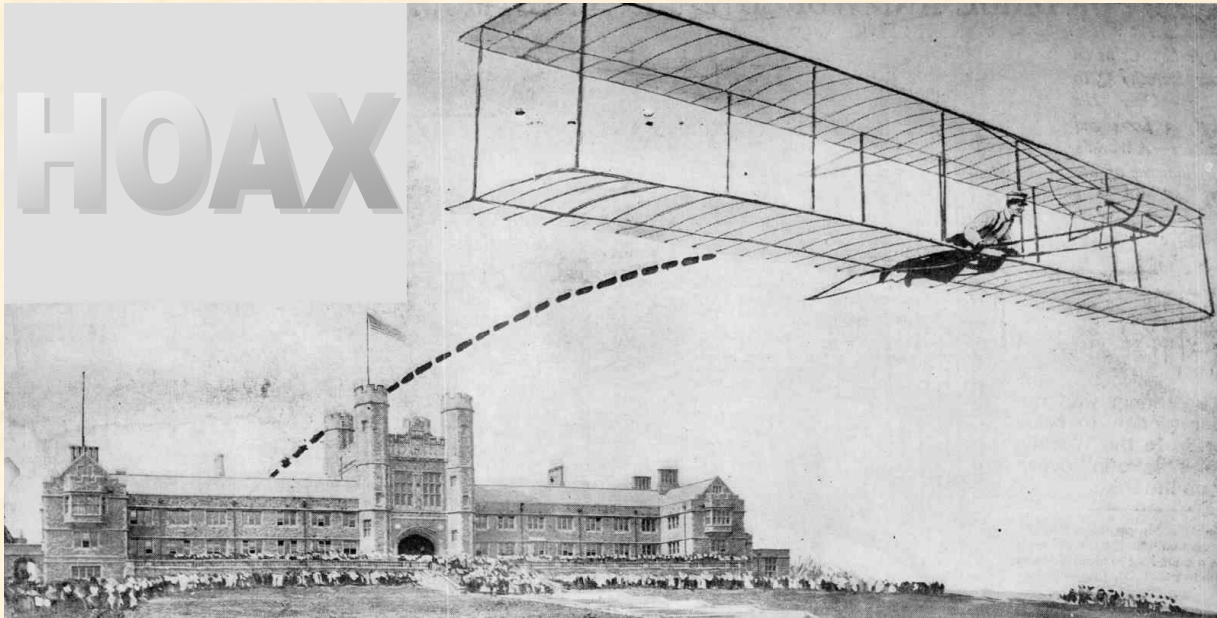


The Wrights and their impossible 1904 flights



8 Aug 13,
Wind West 8-12 mi.
First flight 195 ft. nose
First flight O.W.
Did not turn up till
too late 200 ft.
Second flight W.W.
130 ft. in 39 1/4 sec.
Ave. speed 70.5 meters
50 3/5 sec.
Ave. Wind 12.2 ft. sec.
Speed 33.2 " "
Rel. Speed 45.4 " "
Third flight O.W.
640 ft in 15 sec.
Ave. speed 42.5 meters
26 sec.
Ave. Wind 17 ft. sec.
Speed 42 " "
Rel. Speed 59 " "
Fourth flight W.W.
784 ft in 22 3/4 sec.
Ave. speed 47.4 meters
32 3/5 sec.
Wind 14 ft. sec.
Rel. Speed 49 " "
Broke 3. Rudder etc.

Ther. THURSDAY, DEC. 1 Wed.
At home all day
Wrote some
letters. At Lorin's
a half hour in
the evening.
I went to the Lawrence
Huffman's farm
on 12:00 car, and saw
Orville at 4:00 fly
two and 3/4 miles.
(two and 3/4 miles).
Mem. Dayton Oct 1904
On 11th Wrights made 3 flights.
1220 meters = 4001 feet less than circle
1195 " = 11903 " - feet circle
1575 " = 11936 " - more than circle
Flying safely each time
On 15th in presence of A.C. flight #1.
1120 meters = 1374 ft. in 23 3/5 seconds
Speed 57.4 ft. per second = 39 miles per hour
Wind 6 miles per hour, diagonal to start
Slowed around in landing & nose broke
will take about one week to repair
Speed at landing 15 to 20 miles an hour
operator not hurt.
Wright think machine worked too much
and speed too great across water.

A gentleman visiting this city whose home is in Kitty Hawk, is responsible for the assertion that the Wright brothers, of airship fame, will return to Kitty Hawk in the near future and resume work on their aerial monster. According to this gentleman the airship has never been removed from Kitty Hawk, and nearly all the interviews published in the papers of Norfolk have been erroneous in this respect. This gentleman has assisted the Messrs. Wright in all the work on the machine, and has a general supervision of their property during their absence. He says that they have not completed the ship and that they will return some time within the next month and resume their work. A story is current that they will complete the ship and make the trip from here to St. Louis sometime this fall.—Elizabeth City Economist.

by Bogdan Lazar

April 5, 2021

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The Wrights and their impossible 1904 flights

The Wright brothers were two American inventors who claimed they built and piloted powered heavier-than-air flying machines in 1903, 1904, 1905 and May 1908 and really flew planes in front of numerous witnesses, including personalities of the aeronautical world, starting with August 8, 1908, when Wilbur, the elder of them, was seen up in the air above the Hunaudières racecourse near Le Mans, France. The article “Le premier vol, en France, du premier homme oiseau” by François Peyrey (L’Auto, Paris, August 9, 1908, col. 1-2, p. 5) gives a detailed record of the flight performed the previous day and also mentions the names of a few eyewitnesses: Ernest Zens, who timed the aerial trip at 1 minute and 45 seconds, Paul Zens, Ernest Archdeacon, Louis Blériot, René and Pierre Gasnier, Captain Léonide Sazerac de Forge, Count Henri de Moy, all members of the French Aéro-Club.

No technical drawing, detailed description or clear picture showing a Wright plane, on the ground or in the air, were made available to the general public before August 8, 1908, so none of the powered apparatuses constructed and flown before the above mentioned date, according to what the two inventors pretended, could have been a source of inspiration for other aviation pioneers because nobody knew exactly what those machines looked like.

The aviation was born in 1906 without the contribution of the Wrights. These are the first two take-offs, in front of official witnesses, that proved a heavier-than-air mounted flying machine could leave the ground:

- September 13, 1906, 8:40 AM; Bagatelle, France: Santos Dumont flew for 4-7 meters at a height of 50-70 cm and a speed of 30-35 km/h. (Aérophile, “Les grandes journées de l’aviation. L’essor de Santos-Dumont. Pour la première fois, un aéroplane à moteur monté prend son vol librement.”, L’Auto, Paris, September 14, 1906, col. 5-6, p. 1)

- October 7, 1906; Issy-les-Moulineaux, France: Traian Vuia flew 4 meters in 2/5 sec at a height of 15 cm. (Aérophile, “Une belle expérience d’aviation. Hier matin à Issy-les-Moulineaux, l’Aéroplane automobile de M. Vuia a réussi à s’enlever par les seuls moyens du bord en expériences publiques et contrôlées.”, L’Auto, Paris, October 8, 1906, col. 3-4, p. 5)

The present work is dedicated only to the trials made with the second plane the two inventors claimed they built in 1904 and flew many times during that year. Wilbur’s 1904-1905 Notebook E contains records about 92 starts, with the above mentioned machine, from flight no. 14 on August 2, 1904, to no. 105 on December 9th, but in some cases it is not evident from the text whether the aeroplane left the ground.

The purpose of this book is to demonstrate, based on primary sources, that no Wright powered apparatus flew in 1904 and the two brothers just dishonestly pretended, multiple times, they had flown a heavier-than-air machine. The evidence taken into account consists of:

- The Jan. 14 - Dec. 26, 1904, correspondence between Wilbur and Octave Chanute (an old civil engineer and businessman living in Chicago, who was a known personality of the time in the field of aeronautics) plus a few other letters exchanged by the two in 1905 and 1906.

- Wilbur’s and Orville’s notebooks E and G, respectively, containing flight data.

- The 1904 entries, related to the aeronautical work of the two experimenters, in their father’s diary.

- The 1904 newspaper articles that mention flights performed by the brothers in 1904 or offer information about their aeronautical activity.

- The letters exchanged by the Wrights and Georges Spratt, an aviation enthusiast, between Jan. 7, 1904, and Feb. 9, 1905.

- The Aug. 24, 1904 - Nov. 17, 1905, correspondence between the two inventors and Carl Dienstbach, the New York correspondent of the German journal “Illustrierte Aeronautische Mitteilungen”.

- The negotiations between the brothers and: (1) the US War Department (from Jan. 18 to Oct. 27, 1905); (2) the British War Office (from Sep. 16, 1904, to Feb. 8, 1906).

- Various other documents.

In order to avoid accusations that I base my conclusions on citations taken out of context, all letters and articles mentioned above plus other primary sources of interest had been converted by me in electronic format, directly from the scanned copies of the originals, and attached to the present work. Thus, the reader also has the opportunity to draw his own independent conclusions by examining, in chronological order: what the Wrights reported to Chanute, Spratt, Dienstbach, plus the US and British War departments, regarding their aeronautical activity; what feedback the brothers received; and how the newspapers and other publications treated the subject of the 1904 powered flights allegedly performed by the two inventors above a field near Dayton, in the proximity of a place known as Simms Station.

It is also worth mentioning that a May 1904 short note, printed in a few newspapers, reveals that a man from Kitty Hawk, NC, who had assisted the brothers in all their work there and had a general supervision of their property during their absence, declared that the two inventors had not completed their plane of the previous year. Therefore, the article throws serious doubts on the credibility of Wilbur and Orville concerning their December 17, 1903, four flights which evidently could not have been made using an unfinished aeroplane.

Octave Chanute, the mentor of the Wright brothers

The aeronautical activity of the two Daytonians can best be followed by studying the correspondence between them and Octave Chanute (1832-1910), author of the book *Progress in Flying Machines* (1894), designer of a biplane hang glider in 1896, president of the Western Society of Engineers and a known personality of that time in the field of aeronautics.

Because the reader might be unfamiliar with what the Wrights did before 1904, I will briefly summarize their previous undertakings connected to heavier-than-air flying machines. On May 13, 1900, Wilbur Wright, living in Dayton, Ohio, that time just an unknown enthusiast who wanted to build and pilot gliders, wrote to O. Chanute. The old engineer answered four days later, on May 17, 1900, encouraging him to pursue his dream and also giving him some advices. This was the beginning of a voluminous correspondence that ended on May 14, 1910, a few months before the death of O. Chanute, on November 23, 1910.

In October 1900, Wilbur and his brother Orville spent a few weeks at Kitty Hawk, North Carolina, a location with sand dunes, characterized by strong and steady winds, suitable for testing flying machines. There, they tried a biplane kite/glider which finally succeeded in making some free flights while mounted. Wilbur continued his correspondence with Octave Chanute who visited the two brothers in Dayton on June 26-27, 1901, (as recorded in the diary of Milton Wright, the father of the two inventors) and then this engineer went to Kitty Hawk, in 1901, 1902 and 1903, and witnessed their tests with unpowered flying apparatuses. Chanute also encouraged Wilbur to write about the results of his experiments, an advice that led to the publication of two important papers:

- Wilbur Wright, “Some Aeronautical Experiments”, *Journal of the Western Society of Engineers*, Chicago, December 1901, vol. VI, no. 6, pp. 489-510.

- Wilbur Wright, “Experiments and Observations in Soaring Flight”, *Journal of the Western Society of Engineers*, August 1903, vol. VIII, no. 4, pp. 400-417.

The old engineer also contributed in making the two inventors known in France, especially with his article “La Navigation Aérienne aux États-Unis” (L’Aérophile, Paris, August 1903, 11^e Année, no. 8, pp. 171-183).

Then the moment December 17, 1903, came. The younger of the brothers sent a telegram, from Kitty Hawk to his father in Dayton, saying that four flights with a powered machine took place that day, the longest lasting 57 seconds (O. Wright, "Telegram to Bishop M. Wright", Kitty Hawk, NC, December 17, 1903).

Annoyed that an inaccurate, highly exaggerated story was spread by the newspapers, the Wrights issued a press release, published on January 6, 1904, with their version of the events, claiming "*a flight of 59 seconds*", as their best performance, "*in which time the machine flew a little more than a half mile through the air, and a distance of 852 feet over the ground*" ("In Teeth of a December Gale Wright Brothers Steered Their Flying Machine a Distance of Half a Mile", The Dayton Daily News, Ohio, January 6, 1904, col. 2-3, p. 11). No witness name is mentioned in this announcement, printed by many papers across the US, and the text made it clear *the inventors did not feel ready "to give out any pictures or detailed description" of their machine.*

The construction and first take-off of the illusive "Flyer No. 2"

On January 18, 1904, W. Wright announced O. Chanute that he and his brother had started the construction of three new airplanes and also about their intention to participate, with one of them, in the aeronautical contests of the St. Louis World's Fair (an international exposition held in Missouri, US, from April 30 to December 1, 1904):

"We are at work building three machines with which we shall probably give exhibitions at several different places during the coming season. We may decide to enter one at St Louis, and have written for copy of the revised rules & regulations. When these come we will give the matter serious consideration, and if we find that the objectionable features of the original rules have been eliminated we may decide to make a try for it. Otherwise we will see what we can do elsewhere than inside the Fair Grounds, if we go to St Louis at all." (W. Wright, "Letter to O. Chanute", Dayton, January 18, 1904)

Chanute answered promptly, encouraging the two brothers to compete:

"I have your letter of 18th. I am greatly pleased that you now contemplate entering your machine at St' Louis. I trust that you will develop it in sufficient time and that you will carry off the main prize." (O. Chanute, "Letter to W. Wright", Chicago, January 20, 1904)

Less than one week later, in his January 26, 1904, letter written after visiting Dayton on January 22nd, (there exists for this day a note, in the 1904 diary of Milton Wright, reading: "*Mr. O. Chanute supped with us.*") this old engineer tried to dissipate the concerns of the two inventors regarding the rules for the aerial competitions of the World's Fair:

"I have seen Mr Willard A. Smith, Chief of the Dept of Transportation, World's Fair, and mentioned the points which you raised concerning the rules for the Aeronautical Contests. He says that it was not the intention of the Advisory Committee (Himself, Prof Woodward, Mr C. D. Mosher, and Santos Dumont) who framed these rules to have them interpreted as you have done.

That if you will write him a letter stating the points concerning which you are in doubt he will have a ruling made by the advisory committee, which will be binding upon the International Jury, as to the interpretation to be given these rules so far as they apply to flying machines." (O. Chanute, "Letter 2 to W. Wright", Chicago, January 26, 1904)

By February 13, 1904, the Wrights already had a letter, from W. A. Smith, concerning the rules in question but, at the same time, Wilbur confessed to Chanute that he and his brother were uneasy about a declaration, attributed to Santos Dumont, which was in contradiction with the competition terms:

"We have a letter from Mr. Smith giving an official interpretation of the rules on the points we talked of when you were in Dayton. I see that in one of the papers you sent us, Santos Dumont is quoted as saying the distance is

to be from twenty to thirty miles. Do not the rules say plainly that the distance specified in the rules is the total distance to be traveled? i.e Fifteen to twenty five Kilometers? It surely cannot mean twice this distance." (W. Wright, "Letter to O. Chanute", Dayton, February 13, 1904)

Again, the old engineer tried to dispel their worries saying:

"I know of no proposal to change the length of the course (10 to 15 miles) as set forth in Sec. III paragraph (c) of the rules.

Santos Dumont has a reputation for making rash statements. When to this is superinduced the general rashness of the newspapers we get remarkable results." (O. Chanute, "Letter to W. Wright", Chicago, February 15, 1904)

However, after a visit to St. Louis, the Wrights discovered another problem, this time in connection with the terrain they would have had to traverse in flight and which was not favorable at all to possible forced landings. Wilbur communicated rapidly this not so encouraging finding to Octave Chanute:

"Orville and I went down to St Louis last month and took a look at the aeronautical grounds and surrounding country. We were not expecting ideal conditions, but we found things even less favorable than we anticipated. I do not know that there would be serious danger to life, but much of the ground over which the course must be laid out is such as to make serious damage to the machine in case of a forced landing, almost inevitable. It would probably be necessary to win the prize in three trials, or not at all. As there are no consolation prizes for flying machines, like those provided for the airships, we would have to win the grand prize, or, get nothing. It is a tough proposition. However, when we get out again with our machine, and have fully tested its reliability for long flights, we will see whether it will pay to enter. The conditions are such that we wish to know that we will win before we finally decide to go for it. If we enter, it will be for the purpose of winning; not for the purpose of seeing how close we can come to it." (W. Wright, "Letter to O. Chanute", Dayton, March 1, 1904)

One more time, the old engineer advised them to compete, correcting W. Wright by explaining there were consolation prizes:

"I hope that you will succeed so well when you resume experiment that you will see your way to entering for the grand prize. You are mistaken however as to there being no "consolation" prizes for flying machines. There are three of them if you can contrive to go slow enough." (O. Chanute, "Letter to W. Wright", Chicago, March 3, 1904)

The next two letters of Wilbur, dated March 14 and 29, 1904, contain some concrete details about the new planes, he was working at, and the location of a terrain that would serve as testing grounds for them:

"We are hard at work getting ready for Spring. The new machines will be of the same size as the old one but will weigh a little more, 800 lbs. probably. By gearing the engine to run a little faster we will not only carry the additional weight but will have enough surplus to increase the speed to about 40 miles an hour." (W. Wright, "Letter to O. Chanute", Dayton, March 14, 1904)

"We are about ready to commence setting up our new machine. We have arranged for an experimental station about 8 miles east of Dayton and so will not go to Kitty Hawk this Spring." (W. Wright, "Letter to O. Chanute", Dayton, March 29, 1904)

After sending a letter dated March 19, 1904, that is not directly related to the Wrights' planes, on March 30th, Chanute again wrote to Wilbur asking a surprising question for a person supposed to have had a quite clear idea about the general appearance of the December 1903 apparatus. The old engineer inquired whether two images, published in a German aeronautical journal and claiming to portray the Wright powered machine as a quite strange contrivance having a propeller underneath, were correct. The text demonstrates that even Chanute himself had some doubts regarding the aspect of the 1903 flyer. Also the correspondence between the two continued, no answer to this question can be found in Wilbur's letters at least till May 7, 1904, when Chanute wrote him saying that he had

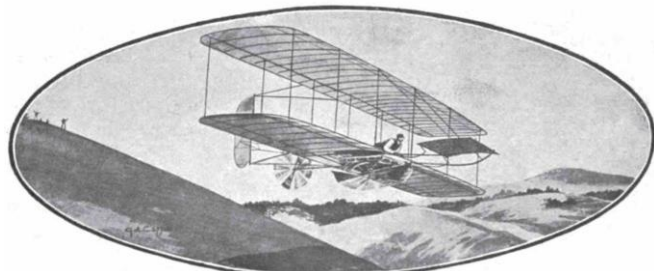
informed the editor of the publication that the illustrations were incorrect.

"Did you get a copy of the "Illustrierte Aeronautische Mitteilungen" (Moedebeck's paper) for March 1904? ...

