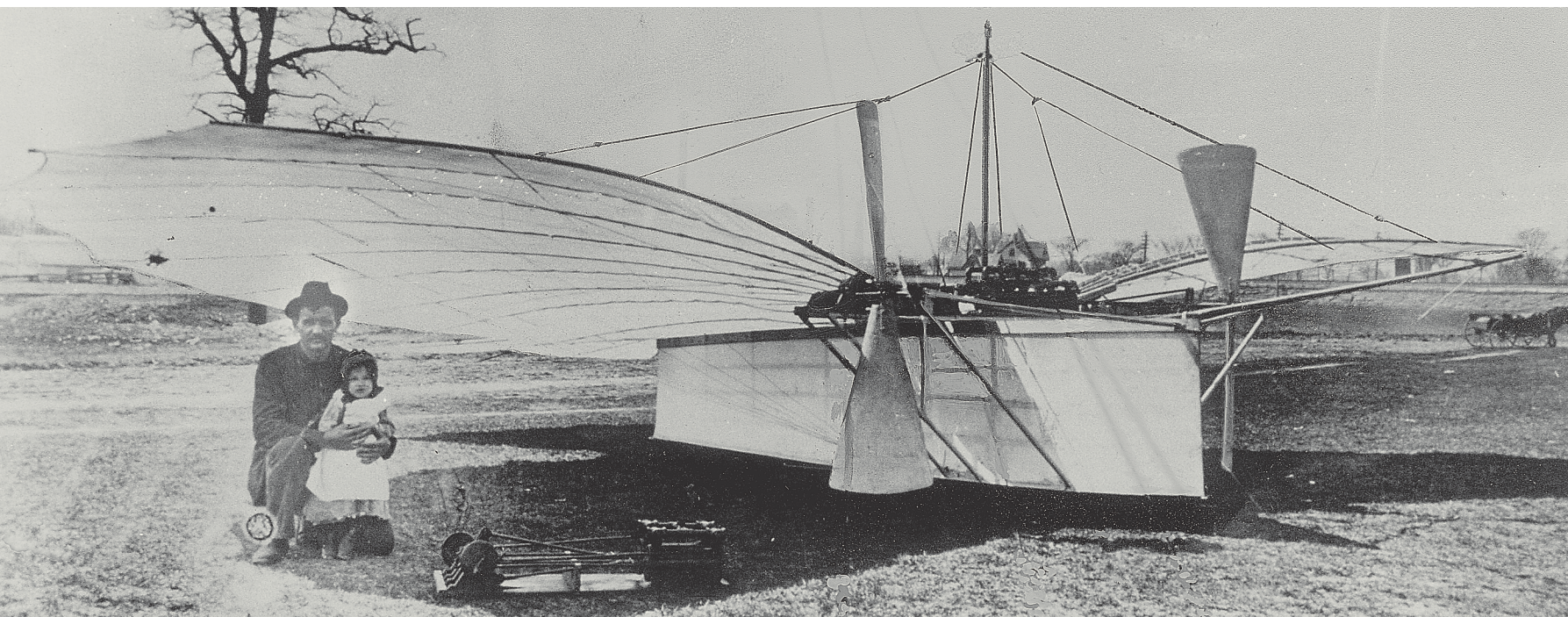
But hold on! Turn the pages of the same

December 15, 1906, issue to catch what Beach also had to say in his reports of that period. Go to the right column, page 447. It is titled: "The Second Annual Exhibition of the Aero Club of America." Beach begins a three-page report, with photos, about who exhibited which aircraft and engines at the airshow. Near the bottom of page 447 he states: "The body of the framework of Gustave Whitehead's latest bat-like aeroplane was shown mounted on pneumatic-tired, ball bearing wire wheels Whitehead also exhibited the 2-cylinder steam engine which revolved the road wheels of his former bat machine, with which he made a number of short flights in 1901." Yet in 1939, Beach (conveniently?) fails to recall that clear credit!

At the bottom of page 448, Beach shows a photo in which you can see the 1901 Whitehead engine in the lower right corner of that exhibit region. The photo legend reads: "Rear End of Body Framework of Whitehead's Aeroplane. The motor and propeller seen belong to a smaller machine" (Whitehead's 1901 engine and props!). Near the top of page 449, Beach shows three photos of aeronautical motors. At left is "The Curtiss 9-Cylinder, Air-Cooled, V-Motor of 30 Horse-Power." The middle photo shows "The Whitehead 2-Cycle Motor" (his 1903-4 motor). The photo to the right is the "Wright brothers' 28- to 30-Horse-Power Aeroplane Motor."

The January 25, 1908, *Scientific American* has Beach's coverage of when Henri Farman flew his aircraft 1 kilometer in a closed circle at 30mph "... during the last few days of 1907." Farman went

This original March 1901 photo shows Whitehead, his daughter, Rose, and the machine. To develop plans using the Herb Kelley system (there must be one known vertical measurement), this view was crucial. In this case, it was the 6-foot-diameter propellers and the 3-foot-high bow of the airframe. Original front, tail, overhead and side views assure scholars that accurate reproductions can be achieved. Enlargements of these original photos allowed us to gather airframe detail, and the sunlight pouring into the "fuselage" revealed the silhouette of the internal wooden frame.



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on to make “two unofficial flights” on January 11, 1908. “Two days later, before the officials of the Aero Club of France, he repeated this performance for a third time and won the Deutsch-Archdeacon prize of 50,000 francs (\$10,000) for the first flight by a heavier-than-air machine of one kilometer in a closed circuit”

There is a startling close to Beach’s extensive report about Farman: “In view of the above-mentioned facts, while giving to M. Farman the credit for first publicly demonstrating that it is possible to fly in all directions, both with, against and across a light wind, we nevertheless wish to recall to the aeronautical world the fact that to America belongs the credit of producing the first successful motor-driven aeroplane, and that to such men as the Wright brothers, A.M. Herring, and Gustave Whitehead—men, who under the tutelage of Lilienthal and Chanute, have begun with gliding flight and gradually worked their way forward to the production of a self-propelled aeroplane in all its details, including the gasoline motor—belongs the real credit of having produced the first successful heavier-than-air flying machines.”

In 1982, Thomas D. Crouch, then curator of aeronautics for the National Air & Space Museum, wrote to a publisher of an aviation history magazine concerning the early aeronautical editors of the

Scientific American. He said, in part, “The editors of the *Scientific American* were honest men. They would not lie to their readers. I have no doubt that they saw a blurred image of some sort on the wall. That is not to say that the editors of the *Scientific American* believed that Whitehead had invented the airplane. They had quite another candidate in mind for that honor.” Dr. Crouch then pointed to Beach’s report crediting the Wrights for the “Genesis of the Aeroplane,” stating: “In short, these were trained, professional technical journalists who were in the best possible position to judge Whitehead’s work, and who had always been sympathetic toward him. They were far better able to evaluate the validity of Whitehead’s case than anyone alive today.”

I buy that, Dr. Crouch! Those editors credited Whitehead for flying with power in 1901 and also 1903! Not “practical flight,” but “successful motor-driven flight.”

The September 19, 1903, *Scientific American* full-page report by its aeronautical editor Stanley Yale Beach told of Whitehead making powered flights in what had been his triplane glider, which also pre-dates the flights made at Kitty Hawk the following December!

Beach reported on page 204 in the September 19, 1903, *Scientific American* edition: “... By running with the machine against the wind

after the motor had been started, the aeroplane was made to skim along above the ground at heights of from 3 to 16 feet for a distance, without the operator touching, of about 350 yards. It was possible to have traveled a much longer distance, without the operator touching terra firma, but for the operator’s desire not to get too far above it. Although the motor was not developing its full power, owing to the speed not exceeding 1,000 R.P.M., it developed sufficient to move the machine against the wind Having proven that a less powerful motor will do the work, Mr. Whitehead is now constructing one of 6 horsepower which will weigh between 25 and 30 pounds”

The engine shown in the September 1903 article was the engine exhibited by Whitehead at the Second Annual Exhibit of the Aero Club of America in December 1906 that was shown in the photo between the Curtiss and Wright engines.