The ... paper contains a 4 page article upon your achievement, and gives a photograph and a diagram, taken from New York Herald 17-1-04, which purports to show your machine. This shows a horizontal propeller under the front of the apparatus. Is this correct?" (O. Chanute, "Letter to W. Wright", Chicago, March 30, 1904)

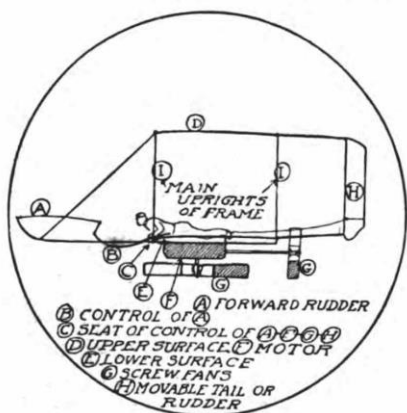
"I have advised Major Moedebeck that the pictures of your machine which he republished from the N.Y. Herald are not correct ..." (O. Chanute, "Letter to W. Wright", Chicago, May 7, 1904)

As an explanation, the four-page text, O. Chanute referred to, was a set of two articles: "Die Erfindung der Flugmaschine" and "Der Motorflug der Gebrüder Wright", Illustrierte Aëronautische Mitteilungen (edited by Hermann Moedebeck), March 1904, pp. 97-100, by Carl Dienstbach. At page 99, there is an artist impression showing a biplane similar to the 1902 glider but outfitted with only one pusher propeller plus another, spinning in the horizontal plane, beneath the apparatus. One page further, the journal contains a drawing with a side view of the same contrivance.



Skizze der Wright'schen Flugmaschine aus „New-York Herald“, 17. I. 04.

Fig. 1. Perspective view. Alleged drawing, of the 1903 Wright aeroplane, taken from the Jan. 17, 1904, number of the New-York Herald. (C. Dienstbach, "Der Motorflug der Gebrüder Wright", Illustrierte Aëronautische Mitteilungen, March 1904, pp. 98-100, (p. 99))



Skizze der Wright'schen Flugmaschine aus „New-York Herald“, 17. I. 04.

Fig. 2. Side view. Alleged drawing, of the 1903 Wright aeroplane, taken from the Jan. 17, 1904, number of the New-York Herald. (C. Dienstbach, "Der Motorflug der Gebrüder Wright", Illustrierte Aëronautische Mitteilungen, March 1904, pp. 98-100, (p. 100))

Wilbur continued writing about the progress he and his brother made in the construction of the new flying machine. His letter of April 10, 1904, reveals he worried about the capacity of the plane's engine to run under full load for 20 minutes, in case the two inventors decided to compete at St. Louis. Also, the same text gives a possible precise date, "close to the first of June" 1904, for the first

flight of Flyer II. A few days later, on April 14, 1904, W. Wright announced his mentor that some things would be moved "to the new building" the following day.

"We recently wrote Mr. Smith asking that the words "starting point" be interpreted as including the entire aeronautical enclosure, and he writes that this will be conceded. As this gives the entire enclosure for starting, and the entire enclosure together with a fifty yard strip outside the fence for landing, the conditions are thus made much less severe than if more strictly interpreted. The only question now is whether we can make sure that the engine will run twenty minutes under full load without any serious risk of making a single stop in three trips.

Bad weather has delayed the completion of our new building so that we have not yet commenced setting together the new machine, but hope to begin soon. It will probably be close to the first of June before we make any flights." (W. Wright, "Letter to O. Chanute", Dayton, April 10, 1904)

"We will probably begin taking our things out to the new building tomorrow." (W. Wright, "Letter to O. Chanute", Dayton, April 14, 1904)

On April 15, 1904, O. Chanute sent Wilbur a letter in which, amongst other things, the old engineer said *he was glad to know the machine was approaching completion* and two days later, he wrote again informing the brothers about a big prize offered in France for the first aviator who would fly one kilometer in a closed circuit:

"Some weeks ago I saw in the foreign press dispatches that M^r Deutsch had offered a prize of \$5000 to the first aviator who would fly by power a closed circuit of 1 kilometer, and that M^r Archdeacon of Paris had added a like sum thereto.

The Aerophile for March, received today, confirms this news, and states that it is proposed to add Various other Subscriptions so as to raise a "Grand prize of Aviation" of \$100.000; the details to be ruled upon by the French Aero-club and to be published later.

There is nothing said thus far about confining the award of the prize to French Aviators, although I believe that is what is in the mind of the present subscribers, but it will be well to keep your eye on this prize and to perform the feat before official witnesses so as to obtain affidavits establishing a record.

I will advise you further when I learn more. Do you think it would be wise to write to some of my friends to enquire into the status?" (O. Chanute, "Letter to W. Wright", Chicago, April 17, 1904)

Wilbur answered, on April 24th, saying he and his brother were interested in the French prize, at the same time estimating their powered flying apparatus would be completed in no more than one month. Chanute even received an invitation from Dayton, dated May 5, 1904, to the first test of the plane which was expected to take place about 10 days later.

"The French prize of aviation is certainly interesting and we shall be glad to know more of the details as they become known. It is probable that the flight must be made in France, but this would be no insuperable objection if the prize be sufficient to justify a trip to Europe.

Work on the new machine is progressing and we hope to have it finished in three or four weeks." (W. Wright, "Letter to O. Chanute", Dayton, April 24, 1904)

"A three days trip to Huntington Indiana ... has delayed our work on the machine somewhat, but we expect to be ready for a trial in about ten days. We are looking forward to the pleasure of a visit from you about that time if your engagements will permit. We will keep you informed as the machine approaches completion, and hope there will be no disappointment like that of last year.

So far we have not been subjected to the slightest annoyance from visitors or newspapers. I think the reporters are not aware of what is going on." (W. Wright, "Letter to O. Chanute", Dayton, May 5, 1904)

O. Chanute answered on May 7, 1904, apparently appreciating the invitation of Wilbur but, at the same time, he expressed his reserves regarding the possibility to come and be a witness of the brothers' experiments, for reasons related to his tie-treating business:

"I have yours of 5th, and I thank you heartily for the invitation to witness your forthcoming experiments. I am, however, now building two tie-treating

plants, and may not be able to get away on a fixed date.” (O. Chanute, “Letter to W. Wright”, Chicago, May 7, 1904)

Wilbur continued mailing Chanute, writing about various things related to the aeronautical world and also reporting the progress the two brothers had made in connection with the construction of their plane. The old engineer always answered, also approaching various subjects, but not forgetting to add at least a few words related to Flyer II and its possible participation in the St. Louis competitions.

A letter of great interest is that of May 27, 1904, in which Wilbur stated that the day before, May 26th, the new “*machine rose six or eight feet but the power was insufficient and it came down*”. The same text reveals that, on May 23rd, in the afternoon, the two brothers *took the machine out but just as they were ready the wind died out to ¾ meter per second and as they only had a little over a hundred feet of track, they were unable to obtain supporting speed*. On May 25th and 26th (before the take-off), they again *took the machine out but, this time, the rain compelled them to take it in*. An important remark is that W. Wright made no mention of witnesses, of any kind, including journalists, who might have been present on these four occasions, including the moment when the machine got airborne. In a subsequent letter, dated June 5, 1904, the elder of the two inventors ended his text with this statement: “*The fact that we are experimenting at Dayton is now public, but so far we have not been disturbed by visitors. The newspapers are friendly and not disposed to arouse prying curiosity in the community.*”, from which it is not clear at all that the newspapers of Dayton, and across the United States, had already written about the May 26, 1904, flight and had given the precise location of the test.

A slight change in the attitude of O. Chanute, regarding the credibility of the two brothers, can be seen after he received the May 27, 1904, letter. He became more and more ironic, as Wilbur reported longer and longer flights, repeatedly expressing his hope the two Daytonians would “*keep out of the newspapers*”.

Here is a selection of the most relevant passages from the correspondence between Wilbur and Chanute, starting with May 15, 1904, and ending June 8th, the same year:

1904-05-15, W. Wright, “Letter to O. Chanute”, Dayton, May 15, 1904.

“The “Flyer No. 2” is approaching completion; another day ought to see it about finished. We will probably spend a day or two making indoor machinery tests before attempting a flight, and if all goes well will resume our door practice before the end of this week.”

1904-05-16, O. Chanute, “Letter to W. Wright”, Chicago, May 16, 1904.

“I have your welcome letter of yesterday, and write at once to wish you a great success. I hope to be kept advised of the results.”

1904-05-20, W. Wright, “Letter to O. Chanute”, Dayton, May 20, 1904.

“We have had almost constant rain for the past six or seven days and have not had opportunity to make any trial yet. But intend to make some flights Monday if the weather is good. We hope your engagements will permit you to be present.

Our indoor tests of the machinery show excellent results. With the same screws we used last year we get an increase in speed of 50 turns per minute, indicating an increase in power of more than one half. This is partly due to gearing the engine to run at higher speed per turn of screw, and partly to increase in efficiency of the engine itself.”

1904-05-26, O. Chanute, “Letter to W. Wright”, Chicago, May 26, 1904.

“I am glad to know, from your letter of 20th that the indoor tests of your machinery have resulted so well, and I am anxious to come down to see your first flights.

Unfortunately some questions, important to my wood preserving business, have come up in a bunch to detain me, and I do not know how soon I can dispose of them.

Santos Dumont has broken his 60 HP motor and must make the race with 40 H.P. He accordingly cabled to have the speed limit reduced to 15 miles an hour, and this has been granted with conditions stated in enclosed clipping, which says that he accepts them. He seemed to be inclined to withdraw when his motor broke. No other man, with the least chance of

winning has yet entered the lists at St. Louis and the management realizes that it will have to allow entries to be made subsequent to June 1st.

I am glad to see that the newspapers have not yet found you out. I hope your luck will continue and I ardently wish for your success.”

1904-05-27, W. Wright, “Letter to O. Chanute”, Dayton, May 27, 1904.

“Your letter of 26th rec’d. Can you find out whether entries in St. Louis Contest positively close June 1st? If so we would be glad to know by telegraph. We wish to enter but not just yet.

We took the machine out Monday but just as we were ready the wind died out to ¾ meter per second and as we only had a little over a hundred feet of track, of course we were unable to obtain supporting speed. On Wednesday we again took it out but were driven in by rain. Again on Thursday we took it out and again the rain compelled us to take it in, but in the afternoon we again took it out. Once more a rain came up but before it broke we made a start. The engine was not working right but there was no time to see what the trouble was then. The machine rose six or eight feet but the power was insufficient and it came down. We found today that one of the iridium spark points had become detached and only three cylinders were working.

We broke several pine spars, which we had been compelled to use on account of not being able to obtain spruce in time. It will take a week to make repairs. We had the luck to get the machine under cover just as the storm broke upon us. We will inform you when we are ready again.”

1904-05-28, O. Chanute, “Letter to W. Wright”, Chicago, May 28, 1904.

“I have yours of 27th. M^r Willard Smith told me last week that the time for entries would be indefinitely extended beyond June 1st, for those who could otherwise comply with the rules.”

1904-05-30, O. Chanute, “Letter to W. Wright”, Chicago, May 30, 1904.

“The time for entry in the Aeronautical Contests is to be extended from time to time as seems most judicious.

I saw M^r Willard Smith this morning. He has your letter and will write to you.”

1904-06-05, W. Wright, “Letter to O. Chanute”, Dayton, June 5, 1904.

“Your letters of May 28 & 30 received. We thank you for so kindly obtaining the information we desired. ... We have made repairs in our machine and expect to be ready for trial on Thursday of this week. After a few flights we will know better what we will wish to do about entering at St. Louis. I have written Mr. Smith that we wish to test the machine, before taking up the matter of entering the race. ...

The fact that we are experimenting at Dayton is now public, but so far we have not been disturbed by visitors. The newspapers are friendly and not disposed to arouse prying curiosity in the community.”

1904-06-08, O. Chanute, “Letter to W. Wright”, Chicago, June 8, 1904.

“I hope that your immunity from premature publicity may continue. I do not quite understand whether your experiments are made with last year’s or this year’s machine.”

More flights over the Huffman field

Beginning with June 14, 1904, W. Wright started reporting, in the letters to his mentor, more and more flights of increasing length. However, it is self evident, from the tone of the answers he got, that the old Chicago-based engineer did not believe him as long as O. Chanute repeatedly, and not without detectable irony, expressed his wonderment in respect with the capacity of the two brothers to keep so many flights made outdoors far from the curious eye of the press, at the same time, continuously provoking Wilbur with things related to the St. Louis aeronautical contests.

In his June 14, 1904, letter, Wilbur reported a flight of 60 feet, the second of the year, carried out the previous week at an unspecified precise date. After being asked by O. Chanute, in a June 17, 1904, letter, whether he contemplated to go back to Kitty Hawk to perfect the plane for the St. Louis competitions, the elder of the two aeroplanists sent back a long answer, dated June 21, 1904, in which he described the new testing grounds near Dayton, also talking about the disadvantages it had (limited space, unsteady winds, cattle and horses in the way, difficult terrain for laying down the track, etc.) in comparison with the open spaces with sand dunes and

strong constant winds in North Carolina. The letter contains another interesting piece of information, W. Wright saying that he and Orville had “one machine finished, another approaching completion, and a third well started”, basically repeating what he claimed in the January 18, 1904, text where he also talked about the three planes which, that time, were in a less advanced stage of construction.

However, the most interesting aspect of the letter is that it reveals a wrong belief of W. Wright which would appear increasingly clearly stated in later reports to O. Chanute and Georges Spratt (an aviation enthusiast whom he knew). Wilbur thought that the groundspeed of his plane grew as the headwind blew faster and faster (a thing that would have reduced the drag, in Wilbur’s conception) and based on this incorrect theory he constructed, on paper, using wrong calculations, fictitious flights which he reported to Chanute and Spratt as authentic. Had the plane really flown he could simply not have noticed an increase of its groundspeed while flying against stronger and stronger headwinds.

His letters show he was perfectly aware of the formula:

$$V_g = V_a - V_w, \quad (1)$$

where, V_g is the groundspeed of the plane, V_a the airspeed relative to the plane and V_w the headwind speed. He correctly applied this relation but believed the airspeed was not independent of the headwind speed. In reality, V_a must be the same no matter how fast the wind blows.

For June 21, 1904, W. Wright claimed three flights, the first two “of a little more than a hundred feet, and the third” of “two hundred and twenty five feet”, the airplane being driven by Orville during this last test of the day. According to Wilbur, the apparatus “had a speed of about 18 miles on leaving the track, but the rise necessary to gain a little room for maneuvering reduced this to about 16 miles, and as the wind was blowing only 8 miles and unsteady at that, the resistance was too high to permit rapid acceleration, owing to the great angle of incidence required”. In other words, he says that the take-off airspeed was:

$$\underbrace{18 \text{ mph}}_{V_g} + \underbrace{8 \text{ mph}}_{V_w} = \underbrace{26 \text{ mph}}_{V_a} \quad (2)$$

Because the machine climbed at a steep angle, the groundspeed reduced from 18 mph to 16 mph and, in consequence, the relative speed of the plane became:

$$\underbrace{16 \text{ mph}}_{V_g} + \underbrace{8 \text{ mph}}_{V_w} = \underbrace{24 \text{ mph}}_{V_a} \quad (3)$$

at which the apparatus was unable to fly and stalled. Had the headwind blew faster the plane would have been able to maintain an airspeed high enough (greater than 24 mph, even 26 mph) and it would have continued flying.

In fact, an airplane flying in a block of air, which travels, at approximately constant speed, in a certain direction relative to the ground, is “unaware” it flies in moving or still air. Flyer II would have stalled independently of the headwind speed, when losing some airspeed due to climbing.

As an example, assuming $V_w = 12 \text{ mph}$ instead of just 8 mph, then V_g at take-off would have been just 14 mph.

$$\underbrace{14 \text{ mph}}_{V_g} + \underbrace{12 \text{ mph}}_{V_w} = \underbrace{26 \text{ mph}}_{V_a} \quad (4)$$

Owing to a climb, the airspeed would have dropped to below 26 mph and the apparatus would have stalled. The horizontal wind simply does not matter as long as it blows at relatively constant speed.

Wilbur continued writing about the progress made with the 1904 machine. In a letter dated July 1, 1904, he announced three more flights. The first two, one of 264 feet and the second of an unspecified length, took place on Thursday, June 23, 1904. On Saturday, June 25th, the plane flew again, this time against a 15

mph wind. As the apparatus was not high enough in the air, “it struck the ground in one of its undulations”. As of July 17, 1904, the brothers had not found a fix for the sinuous course their plane manifested in flight. They discovered that their idea of shifting its center of gravity backward did not give satisfactory results.

In a letter dated August 8, 1904, W. Wright informed Chanute about a number of 11 trials of Flyer No. 2 out of which only two were made in July. *After reconstructing some parts of the machine, the brothers resumed practice*, on August 2, 4 and 5, 1904, conducting two tests per day and on Saturday, August 6th, three, one of the flights reaching 600 feet in length, a record for the new plane. The problems the two inventors encountered were much the same as those described in the June 21, 1904, letter. In still air, their machine was not able “to reach a higher speed than about 24 miles” on the track of limited length they had. The plane took off at 23 mph but *it was only after the speed reached 27 or 28 miles that the resistance fell below the thrust*, a formulation which implies that, due to an abrupt climb, after leaving the rail at 23 - 24 mph, the drag became higher than the thrust, the plane slowed down and landed. If the airspeed at take-off was 27 - 28 mph, which required a headwind of 4 - 5 mph, Flyer II would have also lost some airspeed while rising, but the moment it stopped climbing and started flying horizontally its airspeed would have been above 23 mph and so the apparatus would have been able to continue its course.

Wilbur concluded his letter by announcing Chanute that, to get rid of the dependence of unreliable headwinds, he and his brother were designing a starting device that would render them independent of wind.

As a remark, the way W. Wright explained the need for higher airspeeds might be confusing because it looks like he believed the drag was less than the thrust from the moment the plane started sliding on the rail till it reached 27 - 28 mph, a case in which Flyer II would not have been able to accelerate at all in the forward direction because of the Second Law of Dynamics which tells that: $m \cdot a = \text{Thrust} - \text{Drag}$. If $\text{Drag} > \text{Thrust}$ it means that a is negative.

The reaction of O. Chanute to all the progress, reported by Wilbur between June 21 and August 8, 1904, was rather weak, to say the least. This is what he replied: “I hope that you will use great caution in your experiments, and will not run into a cow” (June 25, 1904), “I hope you will have good luck, and keep out of the newspapers” (July 4, 1904), “I expect ... to receive a letter from you advising me of your final success” (July 31, 1904), “I feel confident that once you get a good start you will make a phenomenal flight” (August 14, 1904).

Here are the relevant passages of all letters discussed above:

1904-06-14, W. Wright, “Letter to O. Chanute”, Dayton, June 14, 1904.

“We certainly have been “Jonahed” this year, partly by bad weather, and partly by being compelled to use pine spars in our wings which cause breakages difficult to repair quickly. We now have spruce in the central sections and do not anticipate further trouble from that source. The weather, we do not have any power over, but hope to find a good day soon. We should have made a trial today but for threatening weather. We made a trial last week but made an awkward start and struck the ground after about 60 ft. This machine is entirely new, including engine and machinery. We are using the old screws.”

1904-06-17, O. Chanute, “Letter to W. Wright”, Chicago, June 17, 1904.

“I thought that your new machine was to be a duplicate of that of 1903, so that either one could be experimented with in case of breakages. Is this not so?

I rather suspect that your experimental ground is not as favorable as that at Kill Devil Hill. Do you contemplate resorting to the latter spot, in order to work out your machine so that you can compete for the S’ Louis prize?”

1904-06-21, W. Wright, “Letter to O. Chanute”, Dayton, June 21, 1904.

"Your letter of June 17th received. You are quite right in thinking our Kitty Hawk grounds possess advantages not found at our present location, but we must learn to accommodate ourselves to circumstances. At Kitty Hawk we had unlimited space and wind enough to make starting easy with a short track. If the wind was very light we could utilize the hills if necessary in getting the initial velocity. Here we must depend on a long track, and light winds or even dead calms. We are in a large meadow of about 100 acres. It is skirted on the west and north by trees. This not only shuts off the wind somewhat but also probably gives a slight down trend. However this matter we do not consider any thing serious. The greater troubles are the facts that in addition to cattle there have been a dozen or more horses in the pasture and as it is surrounded by barb wire fencing we have been at much trouble to get them safely away before making trials. Also the ground is an old swamp and is filled with grassy hummocks some six inches high so that it resembles a prairie dog town. This makes the track laying slow work. While we are getting ready the favorable opportunities slip away, and we are usually up against a rain storm, a dead calm, or, a wind blowing at right angles to the track. Today we had our first decent chance, but as the margin was very small, we were not skilful enough to really get started. The first two flights were for a distance of a little more than a hundred feet, and the third, two hundred and twenty five feet. On this one Orville almost got away, but after about 200 ft he allowed the machine to turn up a little too much and it stalled it. He had a speed of about 18 miles on leaving the track, but the rise necessary to gain a little room for maneuvering reduced this to about 16 miles, and as the wind was blowing only 8 miles and unsteady at that, the resistance was too high to permit rapid acceleration, owing to the great angle of incidence required. To get started under such conditions requires perfect management. We are a little rusty. With a little more track and a little more practice we hope to get a real start before long and then we will see what the machine can really do in the way of flying. The machine landed nicely each time without any injury at all.

We have about concluded to enter the St Louis contest but are reluctant to do this formally, until we are certain of being ready in time. We have one machine finished, another approaching completion, and a third well started. As these are built to measure the parts are interchangeable, and even a rather serious accident would not necessarily throw us out of the contest. If the Exposition people will hold the door open till we get ready, there is yet hope that there may be a real contest for the grand prize. If there is an intention to set a definite limit to the acceptance of entries we would be glad of ample warning of the limit set. ... In a light wind we ought to cover the course in eighteen or twenty minutes easily."

1904-06-25, O. Chanute, "Letter to W. Wright", Chicago, June 25, 1904.

"Meantime I hope that you will use great caution in your experiments, and will not run into a cow. I shall be glad to know how you are progressing."

1904-07-01, W. Wright, "Letter to O. Chanute", Dayton, July 1, 1904.

"Since my last letter we have made but three trials, two of Thursday of last week and one on Saturday. On Thursday the starts were made facing a barbed wire fence about 350 ft from the end of our track. There was not sufficient time to make the turn after getting well started and it was necessary to turn off the engine after going 264 ft. In the second flight the tail was injured in landing. On Saturday another trial was made in a wind averaging about 15 miles an hour. Through failure to keep at sufficient height, it struck the ground in one of its undulations while going at full speed, and pointed slightly downwards. The struts which carry the front rudder were broken, and one of the wires trussing the skids under the machine, also a pine spar in the right wing. The repairs would have required about three days, but all the experiments with our 1903 and 1904 machines having shown that the center of gravity was rather too far forward, we decided to shift the engine, man, and water tank to the rear. As this necessitated cutting down the length of the axles, and supports carrying the screws, about three days more time is added. We will probably finish tomorrow but may not take the machine out till after the Fourth.

Our transmission has given perfect satisfaction and we are certain it will continue to do so. You probably remember that we were uneasy on this point last year. Except for the loss of a sparking point on one occasion, the engine has met every requirement."

1904-07-04, O. Chanute, "Letter to W. Wright", Chicago, July 4, 1904.

"I hope you will have good luck, and keep out of the newspapers."

1904-07-17, W. Wright, "Letter to O. Chanute", Dayton, July 17, 1904.

"We shifted the center of gravity backward as mentioned in a previous letter but the result was not satisfactory. We are now engaged in

reconstructing some of the parts and think we will thus stop the tendency to undulation which has marked our flights with power machines. It will probably be two weeks before another trial is made."

1904-07-31, O. Chanute, "Letter to W. Wright", Chicago, July 31, 1904.

"... I expect ... to receive a letter from you advising me of your final success."

1904-08-08, W. Wright, "Letter to O. Chanute", Dayton, August 8, 1904.

"During July we made but two trials of the Flyer No 2, and they were of more value for the lessons they taught than for exhibition purposes. After reconstructing some parts of the machine we resumed practice last week and made two trials Tuesday, two on Thursday, two on Friday and three Saturday. One of the Saturday flights reached 600 ft. which is the best we have done with the new machine so far. We have found great difficulty in getting sufficient initial velocity to get real starts. While the new machine lifts at a speed of about 23 miles, it is only after the speed reaches 27 or 28 miles that the resistance falls below the thrust. We have found it practically impossible to reach a higher speed than about 24 miles on a track of available length, and as the winds are mostly very light, and full of lulls in which the speed falls to almost nothing, we often find the relative velocity below the limit and are unable to proceed. It is a pity we can not trade a few of our calms to Prof. Langley for some of his windy days that used to trouble him so. It is evident that we will have to build a starting device that will render us independent of wind, and we are now designing one. Mean while we will take advantage of days when there is suitable wind."

1904-08-14, O. Chanute, "Letter to W. Wright", Chicago, August 14, 1904.

"I feel confident that once you get a good start you will make a phenomenal flight."

Flyer II breaks the laws of physics

If the flights claimed as made before August 8, 1904, were not physically impossible and in theory they could have taken place, two of those reported to Chanute, in a text dated August 28, 1904, are just fiction. Wilbur fabricated them based, unfortunately, on a wrong belief which he stated clearly in his letter: "*We find that the greatest speed over the ground is attained in the flights against the stronger breezes.*". He did not limit to this remark but went further "proving" it with measurements he pretended were made during two tests:

Tab. 1. V_g , V_w and V_a , for two flights described by W. Wright in a letter dated August 28, 1904.

Flight	Description of Wilbur (letter of August 28, 1904)	V_g (ft/s)	V_w (ft/s)	$V_a = V_g + V_w$	
				(ft/s)	(mph)
1	"In one flight of 39¼ seconds the average speed over the ground was only 33 ft per second, a velocity only about 3 ft per second greater than that at starting. The wind averaged 12 ft per second."	33	12	45	30.68
2	"In a flight against a wind averaging 17 ft per second, the average speed over the ground was 42 ft per second, an average relative velocity of 59 ft per second, and an indicated maximum velocity of 70 ft per second."	42	17	59	40.22

Remark: Wilbur gives no clue regarding the method used for determining that "*indicated maximum velocity of 70 ft per second*". The onboard Richard anemometer - stopwatch did not provide enough data for evaluating instantaneous airspeeds.

At constant power in about constant wind, the airspeed of a plane is independent of the wind. Assuming that Flyer II traveled at an airspeed of 45 ft/s in a 12 ft/s headwind, it would have recorded the same airspeed, 45 ft/s, if the wind had blown at 17 ft/s, and the groundspeed would have been just 28 ft/s not 42 ft/s. A headwind blowing at V_w just carries the plane back at V_w , reducing the

groundspeed of the machine with V_w not increasing it, as W. Wright claimed.

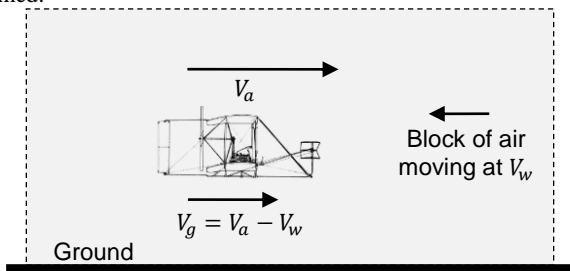


Fig. 3. The block of air moving at V_w transports the plane backward at the same V_w , relative to the ground, without affecting its airspeed.

These two trials can be precisely identified, in Wilbur's 1904-1905 notebook E, as flights no. 28 and 29, performed on August 13, 1904, by him and Orville, respectively.



Fig. 4. Wilbur's 1904-1905 Notebook E, page 8, August 13, 1904, flights no. 27-30.

This is an easily readable rendering of the handwritten text in the scanned copy above:

Aug 13.	
Wind West 8-12 mi. 195 ft Track	Picture
27] First Flight O.W.	Av. Wind. 17 ft. sec.
Did not turn up till too late. 200 ft.	Speed 42 " "
28] Second Flight W.W.	Rel. Speed 59 " "
1304 ft. in 39 $\frac{1}{4}$ sec.	30] Forth Flight W.W.
Anem. { 705 meters	784 ft in 22 $\frac{3}{4}$ sec.
50 $\frac{2}{5}$ sec.	Anem. { 475 meters
Av. Wind 12.2 ft sec	32 $\frac{2}{5}$ sec.
Speed 33.2 " "	Picture.
Rel. Speed 45.4 " "	Wind 14 ft. sec
29] Third Flight O.W.	Speed 35 " "
640 ft in 15 sec.	Rel. Speed 49 " "
Anem. { 425 meters	Broke F. Rudder &c.
26 sec.	The last was our Thirtieth Trial.

As can be seen, the August 13, 1904, entry contains four flights and the measurements corresponding to the last three "confirm" that the groundspeed and airspeed of the plane increased as the headwind intensified, which is a physical impossibility. Had the apparatus really flown that day, the two brothers could not have recorded the flight distances and times written in Notebook E and, in consequence, the tests 28 to 30 represent just imaginary flights logged in a diary (together with most of the 1904 alleged trials) just for keeping track of the lies written to O. Chanute and others.

Tab. 2. Table that summarizes the content of the August 13, 1904, entry:

Flight			Average groundspeed	Headwind speed	Average airspeed	Anemometer		
No.	Distance	Time				Distance	Time	Average airspeed
	(ft)	(sec)	(ft/s)	(ft/s)	(ft/s)	(m)	(sec)	(ft/s)
28	1304	39 1/4	33.22	12.2	45.42	705	50 2/5	45.89
29	640	15	42.66	17	59.66	425	26	53.62
30	784	22 3/4	34.46	14	48.46	475	32 2/5	48.09

where

- Average groundspeed = Flight distance over the ground / Flight time measured with a ground chronometer,
- Average airspeed = Average groundspeed + Headwind speed,
- Average airspeed by anemometer = Distance / Time (two quantities read on the onboard anemometer-timer after the flight ended).

Fig. 5 presents in a graphical form the data in Tab. 2. From left to right, the three bars in each group correspond to flight no. 28, 30 and 29, in this order, to put in evidence the increase in groundspeed and relative speed as the headwind intensified.

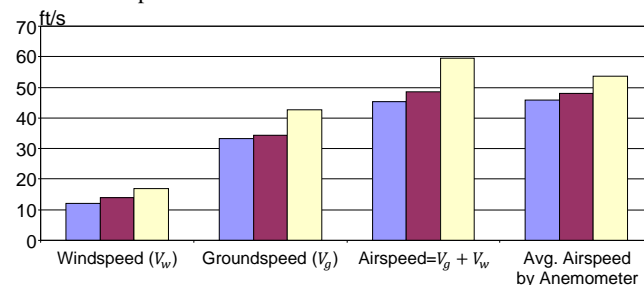


Fig. 5. Graphical representation of the data in Wilbur's 1904-1905 Notebook E, page 8, August 13, 1904. Flight no. 28 corresponds to the first bar from left in each group, 30 to the middle bar and 29 to the right bar.

As a note, the average airspeed was measured with a Richard anemometer, on board Flyer II, which integrated the airspeed between the moment the plane started running on the rail and that of landing, when the anemometer, and the timer attached to it, were stopped by the pilot.

As the flight time, recorded using a ground chronometer, was considerably different from that displayed by the anemometer-timer installed on the machine (see Tab. 3), different values are expected for the airspeeds measured by the two methods.

Tab. 3. The flight time as a percentage of the time measured using the chronometer of the anemometer installed on Flyer II.

Flight No.	Flight time (sec)	Time anemometer (sec)	Flight time/Time anemometer
28	39 1/4	50 2/5	77.88%
29	15 0/0	26 0/0	57.69%
30	22 3/4	32 2/5	70.22%

Surprisingly, this is not the case for No. 28 and 30 where, as can be remarked in Tab. 2, the two airspeeds match quite well also, in both cases, only between 70 and 79% (see Tab. 3) of the time recorded by the anemometer was spent in the air, the rest being consumed while the plane accelerated along the rail when it had evidently a different average speed from that in the air.

Another detail of interest in the August 28, 1904, letter is that since the first of August the brothers had made twenty five starts with the #2 Flyer, the longest being of 1432, 1304, 1296 and 1260 feet. In Wilbur's logbook E, the first three can be identified as flight

no. 33 (August 22, 1904), 28 (August 13), 35 (August 22). The forth trial is not recorded. *The flights were about as long as the Wrights could readily make on their testing grounds without circling.*

It is worth mentioning that Wilbur also wrote about the problems the plane had in maintaining flight if the wind was not strong enough. He repeated, with other words, what he already said in the June 21 and August 8, 1904, letters, claiming that he and his brother found that *their groundspeed at starting was about 29 ft/sec (19.77 mph) or 30 ft/sec (20.45 mph), the last 60 ft of track being covered in from 2 to 2¼ seconds, the acceleration toward the end being very little.* As a remark, there is a small discrepancy here because $\frac{60 \text{ ft}}{2 \text{ sec}} = 30 \frac{\text{ft}}{\text{s}}$ but $\frac{60 \text{ ft}}{2\frac{1}{4} \text{ sec}} = 26.66 \frac{\text{ft}}{\text{s}}$ (18.18 mph) not 29 ft/s (19.77 mph).

Anyway, the real speed at the end of the rail would have been greater than the average speed along its last 60 ft, in other words the take-off groundspeed was above 18.18 mph in the worst case scenario.

W. Wright continued by stressing that *when the headwind averaged much below 10 ft/sec (6.81 mph) it was very difficult to maintain flight, because the variations of the wind were such as to reduce the relative speed so low at times that the resistance became greater than the thrust of the screws. Under such circumstances the best of management would not insure a long flight, and at the best the speed accelerated very slowly.*

As a comment, in a 10 ft/s headwind, the plane evidently had, at take-off, an airspeed of at least:

$$\frac{60 \text{ ft}}{2\frac{1}{4} \text{ sec}} + 10 \frac{\text{ft}}{\text{sec}} = 36.66 \text{ ft/s (25 mph)}, \quad (5)$$

which is greater than the 23 mph necessary for getting airborne, as stated in the August 8, 1904, letter. A drop in this airspeed was expected if the apparatus climbed at a steep angle. Under such conditions, the aeroplane would have slowed down to below 23 mph, the lift would have become less than the weight and the plane would have started to descent, finally landing.

Also, while in horizontal steady flight (at an airspeed greater than 23 mph), say 25 mph in a 5 mph headwind, had the plane abruptly entered a zone of total clam then its airspeed would have suddenly decreased to 20 mph at which it would have started to descend, at the same time, accelerating toward its former 25 mph airspeed. However, at an airspeed of 20 mph, the thrust of the propellers would not have become less than the aerodynamic resistance acting on the plane. From the way he formulated the explanation regarding the difficulty of maintaining flight against a weak wind, it can be inferred that W. Wright apparently believed the thrust of the machine decreased as the headwind slowed down, which is incorrect.

Wilbur concluded his August 28, 1904, narration by announcing O. Chanute that the *starting apparatus, the two inventors were building, was approaching completion and then they would be ready to start in calms and practice circling.* The only reaction of the old engineer, to all this reach aeronautical activity of the two Daytonians, was just a short message of felicitation contained in a letter dated September 5, 1905: *“I have yours of Aug 28th, and congratulate you on the good progress you have made.”*

These are the relevant excerpts of the two letters:

1904-08-28, W. Wright, “Letter to O. Chanute”, Dayton, August 28, 1904.

“Since the first of August we have made twenty five starts with the #2 Flyer. The longest flights were 1432 ft., 1304 ft, 1296, ft. and 1260 ft. These are about as long as we can readily make on our present grounds without circling. We find that the greatest speed over the ground is attained in the flights against the stronger breezes. We find that our speed at starting is about 29 or 30 ft per second, the last 60 ft of track being covered in from 2 to 2¼ seconds. The acceleration toward the end being very little. When the wind averages much below 10 ft per second it is very difficult to maintain

flight, because the variations of the wind are such as to reduce the relative speed so low at times that the resistance becomes greater than the thrust of the screws. Under such circumstances the best of management will not insure a long flight, and at the best the speed accelerates very slowly. In one flight of 39¼ seconds the average speed over the ground was only 33 ft per second, a velocity only about 3 ft per second greater than that at starting. The wind averaged 12 ft per second. In a flight against a wind averaging 17 ft per second, the average speed over the ground was 42 ft per second, an average relative velocity of 59 ft per second, and an indicated maximum velocity of 70 ft per second. We think the machine when in full flight will maintain an average relative speed of at least 45 miles an hour. This is rather more than we care for at present.

Our starting apparatus is approaching completion and then we will be ready to start in calms and practice circling.”

1904-09-05, O. Chanute, “Letter to W. Wright”, Chicago, Sep. 5, 1904.

“I have yours of Aug 28th, and congratulate you on the good progress you have made.”

The starting apparatus

Wednesday, September 7, 1904, was the moment the two aeroplanists became independent of the wind. According to what Wilbur wrote to O. Chanute (in a letter dated September 18, 1904) that day, the brothers tried for the first time their starting device and up to September 18th *they made eleven starts with it* and it seemed *“to operate perfectly and exactly according to calculation”*. On September 15th, the two inventors attempted twice *“to encircle the field but did not quite succeed though on both trials a distance of half a mile was covered”*. Unfortunately, they damaged the machine during the second landing, but not to a great extent, and W. Wright ended the story by expressing his satisfaction that *after fifty starts and landings the plane remained in remarkably good shape.* Chanute answered on September 30, 1904, with a rather formal message: *“Thanks for your most interesting letter of 18th.”*, followed by a text unrelated to the flights of the Wrights.

On October 5, 1904, the elder of the two inventors wrote again, to the old Chicago-based engineer, reporting that they finally succeeded and *circumnavigated the field* on September 20, 1904.

Tab. 4. The details of the September 20, 1904, flight in a circuit as extracted from the October 5, 1905, letter of Wilbur.