An identical engine was bought by Thomas “Lucky” Baldwin, who installed it in his *California Arrow* airship during the preparations to fly it at the 1904 St. Louis World’s Fair. When the Wrights sought a lightweight engine for their powered experiments at Kitty Hawk, Octave Chanute urged Wilbur to look into the ones being built by Gustave Whitehead.

Orville Wright denied they had ever visited Whitehead at his shop, stating they had only stopped in Bridgeport while on the train to Boston. That seems strange, for the Wrights were lent the use of an office by Simon Lake, Bridgeport’s famed pioneer submarine inventor, as was reported in a Bridgeport newspaper. Men who worked in Whitehead’s shop on Pine Street also recalled when the Wrights visited Gustave Whitehead.

Back in the 1960s when we began our investigation, we were informed that the Smithsonian NASM had no knowledge about Whitehead’s early claims of powered flight until Stella Randolph’s book came out in 1937. Nearly two decades later, we discovered the Smithsonian had produced a “Bibliography of Aeronautics” covering the years up through 1912; in it, a great number of the references are cross-indexed under the names of both Whitehead and Weisskopf. Since the Museum’s book covering references on hand in their collection shows they knew a lot about what was being reported about Whitehead’s work and claims, it is hard to understand why the Smithsonian never once contacted Whitehead, or for that matter, ever contacted his family after his death in 1927. His engines, papers and original glass negatives were still at his home until the time his family moved to Florida after WW II. Unfortunately, little has survived: five of the books he studied along with a working scale model of his 1898 steam engine and some miscellaneous parts and wooden patterns salvaged by Stella Randolph in the mid-1930s. All else went to the town dump or to scrap-metal yards.

No marker, other than



The first attempt since 1901 to actually study the aerodynamics of Whitehead’s design took place at Sikorsky Memorial Airport, Stratford, Connecticut, in 1986. The test pilot was Andrew Kosch (photo by Morgan Kaolian).

built and flew a practical flying machine. He merely stated he built and tested a pair of silken wings and tasted the winds and saw the promise of yet greater machines that would plod the airborne trails of what he described as “... the only Universal Highway.”

In a letter to Fred L. Black dated October 19, 1937, in response to Black’s inquiring about Whitehead, Orville Wright states, “In the case of Whitehead, the design of the machine is in itself enough to refute the statements that the machine flew.”

The ultimate outcome of all of this was that two Whitehead airframes were built—one by a team here in the USA in 1985 to ’86 and one by a team in Germany in the 1990s. As we investigated further, greater detail to the plans was achieved. This allowed a better insight to understanding the Whitehead design.

These tests were recorded on videotape, and one evening, I punched the play button on my video machine and watched the German-built reproduction of the Whitehead machine rise into the air and continue down the runway. As it did, Orville Wright’s words echoed in my mind, “... the design of the machine is in itself enough to refute the statements that the machine flew”

Now, having seen the machine fly, it seems the time has come to re-evaluate that statement. It also becomes obvious that it is time for historians to carefully examine the records with an open mind.

Gustave Whitehead was among the first to state that he laid no claim to inventing the first practical flying machine. In all fairness, however, can that claim be laid at the Wright brothers’ doorstep based entirely on their 1903 flights?

The definition of “flight” is being applied to history in a subjective manner, and that must cease, if for no other reason than that it confuses the issue. A machine that rises off level ground under its own power with no catapulting devices and stays there is “flying.” Examining the records with that definition, it becomes obvious Whitehead “flew” prior to December 17, 1903. But it appears others may have as well.

Did Whitehead fly first? No one knows for sure. A.M. Herring may have been first. Or maybe Maxim. That isn’t important. What *is* important is that sufficient evidence exists for even the biggest skeptic to re-examine his iron-clad position on the Wright brothers.

In the end, the Wrights can lay clear claim to having developed the first “practical” airplane. But the first “powered flight?” That is debatable! ✚

Whitehead Reproductions

From the beginning, our squadron decided that one way to prove Whitehead was not a fraud or a hoaxer would be to build and flight-test a reproduction of his 1901 high-wing monoplane. To do that, we needed reliable plans.

To create the plans, original Whitehead photos were found and studied. We were informed that Herb Kelley’s geometry—fading angles process—used by the Pentagon in WW II, was reported to be very reliable. It required at least one

known vertical measurement in any photo for any accurate plans to result.

We employed the volunteered services of an engineer at Sikorsky’s helicopter firm, Irving Burger, to draw the first set of plans along with a three-view drawing. Those plans were completed and approved as being substantially accurate by Whitehead’s surviving toolmaker/machinist assistant Anton Pruckner. Pruckner was interviewed in depth by Lippincott and the Smithsonian’s Paul Edward Garber. Garber was greatly impressed with Pruckner’s testimony and valuable memory. In all, four sets of plans were evolved to hone the accuracy of the finite details.

During 1985 and ’86, we found a serious sponsor, Kaye Williams, who provided us with a building in which we could gather a team to build the

Whitehead 1901 monoplane reproduction. Earlier, in 1966, it had become an international project involving volunteers in Germany, for Whitehead was born on January 1, 1874, in Leutershausen, Germany, where he was baptized “Gustav Albin Weisskopf.”

In 1992, at the request of the Gustav Weisskopf Museum research team, Boeing Vertol mass properties engineer Arling “Pud” Schmidt created metric scale

plans and details for the construction of a reproduction of the 1901 Whitehead airframe. Fritz Brüder, a mechanical engineer on that team, built the airframe and assisted throughout the construction and flight testing. The bamboo poles used for the ribs were purchased at the Bamboo and Rattan Works in Lakewood, New Jersey. They originally furnished the bamboo, as wholesalers, in 1900, where Whitehead bought his—the Ryder and Hayes ship chandler’s store on Railroad Avenue in Bridgeport. The silk to cover the wings was made by Kanebo Silk in Osaka, Japan, but the cost was borne by the entire Japanese Silk Manufacturers Association because Whitehead used Japanese silk in 1900 to 1908 on his wings. (The Bridgeport Silk Co. was two blocks behind where Whitehead lived on Pine Street.)

The only purpose of building and testing the airframes here in 1985 to ’86 and over in Germany was to study their design and determine their aerodynamic merits. We used modern engines, since no surviving photos show us any details of the design of the generator used by Whitehead for his calcium carbide (acetylene) gas-powered engine.

Had his critics who labored so hard denouncing him devoted time to visiting his shop and learning about his generator and engines, a reproduction might have been possible. A working, full-scale model of his 1901 20hp engine is being tested using compressed air. A working, full-scale model of the ground engine is on exhibit at the Gustav Weisskopf Museum.

We cannot definitely say that Whitehead flew in 1901. We can, however, definitely state that an accurate reproduction of his airframe flew (with modern engines) in 1997. That, in itself, says something important.



Left: during the January 25, 1986, meeting at “Hangar 21,” Angelo “Mike” Cartabiano (left), retired R&D and flight safety engineer for Sikorsky and Arling “Pud” Schmidt (right), mass properties engineer for Boeing and McDonnell Douglas, discuss the design of the tail for Whitehead’s 1901 powered monoplane reproduction. Pud Schmidt created the metric scale plans in 1992 so Germany could build and test the next copy of Whitehead’s 1901 airframe. Right: on January 15, 1986, Ken Terry (left), an R&D industrial engineer who studied nuclear submarines under Admiral Rickover, and Pratt & Whitney’s Wes Gordeuk (right), discuss the design of Whitehead’s engines and propellers. Gordeuk carved the first copy of Whitehead’s 1901 props using Whitehead’s technique, which included the use of animal hide glue for the rough block laminations. Wes also drew the first set of plans for study of the Whitehead engines. Out of that initial effort, further studies by engineers in Germany resulted in working reproductions that are now being tested.