Wind direction	Wind speed		Distance traveled by the plane	
	on the ground (mph)	at a height of 15 - 20 ft (mph)	over the ground (ft)	through the air (ft)
From NE	7 - 8	10	4100	4800

Remark: The text does not say how much time the plane spent in the air.

W. Wright ended his account by inviting O. Chanute to pay him and his brother a visit, preferably in the following three weeks because, *as they had decided to keep their experiments strictly secret, the two brothers were becoming uneasy about continuing them much longer at their location*, at the same time, not forgetting to repeat his old story that *they had been very fortunate in their relations with newspaper reporters. Unfortunately, intelligence of what they were doing was gradually spreading through the neighborhood.*

The reason behind keeping the experiments secret is not entirely clear. As of October 5, 1904, according to what W. Wright wrote to Chanute, the plane had already become *much more controllable and seemed very much like the gliders tested at Kitty Hawk* and, in the same letter, the inventor admitted that he and Orville were thinking of *what they would do with their baby.* The intention of making money by selling the machine is not apparent.

Also, the first and most important patent of the brothers had already been filed in a number of countries like: United States

(March 23, 1903); Great Britain (March 19, 1904); France (March 22, 1904); Austria (March 23, 1904) and even granted in Great Britain (May 12, 1904) and France (September 1, 1904). The patent claimed:

- (1) The method of wing warping, in particular, and the ailerons, in general, for stabilizing an aeroplane type machine in roll.
- (2) A movable vertical tail aimed at counteracting the adverse yaw generated by twisting the main wings.
- (3) A flexible front elevator for maintaining the pitch stability of the same machine.
- (4) Various constructive details.

Therefore, the invention is not about powered machines based on the aeroplane principle, as Flyer II, and would not have protected the two brothers against people who wanted to copy their apparatus.

A flight of 4100 ft (1.25 km) in a circuit, like that of September 20, 1904, in front of journalists, would have made the two Daytonians instant celebrities in the whole world.

Based on the evidence collected in this work, the most logical explanation for the Wrights' secrecy is that they had no flight capable plane and were just bluffing in the hope of obtaining enough funds, from a source or another, to develop a working flying apparatus capable of navigating the air.

O. Chanute answered on October 12, 1904, saying he would come to Dayton two or three days later.

These are the relevant fragments of the letters discussed in the present chapter:

1904-09-18, W. Wright, "Letter to O. Chanute", Dayton, Sep. 18, 1904.

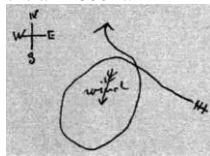
"The starting apparatus which I mentioned in a former letter was finished and tried for the first time on Sept 7th. Up to the present time we have made eleven starts with it. It seems to operate perfectly and exactly according to calculation so far as we can measure. On Wednesday, Sept 15th we made our first attempts to encircle the field but did not quite succeed though on both trials a distance of half a mile was covered. In the second trial the machine rose after partly landing and came down slightly crosswise. As the speed was above 35 miles several of the wires staying the skids were broken and let the latter fold sidewise. The damage was not very serious, and is almost repaired. Considering the fact that we have made fifty starts and landings with this machine, it is yet in remarkably good shape."

1904-09-30, O. Chanute, "Letter to W. Wright", Chicago, Sep. 30, 1904.

"Thanks for your most interesting letter of 18th."

1904-10-05, W. Wright, "Letter to O. Chanute", Dayton, Oct. 5, 1904.

"I think I mentioned in a former letter that we had made two attempts to circumnavigate the field where our present experiments are being made, but that neither was successful. On the 20th of September we renewed the attempt and on the second trial succeeded. The sky was overcast and a heavy rain separated the two attempts, but the wind was fairly steady and had a velocity of 7 or 8 miles an hour on the ground and about 10 miles at a height of 15 or 20 ft from the ground. The distance over the ground was about 4100 ft and through the air 4800 ft.



About two thirds of the flight was more or less to windward. The wind was blowing almost from the north. Since we have been making longer flights and getting more practice the machine is becoming much more controllable and now seems very much like our gliders at Kitty Hawk.

Up to the present we have been very fortunate in our relations with newspaper reporters, but intelligence of what we are doing is gradually spreading through the neighborhood and we are fearful that we will soon have to discontinue experiment. If your business will permit you to visit us this year it would be well to come within the next three weeks. As we have decided to keep our experiments strictly secret for the present we are becoming uneasy about continuing them much longer at our present location. In fact it is a question whether we are not ready to begin considering what we will do with our baby now that we have it."

1904-10-12, O. Chanute, "Letter to W. Wright", Chicago, Oct. 12, 1904.

"I expect to go to Cincinnati thursday night and to call on you friday afternoon (14th) or saturday."

More detailed information about the two trials of September 20, 1904, can be found in Wilbur's notebook E at pages 18-19, as follows:

Sept 20th W.W.

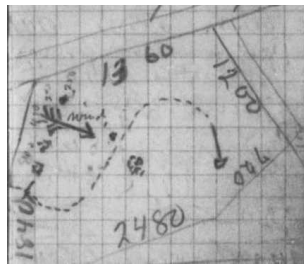
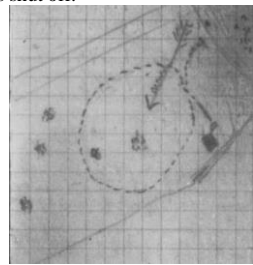
<p>Cloudy. N.W. Wind. AM 51] First Flight W.W. Sep 20 Distance $315 \times 8 = 2520$ Time OW $1.01 \frac{2}{5}$ " { CET $1.01 \frac{4}{5}$ Anem. 473 ft. Anem. { $1.05 \frac{3}{5}$ 1005 meters. Flight lasted about 2 sec. after engine shut off.</p> 	<p>Rain N.E. Wind. P.M. 52] 2nd Flight W.W. Sept 20 Complete circle Distance $510 \times 8 = 4080$ Time OW $1:35 \frac{2}{5}$ C.E.T. $1:35 \frac{1}{5}$ Anemometer $1:35 \frac{4}{5}$ Dist 1505 met Anemometer on ground recorded 900 ft. in 1.35 Flight lasted about 3 sec after anemom was shut off.</p>  <p>(Root present)</p>
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Fig. 6. A more readable rendition of flight no. 51 and 52, as they appear in W. Wright's 1904-1905 Notebook E, pp. 18-19.

The meaning of the numerical values, drawings and explanations in Fig. 6 is as follows:

- Flight 51: In the morning of September 20, 1904, the sky was cloudy and the wind blew from the NW. Wilbur flew a distance of 2520 ft over the ground and the plane followed an S-shaped path, taking off from the right of the testing grounds and landing near its left side. Orville timed the flight at 1 min $1 \frac{2}{5}$ sec with a chronometer and the mechanic of the Wrights, Charles Edward Taylor, at 1 min $1 \frac{4}{5}$ sec using an English anemometer-timer that also recorded, during this interval, a distance of 473 ft representing the integral of the near-ground wind speed. The onboard French anemometer recorded 1005 meters in 1 min $5 \frac{3}{5}$ sec. The plane landed two seconds after the engine shut-off.

- Flight 52: The two tests, 51 and 52, were separated by a rain. The second flight of the day took place in the afternoon with a NE wind. W. Wright traveled 4080 ft over the ground, describing a full circle. Orville timed the flight at 1 min $35 \frac{2}{5}$ sec and Taylor at 1 min $35 \frac{1}{5}$ sec. The Richard instrument counted 1505 meters in 1 min $35 \frac{4}{5}$ sec and was stopped about 3 seconds before landing. The ground anemometer recorded 900 ft in 1 min 35 sec. Amos Ives Root, a businessman and aviation enthusiast, from Medina, Ohio, witnessed the flight.

As a remark, the work "A. I. Root, the liar number four after the Wright Brothers and their mentor, Octave Chanute" demonstrates with solid evidence that Root did not witness any flight, of a Wright plane, before August 29, 1910. If Wilbur mentioned a fictitious witness in his Notebook E, why should the figures, he recorded there, be considered real?

A 420 - meter long flight about which O. Chanute lied he witnessed on October 15, 1904

According to an aide-memoire written by the hand of Octave Chanute, this engineer located in Chicago visited the Wright brothers on October 15, 1904, as he had promised, and witnessed a 420-meter long flight which lasted $23 \frac{4}{5}$ seconds. The plane

suffered damages while landing. Here are a scanned copy and a transcription of the record:

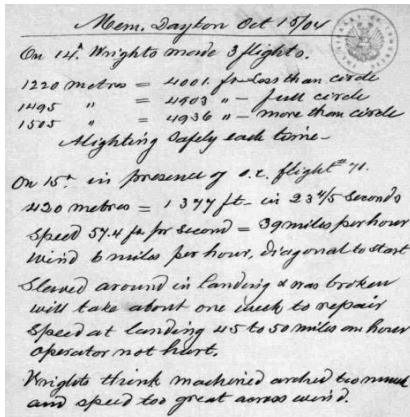


Fig. 7. Aide-memoire, written by Octave Chanute, about a flight he witnessed on October 15, 1904.

1904-10-15, O. Chanute, "Mem. Dayton Oct 15/04", October 15, 1904.

"Mem. Dayton Oct 15/04"

On 14th Wrights made 3 flights.

1220 metres = 4001. fs — Less than an circle
1495 " = 4903 " — full circle
1505 " = 4936 " — more than circle

Alighting safely each time —

On 15th in presence of O.C. flight #71.

420 metres = 1377 ft — in 23 4/5 seconds
speed 57.4 fs per second = 39 miles per hour
wind 6 miles per hour, diagonal to start

Slowed around in landing & was broken

will take about one week to repair
speed at landing 45 to 50 miles an hour
operator not hurt.

Wright think machined arched too much and speed too great across wind."

A letter, of Wilbur to Chanute, dated *Dayton, Ohio, November 15, 1904*, (written one month after the visit) confirms that the old engineer had been in Dayton at an unspecified time when the machine received some damages which were repaired in three days. However, the text does not say O. Chanute witnessed a flight or that the plane, at least, left the ground and fell in his presence. The elder of the two inventors also refers to some "*changes made to remedy the trouble which caused Orville's misfortune*", a phrasing that leaves room for interpretation. It can be understood that the younger brother was the pilot during an unlucky test conducted on October 15, 1904, that could have been a flight or a failed take-off. Here is the relevant fragment of the letter:

"Three days sufficed to repair the damage the machine received the day you were here, but owing to the funeral of our neighbor and bad weather, it was ten days before we were able to make another trial. The changes made to remedy the trouble which caused Orville's misfortune gave the machine an unfamiliar feeling, and before I had gone far I ran it into the ground and damaged it again." (W. Wright, "Letter to O. Chanute", Dayton, November 15, 1904)

As a parenthesis, the flight performed 10 days later by Wilbur can be identified in his 1904 - 1905 Logbook E, at page 31, as No. 72, made on October 26, 1904. This is the content of the record:

Oct 26

Wind N.W.
72] First Flight W.W.
Distance 1040 ft
Time 26 sec

Anem { 34 sec
465 meters
Darted into ground and broke upper spar, & skids
& screw.
72 trials

As a conclusion, the November 15th letter neither confirms nor denies that Chanute saw a 420-meter long flight in 23 4/5 seconds, on October 15, 1904. The answer to this question is found by analyzing:

- a number of letters belonging to the 1905 - 1906 correspondence between Wilbur and the old engineer,
- a letter of Chanute to Captain Ferdinand Ferber, a French aeronaut, who sent it to L'Aérophile (a journal from Paris dedicated to lighter and also heavier-than-air flying machines), making it public,
- a 1906 letter of O. Chanute to the Scientific American, that was immediately published, in which he confirmed he saw the October 15, 1904, flight.

Nearly one year later, O. Chanute wrote a letter to Wilbur, dated November 7, 1905, which contains both an English translation of an enquire received by him from Capt. Ferber and the answer he had prepared for this Frenchman. The elder of the two brothers was asked to review Chanute's draft reply and suggest changes, if necessary. Wilbur did not propose modifications and finally Ferber received the letter and had it published by L'Aérophile in its December 1905 issue:

1905-11-07, O. Chanute, "Letter to W. Wright", Chicago, Nov. 7, 1905.

"I received this morning a letter from Cap^t Ferber, of which I enclose a faithful translation.

I also enclose my answer to him, and a translation of that. You had better compare them.

If the answer is what you desire, please mail it. If it is not shaped as you like, return it to me, with indication of your desires."

1905-10-26, F. Ferber, "Letter to O. Chanute (translation made by O. Chanute for the Wright brothers)", Chalais, France, Oct. 26, 1905.

"I am uneasy in having no news from you, but I hope that you are in good health.

The informations which I have from Wright are so magnificent that they need confirmation from some authority.

They are said to have gone on the 1st, 2nd, 3rd & 5 Oct on flights of 24 to 39 kilometers.

But, as they have played the mysterious for the last 2 years, nobody here will believe them when I show their letter, and it must be admitted that this is only natural.

I am answered: if they had made such performances it would be known. The American Press is such a babler that it would rather have exaggerated, and yet nothing has appeared anywhere.

I now come to ask you whether the facts have been proved and whether a newspaper has mentioned them.

If it were true, it would be magnificent, and I would go to Dayton, to verify the facts first and to buy afterwards.

Please accept, my dear sir, the expression of my best sentiments."

1905-11-07, O. Chanute, "Translation made by O. Chanute, for the Wrights, of a letter he indented to send to Capt. Ferber.", Nov. 7, 1905.

"I have just received your letter of October 26th.

I believe that you can grant all your confidence to what the Wrights have written to you concerning their performances.

I have seen, with my own eyes, only a little flight of half a kilometer but they have advised me of the progress they have made from week to week and their intimate friends who have seen the long flights of the beginning of October confirmed the facts verbally last week when I was in Dayton to see a projected flight of 60 kilometers in one hour which could not take place because of a great storm.

The Wrights followed the example of France, which preserved secrecy upon its progress with Navigable balloons since 1885. They arranged with the press at Dayton.

It is true that there was an indiscretion and one article was published, but its circulation was suppressed."

1905-11-08, W. Wright, "Letter to O. Chanute", Dayton, Nov. 8, 1905.

"Regarding the letter to Capt. Ferber we have no suggestion to make except that it would be better to mail it at Chicago rather than Dayton."

1905-12-01, F. Ferber, "Letter to O. Chanute (translation made by O. Chanute for the Wright brothers)", Chalais, France, Dec. 1, 1905.

"I have your letter. It is a beginning towards authentication, for you say that you have seen a flight of about 500 metres; this is something. It enables me already to say more than I have done.

This question of authentication is of the greatest importance, and you must make the Wrights so understand. A government cannot engage to pay 1.000.000 for a thing that nobody has verified, because if it proves to be a "bluff" the government would be ridiculed."

1905-12, "Les Frères Wright et leur Aéroplane à moteur. L'origine et les pièces du débat. — Exposé des faits avancés par les Wright. — Objections et possibilités. — Premiers résultats de l'enquête.", L'Aérophile, Paris, Décembre 1905, 13^e année, no. 12, pp. 265-272 (p. 268).

"le capitaine Ferber avait reçu de M. Chanute la lettre suivante, écrite en français, qu'il avait provoquée pour arriver à un premier contrôle des assertions Wright:

Chicago, Ill., 9 novembre 1905

Cher capitaine Ferber,

Je viens de recevoir votre lettre du 26 octobre. Je crois que vous pouvez octroyer toute confiance à ce que les Wright vous ont écrit de leurs accomplissements (*sic*). Je n'ai vu, de mes yeux, qu'une petite envolée d'un demi-kilomètre, mais ils m'ont mandé leurs progrès de semaine en semaine et leurs amis intimes qui ont vu les longs parcours du commencement d'octobre, m'ont confirmé verbalement la semaine dernière, quand j'étais à Dayton, pour voir une envolée projetée de 60 kil. en une heure, qui n'a pu avoir lieu par raison d'un grand orage.

Les Wright se sont inspirés de l'exemple de la France qui a tenu secrets ses progrès de ballons dirigeables depuis 1885. Ils se sont arrangés avec leurs journaux à Dayton. Il y a bien eu une indiscretion et un article publié, mais sa circulation a été supprimée."

Up to this point there is no serious evidence that O. Chanute had not, in fact, seen the 420-meter flight of October 15, 1904. However, the situation changed dramatically on January 31, 1906, when, after a few letters in which O. Chanute expressed his wish to give an account of Wrights' performances, in a magazine named *The Car*, Wilbur explained to him that: (1) he did not wanted the constructive secrets of his plane be made public in any form, a thing the old engineer understood, and (2) he did not like that O. Chanute should talk about the performances of his machine which, also already in newspapers and magazines, were not witnessed by this Chicago-based aeronautical personality. This is what Wilbur wrote to Chanute:

"You have not exactly grasped our idea in regard to the article for the "Car". The fact is that all or nearly all that you know from personal knowledge relates to the construction of our machine. The performances you have not seen. We have not felt at liberty to impose upon you the task of vouching for things you have not seen, while forbidding you to talk of the things you really do know." (W. Wright, "Letter to O. Chanute", Dayton, January 31, 1906)

In other words, W. Wright unwillingly confirms that his mentor had not seen any powered flight up to January 31, 1906, and in consequence the latter lied to Ferber, with the tacit approval of Wilbur himself who did not stop Chanute to claim he had witnessed that 420-meter long flight, also Wilbur had all power and permission to do it in his November 8, 1905, reply.

The things further complicated when the German magazine *Illustrierte Aeronautische Mitteilungen*, in its February 1906 number, quoted O. Chanute as saying he had witnessed a flight of about ½ km in length:

1906-02, "Die Versuche der Gebrüder Wright im Jahre 1905", *Illustrierte Aeronautische Mitteilungen*, February 1906, pp. 48-50.

"Die Versuche der Gebrüder Wright im Jahre 1905.

Unserem eifrigen, sachverständigen Korrespondenten, Herrn Dienstbuch, in New-York ist es bisher leider noch nicht möglich gewesen, sich von den behaupteten Leistungen der Wrightschen Flugmaschine persönlich mit eigenen Augen überzeugen zu können. ...

Vor allem bleibt es auffallend, daß sie ihre Zeugen aus ganz nichtigen Gründen nicht angeben. Sodann schreibt sogar unser verehrter Mitarbeiter Mr. Chanute, dessen Zuverlässigkeit wir alle zu schätzen wissen und welcher persönlich in Dayton, Ohio die Gebrüder Wright besucht hat, daß er nur einen kleinen Flug von ½ Kilometer mit eigenen Augen gesehen habe, und nur von intimen Freunden der Wrights von ihren langen Umflügen gehört habe."

From this German aeronautical journal the information reached the Scientific American which questioned O. Chanute regarding what he had seen. There was no way back for the old engineer and he had to repeat the tale told to Captain Ferber. He not only did this but developed the story with additional details, also found in his October 15, 1904, handwritten aide-memoire. However, in the final part of his answer, he did not forget to stress that the Wrights had performed two improbable feats, the first consisting in "*inventing a practical flying machine*", the second in keeping their plane, *which could only be operated in the open, far from the incredulous but Argus-eyed American press*. This remark sounds like a joke, an irony. Here is Chanute's letter to the Sci. Am., as published by this well known technical magazine:

1906-04-14, Octave Chanute, "Chanute on the Wright Brothers' Achievement in Aerial Navigation", *Scientific American*, New York, Munn & Co., April 14, 1906, vol. XCIV, no. 15, col. 1, p. 307.

"Chanute on the Wright Brothers' Achievement in Aerial Navigation.

To the Editor of the SCIENTIFIC AMERICAN:

Upon my return last evening from a ten days' trip to New Orleans I received your letter of 19th and telegram of 29th instant, asking me for a verification of the statement in the *Illustrierte Aeronautische Mitteilungen*, that I witnessed a flight of about half a kilometer by the aeroplane machine of the Wright brothers.

This is quite true. The Wright brothers have for the past two years been in possession of a successful flying machine driven by a motor, to my certain knowledge, and have been gradually perfecting it.

On the 15th of October, 1904, I witnessed a flight of 1,377 feet performed in 23 4-5 seconds, starting from level ground and sweeping over about one-quarter of a circle, at a speed of 39 miles per hour. The wind blew at some six miles per hour, but in a diagonal direction to the initial course. After the machine had gone some 500 feet and risen some 15 feet, a gust of wind struck under the right-hand side and raised the apparatus to an oblique inclination of 15 to 20 degrees. The operator, who was Orville Wright, endeavored to recover an even transverse keel, was unable to do so while turning to the left, and concluded to alight. This was done in flying before the wind instead of square against it as usual, and the landing was made at a speed of 45 to 50 miles an hour. One side of the machine struck the ground first; it slewed around and was broken, requiring about one week for repairs. The operator was in no wise hurt. This was flight No. 71 of that year (1904), and on the preceding day Wright brothers had made three flights — one of 4,001 feet for less than a full circuit of the field, one of 4,903 feet covering a full circle, and one of 4,936 feet over rather more than a full circuit, alighting safely.

The illness of a near relative, who had to be taken to the seashore, prevented me from being present at the greatly longer flights of September and October, 1905, but I visited Dayton in November, on my return, and verified the absolute accuracy of the statements which the Wrights have since made, over their own signatures, to the *Aérophile* of Paris and to the Aero Club of New York. There is no question in my mind about the fact that they have solved the problem of man-flight by dynamic means.

Believing that this solution had a money value, they have, until recently, preserved whatever secrecy they could, particularly when those who chanced to learn of their experiments made inquiries as to the construction and details of their apparatus; but since the French papers have published that negotiations were pending for the use of their machine, they have given some particulars of their performances. As the first use will be in war, it is my belief that the various purchasers will desire to preserve such secrecy as may be practicable concerning the further developments.

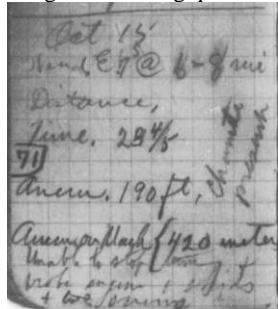
In addition to the great feat of inventing a practical flying machine the Wright brothers have, in my judgment, performed another improbable feat by keeping knowledge of the construction of a machine, which can only be operated in the open, from the incredulous but Argus-eyed American press.

I send you a page cut from *The Car* of London, which may prove of interest. The *Aérophile* of Paris for December, 1905, and January, 1906, contains fuller accounts.

O. CHANUTE.

Chicago, Ill., March 31, 1906."

Those who want to save the reputation of the Wright brothers (no matter how much evidence, that proves they were two frauds who did not invent anything important, is brought forward) might argue that the lie told to Ferber was the initiative of O. Chanute who was not explicitly asked by the two Daytonians to claim he had witnessed one of their powered flights. This is correct. However, Orville, in his article "The Wright Brothers' Aëroplane" (The Century Magazine, New York, September 1908, vol. LXXVI, no. 5, pp. 641-650 (p. 645)) states that O. Chanute "*also witnessed one flight of the power machine near Dayton, Ohio, in October, 1904*" which means that the Wrights, through the voice of the younger brother, explicitly subscribed to the lie of the old engineer from Chicago which was used in support of the numerous claims made in the September 1908 article. Also, Orville added in Wilbur's 1904-1905 notebook E, at flight no. 71 (page 30), the words "*Chanute present*" (the final "r" in Orville's handwriting is easily recognizable being quite different from that of his brother).



Oct 15

71] Wind. E. by S. @ 6-8 mi
Distance.
Time. $23\frac{4}{5}$
Anem. 190 ft.
Anem on Mach. {420 meters
Unable to stop turning & broke engine
& skids & both screws.
Chanute present

Fig. 8. Flight no. 71, witnessed by O. Chanute, recorded in Wilbur's 1904-1905 notebook E, at page 30.

In conclusion, the answer to the question whether O. Chanute saw a Wright powered plane, traveling through the air, on October 15, 1904, or at any other date, is only one: He did not witness any such flight of the two inventors, at least up to January 31, 1906.

Roosevelt's election celebrated up in the air

The same letter dated November 15, 1904, whose content was already partly discussed in the preceding chapter, also contains an account about three circular flights. The first two took place on November 2 and 3, 1904. In both cases the plane "*circled the field*". The third occurred on November 9th when the two brothers "*went out to celebrate Roosevelt's election by a long flight and went around four times in 5 min. 4 sec.*". Because they failed to set the recording anemometer they did not get a measure of distance which Wilbur estimated at "*a little over three miles*". He also stated that the trouble in righting the machine after swinging a short circle was evidently corrected.

Chanute answered four days later, on November 19, 1904, by sending a French clipping which laid down the rules for the \$10,000 prize for a power flying machine, at the same time commenting, in the letter sent together with the cutting, that the Wrights could win the prize if they chose to go to France.

Wilbur wrote again to Chanute close to the end of the year, on December 20, 1904, saying that a number of flights had been performed, since his previous letter, out of which the best were on November 16, 1904, of "*2 1/4 turns of the field*" and December 1st, of "*almost four rounds*" about which W. Wright made this remark: "*Although 70 lbs of steel was carried in this last flight to balance the machine it was still insufficient and the flight was made with pressure on the top side of the front rudder.*", and then continued by saying that he and his brother "*succeeded in curing the trouble caused by the tendency of the machine to turn up too much laterally when a short turn was made*".

The same text announced Chanute that the two inventors *had finished their experiments several weeks before and had dismantled the machine*, after making *one hundred and five starts with it, during the season*.

In his reply, dated December 26, 1904, O. Chanute apparently sincerely congratulated the two brothers upon the successful results of their improvements and the safe progress that they had made in controlling their machine, if only the first paragraph of his letter is read. However, he also wrote a quite puzzling text: "*I have been thinking it not unlikely that you should be called upon to go to Japan. It could well afford to give you and your brother \$100,000 for a few months work in reconnoitring. Santos Dumont would preferably be called upon by Russia, as that country follows the French lead.*". This is a joke, an irony related to the big number of flights reported by W. Wright but not supported with any solid evidence. Chanute could not have been serious in thinking that the plane tested near Dayton had reached such a stage of perfection that Japan, then in war with Russia, would have employed the Wrights to do aerial reconnaissance missions while Santos Dumont, living in Paris, would have done the same thing, with an airship, for Russia, an ally of France. (Remark: Also capable of flight, the dirigibles of the time had weak motors and were unreliable in reaching a given destination.)

Here are the relevant fragments of the letters discussed in this chapter:

1904-11-15, W. Wright, "Letter to O. Chanute", Dayton, Nov. 15, 1904.

"Three days sufficed to repair the damage the machine received the day you were here, but owing to the funeral of our neighbor and bad weather, it was ten days before we were able to make another trial. The changes made to remedy the trouble which caused Orville's misfortune gave the machine an unfamiliar feeling, and before I had gone far I ran it into the ground and damaged it again. On Nov 2nd we circled the field again, and repeated it on the 3rd. On the 9th we went out to celebrate Roosevelt's election by a long flight and went around four times in 5 min. 4 sec. We unfortunately failed to set the recording anemometer and so did not get a measure of distance, but it was evidently a little over three miles. The trouble in righting the machine after swinging a short circle is evidently corrected. The machine landed without any injury and was put back on the track for another trial, but the wind had been working more and more to the south and we were unable to get another start."

1904-11-19, O. Chanute, "Letter to W. Wright", Chicago, Nov. 19, 1904.

"I also enclose a French clipping which lays down the rules for the \$10,000 prize for a power flying machine. This prize you can win if you choose to go to France to do so."

1904-12-20, W. Wright, "Letter to O. Chanute", Dayton, Dec. 20, 1904.

"We finished our experiments several weeks ago and have now dismantled the machine. During the season one hundred and five starts were made. The best flights since my last letter were on Nov 16th and Dec 1st, the flights being 2 1/4 turns of the field on the first named date, and almost four rounds on the last. Although 70 lbs of steel was carried in this last flight to balance the machine it was still insufficient and the flight was made with pressure on the top side of the front rudder. We succeeded in curing the trouble caused by the tendency of the machine to turn up too much laterally when a short turn was made."

1904-12-26, O. Chanute, "Letter to W. Wright", Chicago, Dec. 26, 1904.

"I have yours of 20th, and I congratulate you heartily upon the successful results of your improvements and the safe progress that you have made in controlling your machine. I wish you still more success and a happy new year. I trust that it will not pass without bringing you a material reward. Please convey my congratulations to your brother, to your father and to your sister.

I have now a curiosity to know what are your final conclusions as to the power actually required for artificial flight, and whether you hope to reduce it. I am under the impression that birds use less power than you have found necessary.

I have been thinking it not unlikely that you should be called upon to go to Japan. It could well afford to give you and your brother \$100,000 for a

few months work in reconnoitring. Santos Dumont would preferably be called upon by Russia, as that country follows the French lead.”

Flyer II and Georges Spratt

Georges A. Spratt (1870 - 1934) from Coatesville, Pennsylvania, was a medical doctor who had a passion for heavier-than-air flying machines. He started corresponding with the Wright brothers on July 20, 1901, after receiving a letter from Octave Chanute who instructed him how to reach the camp at Kitty Hawk where the two inventors were experimenting. He visited the Wrights each year, in 1901, 1902 and 1903 during their stay in North Carolina and sent many letters to Dayton in which he exposed his theories related to flight and talked about the experiments he made. His texts tend to be long, they are often plagued by divagations and are hard to follow.

In this work, only the correspondence, between Spratt and the Wrights, in connection with the 1904 plane will be discussed. In essence, the two Daytonians told him much the same story, regarding their 1904 trials, as to Chanute and got from Spratt weak reactions consisting in short formal messages of congratulation.

Orville announces Spratt that another machine or two could be ready by early summer

One day after a press release of the Wright brothers was published, and, according to them, gave an exact, authentic version of the December 17, 1903, flights, Orville composed a letter to G. Spratt, dated January 7, 1904, in which he presented *the particulars of their trials* performed on December 14th and 17th and divulged they were just starting *the construction of several more of their engines, and hoped to have another machine or two ready by early summer*. Orville considered that he and Wilbur *saw nothing to prevent them, with a few minutes of practice, from making flights of considerable distances*.

Spratt answered on January 18, 1904, expressing his delight of finding out, directly from the Wrights, the results of their trials, his hope that they would “*continue to have success, unattended with any accidents of a serious character*” and his belief they would “*be able to take the St. Louis prize*”, words that are nothing else but compliments. However, he also suggested that the two brothers should move their two parallel vertical rudders from their position at the rear of the plane and hinge them to the uprights close to the tips of the main wings, in such a way as to stay behind the uprights in the neutral position. Such a combination would have eliminated, in Spratt’s conception, the extra drag the tail created as built by the Wrights. He also proposed his friends from Dayton should place *the front rudder farther from the flying surfaces, explaining that, doing so, control might have become easier because of slower action, and even a smaller forward surface might have been effective*. As a remark, the plane flown by Wilbur near Le Mans, France, starting with August 8, 1908, a machine that was really capable of sustained flight, beyond any doubt, had the front elevators positioned at a greater distance from the main wings in comparison with Flyer I and II.

From later letters (one of Spratt, dated August 28, 1904, and the September 10, 1904, reply of Wilbur) it results that W. Wright answered about two weeks after January 18, 1904, but his reply did not reach the recipient and, in consequence, Spratt could not furnish *the address of the Philadelphia lumber yard where he had found spruce*, an essence of wood the Wrights could not find when building Flyer II. Pine spars were used instead and cost them *fully a month’s time for three men in repairs* (the third person was Charles Taylor, the mechanic of the two inventors).

Chronologically, the next letter still in existence, after that of January 18, 1904, is also one written by Spratt, dated July 23, 1904. From its content, and the reply of Wilbur, on August 16, 1904, it can be inferred that the elder of the two brothers had sent, in fact, two letters between January 18 and July 23, 1904. The first, already discussed, did not reach Spratt and the second have not survived up to the present time. Coming back to the content of the July 23rd text, not too much useful information can be extracted from it. Spratt just says *he was pleased to learn of the trial (likely the short flight of May 26, 1904) direct from the Wrights, because he had seen a notice of a failure, in the Scientific American, and he was anxious to know the cause*. The same text reveals he was told by the two brothers they were ready for another attempt.

Here are the relevant excerpts of the letters discussed above:

1904-01-07, O. Wright, “Letter to G. A. Spratt”, Dayton, Jan. 7, 1904.

“We are now starting the construction of several more of our engines, and hope to have another machine or two ready by early Summer. We see nothing to prevent us, with a few minutes of practice, from making flights of considerable distances, though we are not saying this to every body, as we do not like to blow too much about what we can do before we do it. We are not certain as yet as to the place where we will do our practicing this Spring, but whether it be at Kitty Hawk or some place else, we would be glad to have you with us again, and for a longer time than you staid this year.”

1904-01-18, G. A. Spratt, “Letter to the Wrights”, Chester, CT, Jan. 18, 1904.

“I was exceedingly glad to receive your letter, and know from you the results of your trials. I am very glad of your success indeed, and hope you will continue to have success, unattended with any accidents of a serious character ...

You will be able to take the St. Louis prize, I believe, and not require the assistance of the promoter.

Let me call your attention, again to the placing of those vertical tail vanes. Suppose you hinge one to each of the forward uprights nearest the spar ends, (one on each wing tip) ... They are here placed behind a necessary framing piece and present no extra head resistance, and do away with the after out rigging entirely. ... Also if the front rudder be placed farther from the flying surfaces, control may be easier because of slower action and smaller surfaces be effective, – but it is needless for me to tell you that.”

1904-07-23, G. A. Spratt, “Letter to W. and O. Wright”, Coatesville, PA, July 23, 1904.

“Your letter came to hand some time ago, I had however given up all expectation of receiving another letter from you. I was pleased to learn of your trial direct from you, for I had seen a notice of a failure, in the Scientific American, and I was anxious to know the cause. And ... you told me you were about ready for another attempt ...

If I should happen to go to the ‘Worlds Fair’ I will visit you, but it will be a *happen so* if I go. I would very much like to see you in your shop and have a visit with you, and I thank you for the invitation, and if ever opportunity presents, I would be very much pleased to have you here whether you come by rail or air ship, walk, drive, or automobile.

Wishing you the best of success with your attempts ...”

1904-08-16, W. Wright, “Letter to G. A. Spratt”, Dayton, Aug. 16, 1904.

“Your letter of July 25th received. Glad to know that you are still on deck. I had begun to worry a little when one of my letters was unanswered, and another seemed about to meet the same fate.”

The plane accelerated easily from 30 to 45 mph after leaving the ground

The letters of August 16 and September 10, 1904, sent by Wilbur to Spratt, contain each a paragraph that describes the behavior of Flyer II from the moment it started moving till landing. The elder of the two brothers claimed that, according to their experimental findings, the plane accelerated from 30 to 45 mph if the airspeed at take-off was at least 30 mph:

1904-08-16, W. Wright, “Letter to G. A. Spratt”, Dayton, Aug. 16, 1904.

"the new machine requires a higher relative speed for starting than the old one. It lifts at a speed of 23 or 24 miles an hour but the angle is so great that the resistance exceeds the thrust and the machine soon stalls. Between 25 and 30 miles it is a case of nip and tuck between them; but after the relative speed reaches 30 miles, the thrust exceeds the resistance and the speed accelerates till a velocity of forty five or fifty miles is reached. So far the highest speed attained is forty five miles"

1904-09-10, W. Wright, "Letter to G. A. Spratt", Dayton, Sep. 10, 1904.

"We have made forty five starts with our 1904 Flyer. Unless the relative speed at starting is 27 miles in a calm and two or three miles more than that in a wind, the machine will gradually slow down till unable to fly. After the relative speed passes thirty miles the velocity accelerates till a relative speed of 45 to fifty miles is reached. We found it difficult in practice to get a speed down the track greater than 20 miles an hour, so that unless we had a wind of about 10 miles we were not sure of being able to fly for a lull in the wind would let us drop below the real flying limit."

The findings of the Wright brothers, as communicated to G. Spratt, regarding the behavior of Flyer II, can be summed up as follows:

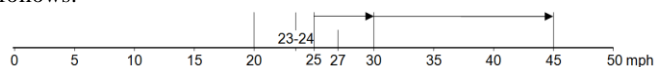


Fig. 9. Graphical representation of the important airspeeds of Flyer II, as presented in the letters of Aug. 16 and Sep. 10, 1904, addressed to G. Spratt.

August 16, 1904:

- 23 - 24 mph = the minimum airspeed at which Flyer II took-off.
- 25 - 30 mph = the interval of airspeeds at which Thrust - Drag could be positive or negative.
- 30 mph = the airspeed that allowed the plane to accelerate easily till it reached 45 mph.

September 10, 1904:

- 20 mph = the maximum airspeed of Flyer II at the end of the track that could be reliably reached in the absence of wind or a catapult.
- less than 27 mph = the airspeed at take-off, in a calm, for which the plane (if it had left the ground) gradually slowed down till unable to fly.
- less than ~30 mph = the interval of airspeeds at take-off, in the presence of a headwind, for which the plane, if in flight, gradually slowed down till unable to fly.
- 27 mph = the minimum airspeed at take-off, in a calm, for which the plane could continue stable flight.
- ~30 mph = the minimum airspeed at take-off, with a headwind, for which the plane could continue stable flight.
- above 30 mph = the airspeed that allowed the plane to accelerate till it reached 45 mph.
- 10 mph = the minimum headwind speed at which the plane left the ground with an airspeed of at least 30 mph, in the absence of a starting device.

Other things reported in the two letters:

August 16, 1904:

- Up to August 1, 1904, the Wrights made 14 trials.
- 17 more tests occurred between August 1 and 16, 1904.
- The longest flight measured 1304 feet and lasted 39½ seconds.

September 10, 1904:

- Flyer II had made 45 starts in total (including those reported in the previous letter) up to September 10, 1904.
- All flights had been limited by the length of the pasture field where the Wrights performed the experiments. As the machine needed a 10 mph headwind (without using a catapult), the two inventors did not attempt turning it and flying with the wind because the landing speed would have been too great.
- A number of flights, measuring between 1250 and 1450 feet in length, had been made at unspecified dates.
- Wilbur also reported he and his brother had just finished a starting apparatus, which gave a speed at start of 27 mph in a dead calm, and that they expected to make circular flights.

The progress announced by Wilbur was impressive but, in the same manner as O. Chanute, G. Spratt, in his answers of August 28 and September 20, 1904, just limited to wish the brothers *success with their work* saying he was *glad they were having better practice*. The two replies of Spratt are relatively long but they contain things not directly related to the flights at Simms Station.

Here are, in chronological order, the relevant excerpts of the letters discussed in the present chapter:

1904-08-16, W. Wright, "Letter to G. A. Spratt", Dayton, Aug. 16, 1904.

"Your letter of July 25th received. Glad to know that you are still on deck. I had begun to worry a little when one of my letters was unanswered, and another seemed about to meet the same fate.

We have been quite busy for several months with our machine, but until recently most of our time was spent in taking out broken pine pieces and substituting spruce. I think I told you that we were unable to get spruce at the time we built this machine. Pine is utterly worthless for flying machines. Up to Aug 1st we had made but fourteen trials; since then we have made seventeen more. So far our longest flight is only 1304 ft. in 39½ seconds, which though farther over the ground than our longest flight at Kitty Hawk is not its equal in duration of time or distance through the air. We are however working under much less favorable conditions so far as grounds and atmospheric conditions are concerned. We have found difficulty in getting satisfactory starts owing to the fact that the winds are usually very light by spells, and the new machine requires a higher relative speed for starting than the old one. It lifts at a speed of 23 or 24 miles an hour but the angle is so great that the resistance exceeds the thrust and the machine soon stalls. Between 25 and 30 miles it is a case of nip and tuck between them; but after the relative speed reaches 30 miles, the thrust exceeds the resistance and the speed accelerates till a velocity of forty five or fifty miles is reached. So far the highest speed attained is forty five miles, but it may exceed this when we get to making longer flights. We are proceeding very cautiously; and do not intend to attempt any thing spectacular until we know that it is safe, and that we know all of the machines peculiar tricks."

1904-08-28, G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, Aug. 28, 1904.

"Wishing you success with your work

Yours

Geo A Spratt"

1904-09-10, W. Wright, "Letter to G. A. Spratt", Dayton, Sep. 10, 1904.

"We have made forty five starts with our 1904 Flyer. Unless the relative speed at starting is 27 miles in a calm and two or three miles more than that in a wind, the machine will gradually slow down till unable to fly. After the relative speed passes thirty miles the velocity accelerates till a relative speed of 45 to fifty miles is reached. We found it difficult in practice to get a speed down the track greater than 20 miles an hour, so that unless we had a wind of about 10 miles we were not sure of being able to fly for a lull in the wind would let us drop below the real flying limit. As we were not ready to turn our backs to such a wind on account of the enormous speed in landing when going with the wind our flights have been confined to the length of our pasture field. We have made a number of flights between 1250 and 1450 ft long. We have now finished a starting apparatus which gives a speed at start of 27 miles an hour in a dead calm, and expect shortly to begin circling. With longer flights and less hauling the machine back, we hope to get more practice than heretofore."

1904-09-20, G. A. Spratt, "Letter to the Wright brothers", Coatesville, PA, Sep. 20, 1904.

"Yours of 10th received, glad you are having better practice, wish you the best possible success."

As a remark, from the way Wilbur explained the need for a starting device, it appears the catapult was intended for:

(1) throwing Flyer II above an airspeed limit (27 mph when the wind did not blow and 30 mph in the presence of a headwind) from which the flying machine sped up easily, by itself, to 45 mph;

(2) accelerating the aeroplane quickly and on a short rail, independently of the wind, to above its take-off speed.

The elder of the two brothers also believed the headwind increased the average airspeed of his machine. This is a misconception as already explained (see Fig. 3).

105 starts were made during that eventful season

Spratt wrote again, on October 2, 1904, just for telling the two brothers he had given an introduction letter to them to a certain A. H. Reid, an inventor. Wilbur answered, on October 18th, saying he and Orville would be glad to meet that man but, at the same time, *they preferred Spratt should tell Mr. Reid neither they were experimenting near Dayton nor that they were making flights because they were not showing the machine or letting the public know what was going on.* In his reply, dated November 13, 1904, Spratt revealed that, unfortunately, he had told Mr. Reid the location where the Wrights were experimenting *but he did not think any trouble to them would result.*

Coming back to Flyer II, Wilbur, in his October 18th letter, reported *he and his brother had had more practice during the past month than in all the rest of the season and they had gotten so they could fly clear round the field and return to their starting place.* However, Spratt, in his November 13th answer, wrote a quite puzzling line: *"I hope you are making better progress and having better success with your work than I am having"*, as if he had not read the last letter of Wilbur and the previous ones. Of course, the two Daytonians, according to what they pretended, had made exceptional advancements, reaching the stage of flying in circuit a man-carrying airplane, while Spratt acknowledged *he was making very slow progress* with an unpowered apparatus.

In his December 20th reply, W. Wright announced Spratt the experiments of 1904 had ended and furnished vague details about some spectacular tests carried out after his previous letter, as follows:

- The longest flights of 1904 occurred on November 9th, 16th, and December 1st.
- In two of the three tests, the plane circled about 4 times the practice ground, each time.
- Flyer II rounded the field only 2¼ times during the other trial.
- The longest flight covered a distance of 3 miles in 5 min 4 sec.
- At the end of the season, the machine weighted ~900 lb, while up in the air, and its speed was lower as compared with earlier flights when the plane reached more than 40 mph.
- 105 starts were made during 1904.

Spratt answered quite late, on February 9, 1905, congratulating the brothers *on the success of their summer's experiments* (also the most spectacular flights, reported to him, occurred in November and December), and expressing his confidence *the Wrights could do more the following summer.*

As a note, in the case of Octave Chanute, it is clear from the ironic tone of his letters, especially in those sent after May 26, 1904, that he had serious doubts the two Daytonians could fly so many times without being remarked by the entire press in the United States. However, it is not self evident whether Spratt believed what the brothers told him.

These are the relevant paragraphs of the correspondence discussed above:

1904-10-02, G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, Oct. 2, 1904.

"Some time ago I met Mr A H Reid proprietor of the cream separator works, bearing his name, and inventor of several articles of various uses. ... I told him of our experiences at Kitty Hawk and of your work, but gave him no particulars. He is coming west in a short while and has asked me to give him an introduction by letter to you & Mr Chanute. This I have done, and I hope I hadn't introduced any trouble or temporary difficulty to you. ...

I am sure you will be interested in his ideas for he is evidently an original thinker, and on many points is rather unwilling to believe himself in error."

1904-10-18, W. Wright, "Letter to G. A. Spratt", Dayton, Oct. 18, 1904.

"Our own experiments are progressing satisfactorily, and we have had more practice during the past month than in all the rest of the season. We have gotten now so we can fly clear round the field and return to our starting place. So we make longer flights and do not have so much hauling to do. We have not tried any very long flights yet but as soon as we feel sure everything is just as we want it we will try a five mile trip.

If Mr. Reid gets out our way we will be glad to meet him and have a chat with him. We prefer however that you do not tell him that we are experimenting here, nor that we are making flights. We are not showing the machine nor letting the public know what is going on."

1904-11-13, G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, Nov. 13, 1904.

"I have delayed writing to you a little in the hope that I might get my machine finished and tried before writing, but with the other work it seems as tho I am making very slow progress. ...

I hope you are making better progress and having better success with your work than I am having. ...

I am sorry I told Mr Reid you were experimenting near Dayton. He seemed to think he would like to go to a place such as Kill Devil hills, when I told him about that place as an experimental ground, and to let him know that he was at liberty to do so I told him you were not there and in this way, he was told, but I do not think any trouble to you will result, hope not anyway."

1904-12-20, W. Wright, "Letter to G. A. Spratt", Dayton, Dec. 20, 1904.

"We have finished our experiments for the year. Our longest flights were made on Nov 9th, Nov. 16th and December 1st being about four times around our practice ground twice, and two and a fourth rounds the other. The longest was three miles in five minutes and four seconds. We made one hundred and five starts during the season. We worked out a number of points that proved troublesome and think that our next years machine will be much better, and when we get to the point where we do not make changes every few days we will become sufficiently accustomed to management to make it safe to make some longer and higher flights. At the end of the season we were carrying close to 900 lbs and this reduced our speed as compared with flights earlier in the year. At first we had a speed above forty miles an hour. We went through the season without worse injury than a sprained finger which bothered Orville a week or two."

1905-02-09, G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, Feb. 9, 1905.

"Altho it is rather late in answering your letter, let me congratulate you on the success of your summer's experiments. I am glad of your success and feel confident you can do more next summer. I want to see you advance the work as rapidly as possible."

The flights of the year summarized in a letter to Carl Dienstbach, a German technical journalist

Carl Dienstbach (1870 - 1956) was a German musician, journalist and inventor living in New York. He first wrote to the Wrights on December 19, 1903, introducing himself as the American correspondent of the leading technical magazine *Illustrierte Aëronautische Mitteilungen* and asking for more precise information regarding the flights that took place two days before, according to the newspapers. On December 28th, the brothers answered, giving him the details he had inquired about. He requested further clarifications on December 31st and, in a letter dated January 8, 1904, the two inventors offered him the necessary explanations. Finally, two articles, in connection with the powered flights at Kitty Hawk, were published in the above mentioned journal ("*Die Erfindung der Flugmaschine*" and "*Der Motorflug der Gebrüder Wright*", *Illustrierte Aëronautische Mitteilungen*, March 1904, pp. 97-100, author: Carl Dienstbach) and on August 24, 1904, this correspondent wrote again to the Wrights to send them translations of his articles in German, and, at the same time, to make them aware he could write new reports for the magazine he

represented if the two brothers mailed him accounts related to their most recent aeronautical activity about which, Dienstbach confessed, *the press had observed silence*.

The two aeroplanists replied on December 21, 1904, appreciating his effort to render in English his write-ups about *the flights of their Flyer at Kitty Hawk the previous December* and giving him a short account, of the 1904 trials, whose main points can be enumerated as follows:

- The Wrights made some flights every month since June, excepting July. As a remark, there is no word about the May 26, 1904, flight and the fact that the newspapers wrote about it.
- The early flights were in straight line.
- On September 15, 1904, for the first time, the plane followed a curved flight path and covered a distance of about a half mile.
- On September 20, 1904, the two brothers made their first complete circle and returned to the starting point. The distance covered was about 4300 feet over the ground and 4900 feet through the air (measured with a Richard anemometer attached to the plane). The difference between the two distances was due to the wind which was blowing during the trial. For the flights made in calm air, the record of the anemometer always agreed, almost exactly, with the distance measured over the ground.
- The longest flights were one of 5 min 4 sec, on November 9, 1904, when a 50-pound load composed of iron bars was carried by the plane, and another of 4 min 52 sec, on December 1st, with a 70-pound weight. On each of these two dates, the machine made almost 4 complete circles, covering more than 4.5 km, the average speed being 35 mph.
- Some flights were made at an airspeed of over 40 mph and a groundspeed of about 50 mph, with a tailwind.
- The plane landed while at over 40 mph, in some cases.
- In rare situations, the aeroplane reached heights of more than 30 or 35 feet above the ground.
- Just a few times the machine suffered serious damage, and only in flights that ended with an accidental touchdown instead of a preplanned landing.
- Many flights in a row were carried out with no damage to the apparatus.
- 105 landings were made during the season's experiments.

As to why the 105 flights of 1904 had not made too much headlines in the press, the Wrights explained to Dienstbach that *through the courtesy of their local newspaper reporters, they had been enabled to carry on the experiments within a short distance of Dayton without the knowledge of that fact becoming generally known*.

Another interesting point is that the text does not make it clear the 1904 machine was not the same as the one of the previous year. On the contrary, it can be said that the letter is framed in such a manner as if all trials had been carried out using a single plane called "Flyer", the word being used with reference to both machines.

These are the relevant parts of the two letters discussed above:

1904-08-24, Carl Dienstbach, "Letter to W. and O. Wright", Orange Lake, Aug. 24, 1904.

"Enclosed please find the translation to my two articles on your memorable success last December in the Ill. Aëronaut. Mitteil. I had the honor of sending you some while ago. You may see therein, that they attach more importance to your achievement, than probably anything else which has so far appeared in print on the subject. At the same time they are correct and substantial.

I most sincerely hope that you are getting along well in this season's experiments, and that the silence the press has so far observed with regards to them, will only serve to put into still bolder relief an eventual public appearance of your machine at the St. Louis contest. ... Any communications as to your recent enterprises you may care to give to our paper, where they are certain to find a sympathetic, fair and truthful as well as discreet rendering, kindly address to my New York address 35 W 118th Street."

1904-12-21, O. Wright, "Letter to Carl Dienstbach", Dayton, Dec. 21, 1904.

"We thank you for the translations of the articles you wrote for the Illustrierte Aeronautische Mitteilungen concerning the flights of our Flyer at Kitty Hawk last December. We read German with difficulty, and the translation has been a great convenience to us.

Through the courtesy of our local newspaper reporters, we have been enabled to carry on our experiments this year within a short distance of our city without the knowledge of this fact becoming generally known.

We have made some flights in every month since June, excepting July. Our early flights were limited by the fact that we did not desire to go outside of the field in which we were located and that we did not consider that we had had sufficient practice to attempt turning the circle. It was not until the 15th of September that we changed our course from a straight line to a curve, which enabled us to cover a distance of about a half mile. On the 20th of September we made our first complete circle and returned to the starting point after having covered a distance of about 4300 feet over the ground, and 4900 feet through the air as recorded by a Richard's anemometer attached to the Flyer. The greater distance recorded by the anemometer was due to the wind blowing at the time of the trial. The record of the anemometer in flights made in calm air has always agreed almost exactly with the distance measured over the ground. The two longest flights of the season were made on the 9th of November and the 1st of December. In each of these flights we made almost four complete circles and covered a distance of a little over four and one half kilometers, at a speed of about 35 miles an hour. In the flight of November 9th a weight of 50 lbs. (iron bars) were carried in addition to the weight of the operator; in the flight of December 1st, 70 lbs.

Some of our flights have been made at a speed of over 40 miles an hour through the air and about 50 miles over the ground when traveling with the wind. Some landings were made when traveling over 40 miles an hour. The flight of Nov. 9th had a duration of 5 min. and 4 seconds; that of December 1st 4 min. and 52 seconds.

We made no attempts at spectacular flights, rarely going more than 30 or 35 feet above the ground.

Although 105 landings were made during this season's experiments the machine has suffered serious damage only a few times and these in flights in which the landing was accidental and not premeditated. Flight after flight has been made without any damage to the machine whatever. ...

(The greater part of the time in making a circle in a wind is consumed in traveling against the wind.)"

"The first year of life of the practical flying machine"

A letter dated February 2, 1905, reveals that Carl Dienstbach received the December 21, 1904, statement of Orville, translated it into German and included it in an article ("Das erste Lebensjahr der praktischen Flugmaschine", Illustrierte Aëronautische Mitteilungen, March 1905, pp. 91-93) which he sent to the journal whose representative, in the US, he was. The write-up starts with an introduction, composed in a literary style, that prizes the achievements of the two Daytonians, continues by quoting the exact account of Orville, about those 105 flights, and ends by echoing a remark attributed to Augustus Moore Herring (American aviation pioneer) who, after becoming aware of Wrights' 1904 trials, exclaimed: "*A magnificent success!*".

The same February 2, 1905, letter of Dienstbach informed the Wrights that *he had gotten an invitation from the American Association for the Advancement of Science to read a paper before its engineering section, at its convention in Philadelphia, on the subject of "lines of progress in aëronautics"*. There (on December 30, 1904) he gave a historical and critical review of all the important steps toward the final practical accomplishment of mechanical flight, starting with Lilienthal and ending with Wright brothers' wonderful news.

On May 1, 1905, Dienstbach wrote again, asking the brothers for news about the progress of their fascinating work, and sending them a copy and a rough translation in English of his March 1905 article "Das erste Lebensjahr der praktischen Flugmaschine (The first year of life of the practical flying machine)". He also mentioned that *an account of his little lecture in Philadelphia was to be found in a publication called "Science"*.

The two inventors answered on May 5, 1905, thanking for the article and its translation and inquiring about *the number of "Science" that contained an account of Dienstbach's address at*

Philadelphia. They also told this German journalist *they would be late in taking up their 1905 outdoor experiments, but they would be pleased to inform him about any of their accomplishments that would be of interest for the readers of the Illustrierte Aëronautische Mitteilungen*.

Five days later, on May 10, 1905, Dienstbach replayed that *his article in "Science" had not yet come out*. As a note, in the May 12, 1905, issue of Science, at page 727, there exists a short paragraph, about Dienstbach's lecture at Philadelphia, which just says he "reviewed the recent progress made in aeronautical science by Maxim, Langley, Zahm and the Wright Brothers".

From the July 25, 1905, entry in the diary of the Wright brothers' father plus a letter and a postcard of Dienstbach, written from Cincinnati on July 28th and 29th, respectively, we find out that the German journalist visited and interviewed the two aeroplanists on July 25th and then wanted to see them again on Sunday, July 30. However, due to a change of plans, this second visit did not materialize.

After a long pause, the dialog, between the Wrights and Dienstbach, restarted with a letter of the former, dated November 17, 1905, in which they tried to dispel *the good deal of doubt that seemed to exist in Europe as to whether there was any truth in the reports that had been made concerning Wrights' flights of 1903 and 1904*. The brothers understood this incredulity because, and here are their own words: "*there has never been any account of any one having seen them, except the inventors themselves*". The text continues with the claim that *there had been a number of witnesses to every flight the Wrights had made in the past three years*, a statement strengthened with more or less precise identification details about the people who saw the 1903, 1904 and 1905 tests, as follows:

- "*The flights near Kitty Hawk were seen by nearly all the men at the U. S. Kill Devil Life Saving Station, who were present, and by the Captain of the Kitty Hawk Station, who viewed the flights through a glass.*"

- "*The flights in 1904 were witnessed by the farmers on the surrounding farms, besides a number of citizens of Dayton, whom*" the Wrights "*had invited. ... A. I. Root, of Medina, Ohio, was also present a number of times, and wrote an account of what he saw for his journal, "Gleanings in Bee Culture", for January 1st, 1905". A "copy of Gleanings of Jan. 1st 1905"* was sent to Dienstbach.

- "*The longer flights*" of 1905 "*were witnessed by a number of citizens of Dayton, among whom were Mr. Torrence Huffman, President Fourth National Bank; Mr. C. S. Billman, Secretary West Side Building & Loan Company; and Mr. Edgar W. Ellis, Assistant Auditor of City of Dayton*". *The two brothers had no doubt that, if Dienstbach or the Editor of his journal wished to make a personal investigation of the matter, the above mentioned gentlemen would have taken pleasure corroborating the fact that they had been present when flights of fifteen to twenty-four miles had been made.*

Because this work is about Flyer 2, I will only make a few remarks about the people said to have seen its flights. The two inventors mention by name just a single witness, "*A. I. Root, of Medina, Ohio*", a man who claimed in an article, published in the January 1, 1905, issue of his journal, "*Gleanings in Bee Culture*", that he had seen Wilbur flying in circuit, near Dayton, on September 20, 1904. I dedicated an entire book titled "*A. I. Root, the liar number four after the Wright Brothers and their mentor, Octave Chanute*" to this self declared eyewitness and the conclusion is that he did not see flying any Wright powered machine before August 29, 1910.

Another comment would be that O. Chanute is not mentioned as a witness also he said he saw "*a flight of 1,377 feet performed in 23 4-5 seconds, starting from level ground*" on "*the 15th of October, 1904*" ("*Chanute on the Wright Brothers' Achievement in Aerial Navigation*", Sci. Am., N. Y., April 14, 1906, vol. XCIV, no. 15, col. 1, p. 307). On November 17, 1905, Wilbur and Orville were

perfectly aware that the old engineer would write a letter (to Capt. Ferber) saying he had seen a flight of half a kilometer (a lie, as already discussed):

"I have seen, with my own eyes, only a little flight of half a kilometer" ("*Translation made by O. Chanute, for the Wrights, of a letter he indented to send to Capt. Ferber.*", Chicago, November 7, 1905).

The absence of Wrights' mentor from the list of witnesses sent to Dienstbach can be easily explained by the fact that the German journalist, and the Editor of his paper, could have questioned Chanute, and the two inventors were unsure about his reaction, as long as the letter to Ferber was just a private document, not intended for publication. Nobody knew, then in November 1905, that the French captain would send Chanute's eyewitness account to L'Aérophile.

This is a chronological list containing the most relevant fragments of the letters discussed above:

1905-02-02, Carl Dienstbach, "Letter to O. and W. Wright", New York, Feb. 2, 1905.

"Accept please my sincerest thanks for your kind news and my heartfelt congratulations for your truly wonderful success, which has given me many a happy hour and came, just at that time like a splendid, wonderful personal Xmass present to me. ... I have translated your account verbally and faithfully as it was impossible to improve upon it and sent it with a suitable introduction to our paper under the heading: "*Das erste Lebensjahr der praktischen Flugmaschine*" ("the first life-year of the practical flying machine"). It will appear in the issue of this month, and I shall of course send you the paper immediately with a translation of the introduction. - Through Professor A. F. Zahm in Washington I got an invitation from the secretary of the "American Association for the advancement of science" to read a paper before its engineering section on its convention in Philadelphia in December as "*lines of progress in aeronautics.*" Therein I gave a historical and critical review of all the important steps toward the final practical accomplishment of mechanical flight, starting with Lilienthal and ending with your wonderful news. It is needless to say, that the latter stirred the large audience to enthusiasm. ... the contents of my paper did not get into the daily papers reports, at least not those I have seen.

But I had a generous applause and Prof. Woodward and Prof. Rotch said some rather nice things. Prof. Zahm just wrote me: "Be sure to have it (the paper) well published; then continue to give us other papers. We need another Chanute to continue the critical history of aeronautics and you have now the mantle, which I hope you will wear with equal renown."

1905-05-01, Carl Dienstbach, "Letter to W. and O. Wright", New York, May 1, 1905.

"Enclosed please find a translation of my article in the March issue of our "*Illustrierte Aëronautische Mitteilungen*" as far as it does not ably contain a literal translation of your own account of your admirable accomplishment. ...

I have been trying my best to present your kind news - certainly in a most prominent place - with all the importance that I attach to them myself, even backing them by the opinion of another well known experimenter. An account of my little lecture in Philadelphia end of last year, where they take such an important place, is to be found in "*Science*." With the same mail I am sending you a copy of the March issue. ...

It is needless to say how much we should appreciate being favored by any news, however about, about the progress of your fascinating work."

1905-05-01, Carl Dienstbach, "The first life-year of the practical Flying machine (attachment to the May 1, 1905, letter)" - Rough English translation, for the Wright brothers, of Dienstbach's article: "*Das erste Lebensjahr der praktischen Flugmaschine*", *Illustrierte Aëronautische Mitteilungen*, March 1905, pp. 91-93.

The first life-year of the practical Flying machine.

"... even for the most unbelieving nothing further is required, but to hear the inventors (the Wright brothers) talk themselves, whose modest, substantial account shows everywhere to such a degree the stamp of ability and truth, that it certainly has to be presented in a verbal translation: - - - -

Mr. A. M. Herring exclaimed at these news in deep emotion: A magnificent success! And no wonder! Are these not for more splendid results, than Maxim, Langley or Hargrave ever dared to expect in the

beginning? Still they are only the most natural consequences of all the fundamental experiments. What an advantage is offered for the operators practice by a flight of 5 minutes duration in place of the short, continually interrupted glidings, is easily comprehended."

1905-05-05, Wright brothers, "Letter to Carl Dienstbach", Dayton, May 5, 1905.

"We have your letter containing the translation of your article in the March "Aeronautische Mitteilungen", as well as the copy of that paper which you were so kind as to sent us, for both of which we thank you.

We would take great pleasure in learning more of your address at Philadelphia last December. Can you inform us as to what number of "Science" contained an account of it, so that we may procure a copy?

On account of business we will be late this year in taking up our out-door experiments, but if we succeed in accomplishing anything that would be of interest to you or the readers of your paper, we will be pleased to inform you."

1905-05-10, Carl Dienstbach, "Letter to W. and O. Wright", New York, May 10, 1905.

"My article in "Science" has not yet come out but as soon as it appears I shall have the pleasure of sending you a copy at once."

1905-05-12, "Short paragraph mentioning Carl Dienstbach's presentation made on December 30, 1904", Science, N.Y., May 12, 1905, pp. 726-727 (p. 727).

"The first paper on the program of Friday morning, December 30, was by Arthur H. Blanchard ...

The next two papers on the morning's program were on 'Lines of Progress in Aeronautics,' ...

The second paper was by Mr. K. Dientsbach, of New York, who is the American correspondent of Illustrierte Aeronautische Mitteilungen. He reviewed the recent progress made in aeronautical science by Maxim, Langley, Zahn and the Wright Brothers."

1905-07-25, Bishop Milton Wright, "The entry for July 25, 1905", M. Wright's 1905 diary, Dayton, July 25, 1905.

"Tuesday, July 25

At home all day. Carl Diensbach dined with us. I wrote several letters."

1905-07-28, Carl Dienstbach, "Letter to O. and W. Wright", Cincinnati, July 28, 1905.

"Allow me first to thank you most sincerely for the extremely pleasant time I had when seeing you last Tuesday.

... I should thank you very much indeed for granting me the great pleasure of seeing you once more next Sunday ... I should call probably the middle of the day. ...

I have already informed our editor that you did not wish to have people know much about your work."

1905-07-29, Carl Dienstbach, "Postal Card to O. and W. Wright", Cincinnati, July 29, 1905.

"the plans have been changed and I shall to my great disappointment not be able to call on you tomorrow."

1905-11-17, Wright brothers, "Letter to Carl Dienstbach", Dayton, Nov. 17, 1905.

"A good deal of doubt seems to exist in Europe as to whether there is any truth in the reports that have been made concerning our flights of 1903 and 1904; and it is not at all surprising, under the circumstances, since there has never been any account of any one having seen them, except the inventors themselves. There have been a number of witnesses to every flight we have made in the last three years. The flights near Kitty Hawk were seen by nearly all the men at the U. S. Kill Devil Life Saving Station, who were present, and by the Captain of the Kitty Hawk Station, who viewed the flights through a glass. The flights in 1904 were witnessed by the farmers on the surrounding farms, besides a number of citizens of Dayton, whom we had invited. Mr. A. I. Root, of Medina, Ohio, was also present a number of times, and wrote an account of what he saw for his Journal, "Gleanings in Bee Culture", for January 1st, 1905.

The longer flights this year were witnessed by a number of citizens of Dayton, among whom were Mr. Torrence Huffman, President Fourth National Bank; Mr. C. S. Billman, Secretary West Side Building & Loan Company; and Mr. Edgar W. Ellis, Assistant Auditor of City of Dayton. If you or the Editor of your journal wish to make a personal investigation of

the matter, we have no doubt any of these gentlemen would take pleasure corroborating the fact that they were present when flights of fifteen to twenty-four miles were made. We would not want their names published, as they would no doubt be flooded with inquiries. None of these gentlemen have any financial interest in our machine, either directly or indirectly. ...

We are sending you under separate cover copy of Gleanings of Jan. 1st 1905."

The May 26, 1904, test as presented by the newspapers

The very same day Flyer II took off, the Press, a Dayton newspaper, published an exclusive story concerning the event. The text lists a few eyewitnesses: "*Bishop Milton Wright, J. G. Feight, George Feight, Henry Webbert, Mr. and Mrs. Frank Hale, Mrs. William Werthner*". However, other three daily papers of Dayton do not identify by name any onlooker. They are vague, saying explicitly, or only suggesting, the flight was seen by Wrights' friends and neighbors, or not mentioning anything about spectators. Most newspapers across the United States just printed, with minor variations, a short press release which specified, amongst other things, that *few had witnessed the test*.

In the next paragraphs, each article in the daily papers of Dayton, and the press release, will be thoroughly discussed.

The Press of May 26, 1904, contains an article which offers most details about Orville's alleged powered hop. The precise location, date and time, length and height, of the flight, as well as the names of some bystanders and that of the pilot are given explicitly:

"The Wright flying machine was given a successful test this afternoon at 2 at Simms Station on the D., S. & U. traction line in the presence of a few invited friends of the inventors.

... The machine, manned by Orville Wright, rose in the air about 12 feet and sped along for about 25 feet. Then it fell to the ground, because the power had not been kept up long enough. In the fall the pine propellers in the rear of the machine were broken. ...

Those who saw the test were Bishop Milton Wright, J. G. Feight, George Feight, Henry Webbert, Mr. and Mrs. Frank Hale, Mrs. William Werthner, a Press reporter and several others." ("Flying Machine Given a Successful Test by Messrs. Wright This Afternoon.", Dayton Press, Ohio, US, May 26, 1904, col. 1-2, p. 6)

The same article also relates about one failed flight attempt, due to technical problems, on Monday, May 23rd, and two other episodes when the unfavorable weather prevented the tests, on Wednesday, May 25th, and the morning of May 26, 1904. Regarding the witnesses present on these three occasions, the report is inexplicit, talking about: a "*party*", Wilbur and Orville and "*a few others*", without getting into details. As a remark, a shed where the plane was stored and a beam from which it was started are briefly mentioned:

"The first test was made last Monday afternoon, but did not prove successful, some of the apparatus being out of order, and the beam from which the machine is started was improperly arranged. The experiment was then abandoned, but yesterday the party went out again, but after the machine had been taken from the shed it began to rain, and again the test was abandoned. ...

This morning Messrs. Orville and Wilbur Wright with a few others again went to the place, but the inclement weather prevented a test." ("Flying Machine Given a Successful Test by Messrs. Wright This Afternoon.", Dayton Press, Ohio, US, May 26, 1904, col. 1-2, p. 6)

The last part of the account gives, under the subheading "The Wright Flyer", the characteristics of the 1903 plane as they appeared in:

- "Dayton Boys Fly Airship", The Dayton Herald, Ohio, US, December 18, 1903, col. 6-7, p. 1.

- "Dayton Boys Emulate Great Santos-Dumont", The Dayton Daily News, Ohio, US, December 18, 1903, p. 8.

- "Wright Flyer. Clever Device of Bishop Wright's Sons.", The Dayton Journal, Ohio, US, December 19, 1903.

The Press of May 27, 1904, comes with additional information, claiming that “several newspaper men” and “a few invited friends” of the inventors were present on May 23, 1904, when the tests started and, two days later, on May 25th, “a larger crowd found its way to the same grounds, near Simm’s Station”. As to what happened on May 26th, the Press relates that:

“Thursday morning at 10:30 there were assembled on the grounds about 30 invited friends of the Wright boys and immediate family, with several newspaper men, and again was the disappointment keen — at least to some. No one had prepared to spend the day there, and in consequence it was necessary that some should return to the city for lunch and bring a supply for those remaining — all of which was agreed to. Of the 18 who came to town on the 12 o’clock car, but six returned. Meanwhile those on the ground were eager for a trial, and after the return car was long past due (for those returning from Dayton were to leave at 1, arriving at 1:30) the brothers decided to make the trial, which was done to the satisfaction of all present, and at the same time consented to an announcement of the fact.” (“Wright Boys Make Repairs. Thursday’s Experiment Unqualified Success. Lack of Power the Cause of Sudden Descent.”, Dayton Press, Ohio, US, May 27, 1904)

Unfortunately, the text above does not clarify whether there was more than a single reporter present (the one working for the Press) at 2:00 PM, when Flyer II took off, but it specifies the two inventors agreed that the event should be made public. Also, the May 27th article points out the Press *exclusively* wrote about the flight the same day it occurred:

“Wilbur and Orville Wright, the designers of the airship, the successful test of which mention was made exclusively in Thursday’s Press, were in the country today, where the test was made, a few miles east of the city, making some repairs occasioned by the precipitous descent of yesterday.”

Coming back to the aeroplane itself, the Press of May 27th furnishes some more technical details, supplementing the information in the previous article, saying that: the weight of the machine and the operator, together, was 800 pounds; the 4-cylinder engine had a capacity of 16 hp; *a slight defect would be corrected in the engine, since one of the inventors believed there was a small air pocket that needed to be eliminated*; and that the “machine made a perfect flight for the distance it covered, but not carrying power enough to meet the suddenly recurring currents of air, was driven back”.

The narration ends with a rather discouraging paragraph, for all those who might have wanted to visit the place where the apparatus rose from the ground, saying that *all further work would be suspended for several weeks and that it was probable that the shed, which had been erected on the field to protect the machine, would be removed to some other place, and the machine would be taken apart and placed in position there.*

The Dayton Daily News of May 27, 1904, unlike the Press, was not so enthusiastic, qualifying the trial, *of the airship belonging to the Wright brothers, as not attended with success.* Regarding the witnesses, the newspaper only talks about a large party, formed by close friends of the inventors, that went to the testing grounds on May 25th; and a few friends present on May 26th. There is no word about any journalist who might have been at Simms Station during the May 26th trial at 2 PM, or before:

“Quite a large party of intimate friends of Messrs. Orville and Wilbur Wright, who have been promoting the invention, went out to the place, in which they effected the reconstruction of the airship on Wednesday, but just as all was in readiness for the flight there began a down pour of rain and the attempt had to be abandoned. Yesterday there were but a few friends of the Wright brothers present and all who were present feel satisfied that the test would have been unqualifiedly successful had not the power become exhausted.” (“Not Attended with Success Was Trial of the Airship Belonging to Wright Brothers. Engine Failed at the Critical Moment.”, The Dayton Daily News, Ohio, US, May 27, 1904, col. 3, p. 18)

The May 26th hop is described similarly as in the Press, with some additions and omissions: the precise time of the test is not

revealed, the height reached by the plane is estimated at 6 to 12 feet, and the article states the machine’s builders intended to *make a circle of the field*. Also, regarding the brothers’ first attempt, on May 23rd, the Dayton News discloses that a flight was tried but the apparatus failed to take off. Nothing is revealed about the possible viewers who might have watched this early experiment.

“The flying machine invented by Orville and Wilbur Wright, the sons of Bishop Milton Wright of West Dayton, was given a test Thursday afternoon on Huffman’s prairie, south of Simm’s station, on the Dayton, Springfield and Urbana traction line. The test was not considered a successful one. The machine rose into the air a height ranging from six to twelve feet, and went ahead on a straight line about 25 feet. It is stated by the inventors that a defect in the engine caused its sudden descent. Their idea was to have made a circle of the field, and like a bird, alight with the wind. But the failure of the machine to go further than 25 feet prevented this. Another test will not be made for a week or 10 days. In the meantime they will devote some time to remedying the defects in the engine.

The first attempt, made earlier in the week, was more of a failure than the trial Thursday. The machine glided along the track from which it is supposed to lift into the air, and plowed along the prairie sod. This was because there was not sufficient momentum power to lift the machine into the air.” (“Not Attended with Success Was Trial of the Airship Belonging to Wright Brothers. Engine Failed at the Critical Moment.”, The Dayton Daily News, Ohio, US, May 27, 1904, col. 3, p. 18)

As a remark, the newspaper does not divulge its source of information.

The Dayton Journal of May 27, 1904, unlike the Press and Daily News, clearly states the aeroplane tested the previous day, at 2 PM, was a new machine; also it remained quite close in construction to the 1903 flyer:

“The first test of the Wright flying machine that has been made since its reconstruction upon Ohio soil was made yesterday afternoon in a large open field located about six miles east of this city, near Simms’s station.

The experiment was made at 2:00 o’clock ...

The new flyer is but little different from the original and with a little more time the inventors believe they will have the problem of air navigation entirely solved.” (“Wright Flyer. First Test since Reconstruction. Rises into the Air to the Height of Fifteen Feet.”, The Dayton Journal, Ohio, US, May 27, 1904)

The article contains much the same data as the May 26th report in the Press. However, it makes no reference to witnesses like journalists or friends and relatives of the brothers, and nothing is said concerning the attempts at flight of May 23rd and 25th. A further comment would be that the weight of the new plane is given as 800 pounds, like in the May 27th number of the Press.

The Dayton Herald of May 27, 1904, contains a highly deceptive account, worded in such a manner as to induce in the minds of its readers the idea that an epoch-making event happened the day before, near Simms Station. The write-up states that the two brothers proved they had solved the problem of aerial navigation. According to the narration, Will Wright perfectly controlled an airship during a flight, characterized as “*not of great duration*”, which took place in front of some viewers:

“The secret of the navigation of the air has been unveiled. It is a secret no longer. To Dayton belongs the credit of the first successful flight of an airship recorded in the history of this state. To the Wright brothers belongs the honor of solving the riddle which for generations has tempted and baffled students of all countries. ...

Yesterday afternoon at 2 o’clock at a little nook on the D., S. & U. traction line, known as Simms Station, a rough bordered shed was thrown open, and from its recesses was carried a creation of wires, sails and wood, introduced to a score of people gathered in the vicinity as an airship. Fifteen minutes later the strange object was placed on a single rail track, jutting out 50 feet into the reach of meadow. ...

At a few minutes past three Will Wright crawled onto the slanting deck of the vessel, and men who had been supporting either end released their hold. There was a furious churning from a pair of white paddles in the rear of the boat, called by the Wrights "propellers," a sudden cat-like spring down the rail and before the fascinated spectators could realize that the start had been made, the vessel was at the end of the rail and into the air. ...

The leap from the track was like the upward sweep of a bird. The transition from terra firma to the air was so smooth, so evidently natural, so skillfully planned, that it seemed as though such contrivances as an airship must have been in use for years. ...

The slender, wire-entwined thing of wood and sails had life. Into the mechanism which gave to it motion had been breathed the eternal spark. It actually advanced through the air. It pursued its way over the earth. It obeyed the hand of the man lying on its deck. A motion of a lever regulated its movements. Machinery had conquered the problem of the air. Man had put behind him another of the baffling problems of nature. ...

The first flight was not of great duration. This was due to the power of the propelling engines giving out. The Wright brothers said before the exhibition that they would be satisfied if they could show to the neighbors and friends of their boyhood, the people among whom they had always lived and to whom they first confided the great problem before them, that they had not worked in vain; that they had an airship that could traverse the air. If they could do this they said they would be satisfied. And they were satisfied. So were the people who watched the trial; people to whom it had been given to witness the first exhibition of a ship of the air. The Wright brothers are planning to enter, if possible, the great flying machine race at the St. Louis Exposition this summer." ("Flying Machine Given a Test", The Dayton Herald, Dayton, Ohio, May 27, 1904, col. 4, p. 10)

As a note, solving the problem of the navigation of the air meant, that time, building an aerial man carrying vehicle able to reliably reach a given place on Earth's surface. The balloons were not capable at all of such a feat and the dirigibles could travel to a certain destination only in favorable weather, as their engines were still weak and unable to fight adverse winds.

Coming back to the article, it is worth pointing out this text contains some discrepancies in comparison to what the other three newspapers from Dayton wrote. The narrative in the Herald says that: Will (Wilbur) was the pilot, not Orville; the machine had "engines", so, more than one motor; and the flight started at "a few minutes past three" instead of 2:00 PM. However, such inconsistencies could be attributed to simple mistakes. Not the same thing can be said about keeping the precise length of the flight undisclosed. This omission was on purpose because if those 25 feet had been mentioned the readers would have realized the aerial trip was just a short hop having nothing to do with solving the problem of aerial navigation.

The final part of the write-up, according to which *the Wright brothers were planning to enter the flying machine race at the St. Louis Exposition, that summer*, is also intended at giving some more credit to the idea that the experimenters really navigated the air and had a flying apparatus able to compete against dirigibles.

Other newspapers in the United States contain articles of various lengths. In general the texts are short and reveal fewer details than the Dayton papers. A standard report that spread across the country has this quite concise form:

"Dayton, O., May 26. [Special]. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city today, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The

Wrights decline to give any information when asked as to their future purposes." ("Test of Flying Machine Is Declared a Success", The Chicago Daily Tribune, Chicago, Illinois, May 27, 1904, col. 5, p. 1)

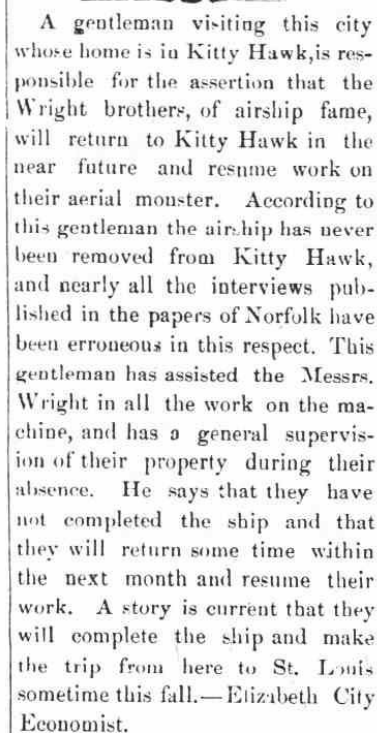
As of May 26, 1904, the Wright brothers had not completed the 1903 plane!

Also not directly related to the alleged May 26th flight near Dayton, a short note in the May 26, 1904, (what a coincidence!) number of Wilmington Messenger, a newspaper from North Carolina, throws serious doubts concerning the December 1903 powered machine. The text says that a gentleman (who lived in Kitty Hawk, had assisted the brothers in all their work and supervised their property during their absence) affirmed that the Wrights had not yet completed *the ship* which had never been removed from Kitty Hawk.

"Elizabeth City Economist: A gentleman visiting this city whose home is in Kitty Hawk, is responsible for the assertion that the Wright brothers, of airship fame, will return to Kitty Hawk in the near future and resume work on their aerial monster. According to this gentleman the airship has never been removed from Kitty Hawk and nearly all the interviews published in the papers of Norfolk have been erroneous in this respect. This gentleman has assisted the Wrights in all their work and has a general supervision of their property during their absence. He says that they have not completed the ship and that they will return some time within the next month and resume their work. A story is current that they will complete the ship and make the trip from here to St. Louis sometime this fall." ("Elizabeth City Economist: A gentleman visiting this city", The Wilmington Messenger, Wilmington, North Carolina, May 26, 1904, col. 1, p. 6)

This article is a serious piece of evidence that Wilbur and Orville did not fly their machine with engine and propellers on December 17, 1903, and left for Dayton without finishing Flyer I.

The same text can be found in the Daily Free Press (Kinston, NC, May 27, 1904, col. 6, p. 1) and another newspaper named the Gazette-Messenger.



A gentlemen visiting this city whose home is in Kitty Hawk, is responsible for the assertion that the Wright brothers, of airship fame, will return to Kitty Hawk in the near future and resume work on their aerial monster. According to this gentleman the airship has never been removed from Kitty Hawk, and nearly all the interviews published in the papers of Norfolk have been erroneous in this respect. This gentleman has assisted the Messrs. Wright in all the work on the machine, and has a general supervision of their property during their absence. He says that they have not completed the ship and that they will return some time within the next month and resume their work. A story is current that they will complete the ship and make the trip from here to St. Louis sometime this fall.—Elizabeth City Economist.

Fig. 10. The article "A gentlemen visiting this city whose home is in Kitty Hawk ..." as printed in the Gazette-Messenger, Washington, North Carolina, May 30, 1904, col. 2, p. 2.

Other successful experiments of 1904 in the news

The Wrights were brought again to the public's attention on June 5, 1904, when newspapers across the United States announced the start of the aeronautical contests at St. Louis, scheduled for the following day, June 6th. A considerable *prize of \$100,000 was to be awarded to the aeronaut whose average speed during his three fastest trips would be greatest*. Some other conditions applied. The two brothers were not the central element of this publicity campaign but a small paragraph was dedicated to them, the text being worded in such a manner as to leave the impression that the participation of Wilbur and Orville, in the competition, did not appear to be in doubt:

"Lively interest is being taken in an American entry ... It is that of the Wright brothers of Dayton, O., who have spent five years in study and experiment, and have constructed a machine that flew three miles in the face of a strong wind. Their maneuvers as witnessed by many persons have been pronounced the most successful feat yet performed by an airship, and curiosity is manifested in what the Wright machine will do at the World's fair." ("Airship Contest at St. Louis for \$100,000 in Prizes Tomorrow", The Salt Lake Tribune, Salt Lake City, Utah, US, Sunday Morning, June 5, 1904, col. 1-2, p. 12, part 3)

Three days later, on June 8th, newspapers of Dayton and Cincinnati announced that a certain *Joseph R. Fraser of Dayton was the possessor of an airship which he hoped to enter in the World's Fair contests* as an opponent of the two brothers:

1904-06-08, "Another Aspirant for Airship Fame. Joseph R. Fraser Is Working on a Model, Which He Expects To Be a Success.", The Dayton Herald, Dayton, Ohio, June 8, 1904, col. 2-3, p. 9.

"From present indications, Dayton will have two aspirants for honors in the airship contest at the St. Louis World's Fair. Another inventor, entirely separate from the Wright Brothers, is now working upon a contrivance that is intended for sailing through the air. This man is Joseph R. Fraser ...

The Fraser airship is designed upon a plan altogether different from that of the Wright Brothers. It will be propelled by a gasoline engine with high power-developing capacity. This engine is now being built by Weinman & Co."

1904-06-08, "Another Airship Invented by a Daytonian — News of the Gem City.", The Cincinnati Enquirer, Cincinnati, Ohio, June 8, 1904, col. 6, p. 3.

"Dayton, Ohio, June 7. — Joseph R. Fraser, of this city, is the possessor of an airship which he hopes to enter in the World's Fair contests providing the test to be made in a few weeks proves a success. ... Fraser will be a rival of the Wright brothers at the Fair, providing the experiments of both prove successful."

As can be seen in the excerpts above, Fraser's apparatus was announced just as a possible presence at St. Louis, by both newspapers. The Cincinnati Enquirer was even uncertain about the participation of the Wrights at the 1904 World's Fair aeronautical contests.

On June 29th, the Dayton News came with a small update saying the three inventors still intended to enter the much advertised aerial contest for the \$100,000 prize. A short article in the July 1st issue of the Evening Item, Richmond, Indiana, said much the same things and on July 29th, the Dayton News informed its readers the situation had remained stationary; Fraser and the Wrights had not yet decided to compete at St. Louis.

1904-06-29, "Dayton Airships in St. Louis Contest. Wright Brothers and J. R. Fraser Will Compete for the \$100,000 Prize.", The Dayton Daily News, Ohio, June 29, 1904, col. 4, p. 4.

"The Wright brothers claim they have given their flying machine a successful test, while Mr. Fraser has not yet tried to fly his machine. The mechanism of the two machines is vastly different. The invention of the Wright brothers is a flying machine, while the product of Fraser's ingenuity can more properly be classed an airship. Fraser and the Wrights intend to enter the aerial contest in St. Louis in competition for the \$100,000 prize, if they perfect their machines to the standard they have as their object."

1904-07-01, "Wright Boys Have Entered. Will Make Aerial Trips in Contests at the World's Fair.", The Evening Item, Richmond, Indiana, July 1, 1904, col. 4, p. 4.

"Orville and Wilbur Wright, formerly of Richmond, and John R. Fraser, the Dayton inventors of airships, will enter the aerial contest to be held in St. Louis. Their machines are of vastly different construction. The Wright brothers are confident of winning the big prize. Fraser has never tested his machine, but is positive that it will fly successfully."

1904-07-29, "Fraser's Ship To Enter Race", The Dayton Daily News, Ohio, July 29, 1904, col. 4, p. 10.

"Daytonians need not lose faith in the hope of being represented in the World's Fair airship contest, as the Joseph R. Fraser craft is to be entered, provided the test, to be made next week, is successful. ...

The Wright brothers will also enter the race if their plans develop as they fondly hope."

The New-York Daily Tribune of June 19, 1904, in a write-up mainly dedicated to Santos Dumont, who had just revisited the US, stated that *the world had heard little about the other competitors for the \$100,000 prize and unless the Wright brothers came to the front, the gas bag type of flying machine would be the only one represented in the international contest*. In other words, the Fair had failed to attract aeronauts and the presence of the two Daytonians with their heavier-than-air machine was also not considered certain.

The articles discussed above are more of a speculative character and they do not talk about other experiments made by the two brothers after those of May. The June 24, 1904, number of the Dayton Herald breaks this monotony, announcing a new test which took place the previous day:

"The Wright Bros.' flying machine was given a successful test at Simms Station, east of the city, yesterday afternoon. There were no spectators at the exhibition except the Wrights. The machine arose from the track to a height of 15 feet, and then sped through the air to a distance of nearly 300 feet." ("Flying Machine's Successful Flight. Wright Brothers Make an Ascent Yesterday Afternoon with Excellent Results.", The Dayton Herald, Dayton, Ohio, June 24, 1904, col. 4, p. 13)

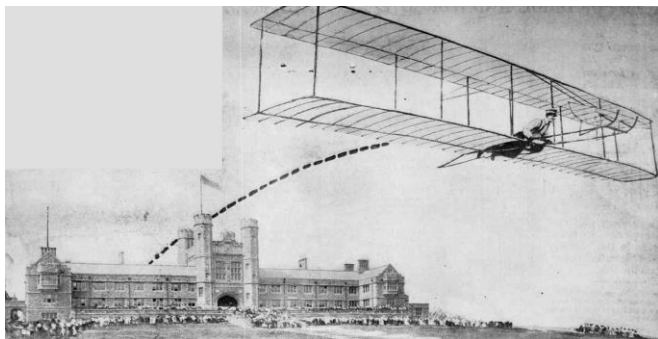
Therefore, the trial was conducted in secrecy, witnesses did not exist, and in consequence the only ones able to communicate its results to the press were the brothers themselves, who could have said whatever they wanted as long as no other person could confirm or dispute their story. The news spread across the US. As an example, the same account can be found in the June 27th issue of the Miami Evening Record, Florida.

An article that is worth mentioning, more for the publicity it made to the 1902 glider of Wilbur and Orville than to their powered 1903 and 1904 machines, is "Gliders' at the World's Fair" which appeared in the St. Louis Post-Dispatch on July 24, 1904. The text is illustrated with a big picture bearing a quite misleading explanation: "Part of the Successful Flight of a Gliding Machine From the Aerodrome to the Transportation Building" and showing one of the brothers up in the air in front of an imposing edifice, after overflying it, while a crowd of people watched the show. Without reading carefully the entire write-up, which talks about possible glides, yet to happen in the future, the image creates the illusion that the event had already occurred.

1904-07-24, " "Gliders" at the World's Fair. An Extraordinary Official Contest. Most Remarkable of All Flying Devices Entered in Great Aeronautic Competition. ", St. Louis Post-Dispatch, St. Louis, Missouri, July 24, 1904, Sunday Magazine, col. 1-6, p. 4.

“GLIDERS” AT THE WORLD’S FAIR

...



Part of the Successful Flight of a Gliding Machine From the Aerodrome to the Transportation Building

...

So far as novelty and peril are concerned, the flights of the gliding machines promise to exceed those of the dirigible balloons. ...

Famous gliding machines will compete in this contest, under the terms of which, however, the list of competitors is not to be made public. The most celebrated experimenters in this field are Prof. Langley of the Smithsonian Institution, the Wright brothers, Wilburn and Orville, who recently made successful flights at Kitty Hawk, N. C., and Octave Chanute of Chicago. The most famous of all was the late Prof. Lilienthal, the daring German who lost his life in testing his latest gliding machine and who made greater progress in this science than any other. It is probable that all the most advanced types of gliding machines will be seen in action at the World's Fair. ...

Prof. Langley used a toboggan chute for his machine, which was also equipped with power of self-propulsion, and was in reality a propelled aeroplane. The Wright brothers, Wilbur and Orville, started from sand hills while making their flight at Kitty Hawk, N. C., last fall. ...

... The Wright brothers' machine is said to be among those entered at the Fair, though the entries must be treated as confidential, according to the rules, and the names are not announced by Supt. Myers. ...

... The Langley machine, for instance, is built very much after the style of the butterfly, with curved wings, while the Chanute or Wright machine is constructed after the box-kite idea, with superimposed planes. ..."

The next noteworthy article, in fact one of the most puzzling texts about the aeronautical activity of Wilbur and Orville, appeared in the Dayton News under the heading "Flyer Is Being Altered and Improved by the Wright Brothers in Preparation for Contest in St. Louis". It was published the very same day, September 20, 1904, when the elder of the two inventors allegedly carried out a spectacular circular flight (the first ever round trip of a Wright machine) in front of A. I. Root. The performance was recorded in the much quoted 1904-1905 Notebook E, at page 18-19, by the pilot himself. However, the account in the Daily News gives no indication the Wrights were so close to such a feat. On the contrary, to "a News reporter one of the brothers made the statement that certain improvements and changes were being made in the machine at Simm's which himself and brother thought would be soon completed". Besides this, the text mentions former attempts at flight that had revealed to the constructors certain defects and then, the final paragraph talks about the Wrights' next attempt at flight.

By simply reading this report, without prior knowledge regarding the powered flights claimed by the brothers, it is not even clear they had already flown. It appears that the previous trials were all unsuccessful; the air-ships experimented near Simms' station being unable to leave the ground.

1904-09-20, "Flyer Is Being Altered and Improved by the Wright Brothers in Preparation for Contest in St. Louis", The Dayton Daily News, Ohio, US, September 20, 1904, col. 5, p. 12.

"Orville and Wilbur Wright are busy making repairs and improvements upon the air-ships which they are constructing near Simms' station on the D.

S. & U. traction line, for competition in the \$100,000 prize contest at the St. Louis Exposition.

Former attempts at flight have revealed to the constructors certain defects, not fatal, but which must be overcome before the machine will navigate the air.

To a News reporter one of the brothers made the statement that certain improvements and changes were being made in the machine at Simm's which himself and brother thought would be soon completed.

When finished as now conceived, the brothers have great hopes of the practicability of their machine and of obtaining the World's Fair award. Not caring to have a large crowd present at their next attempt at flight, the inventors of the machine are reticent about stating when their next trial will take place."

The next article in line, dealing with the progress made by the brothers, is one pretending that a flight of several miles occurred on November 4, 1904, and ended in disaster, the machine falling to the ground. No such trial exists in Wilbur's notebook E, but on November 3rd, according to the same diary, W. Wright flew a distance of 1325 meters, as recorded by the onboard Richard anemometer, and on landing the propellers were broken, the apparatus suffering other damages also.

1904-11-05, "WRECKED. Wright Brothers' Airship Sailed Several Miles, but Met Disaster in the End.", The Cincinnati Post, Ohio, US, November 5, 1904.

"SPRINGFIELD, O., Nov. 5. — (Spl.) — For several years Wright Bros., of Dayton, have been working on an airship, which they thought they had perfected. Yesterday it was tried for the first time, and after sailing through the air for several miles it fell on the tracks of the Dayton, Springfield & Urbana Traction line, near Osborn, and was badly wrecked."

About one month later, on December 2, 1904, the Dayton Journal, published an extensive account regarding a flight of "three or four miles", "at a height of about forty feet above the ground" at the "remarkable speed of fifty miles an hour". To "maintain the equilibrium of the machine, a weight of about seventy-five pounds was carried" on board. No witness is mentioned. The description matches well both the version offered by Orville to Carl Dienstbach, in his December 21, 1904, letter, and Wilbur's record of flight no. 100 in his logbook. The only notable discrepancy appears in connection with the average speed that according to the Wrights was around 35 mph not 50 mph as written in the newspaper.

1904-12-02, "Wright Flyer Glides through Air for Distance of Three Miles", The Dayton Journal, Ohio, US, December 2, 1904.

"... In order to demonstrate the efficacy of the aeroplane, a flight was made yesterday and a distance of three or four miles was made with perfect ease and precision. The machine proved perfectly dirigible and sudden and short turns were made with the same ease as the flight was maintained through a straight course.

The remarkable speed of fifty miles an hour was maintained throughout the flight and even to the minutest detail the experiment was highly satisfactory. The Wright Brothers, by whom the flyer was conceived and perfected, feel that they have accomplished a great achievement and have succeeded in the solution of a problem that until a few years ago was regarded as merely an idle dream. ...

The Wright flyer is the only machine that ever lifted a man off the ground. The other inventions of this character have been of the airship variety, while this is a true flying machine and is operated by means of aeroplanes, that serve as wings to carry the machine through the air. An even higher rate of speed is contemplated for it than has so far been achieved, as now, merely to avoid the necessity at this time of rearranging the engine and other equipment sufficiently to maintain the equilibrium of the machine, a weight of about seventy-five pounds was carried on the flight made yesterday. ...

The flight was made at a height of about forty feet above the ground. It had been contemplated by the Wright brothers to make several spectacular flights for the benefit of the public, but the weather has now become unfavorable for the best results and the work will be abandoned until next spring. The Wright brothers are especially gratified with the result of their experiments, inasmuch as experts have announced that the flight over the distance of a mile, together with the ability to pursue a circuit, would solve

the problem of air navigation. Both have been accomplished and an excellent degree of efficiency attained in both. ...

... As soon as the weather becomes such as to justify a flight will be made and the public will be invited to witness it."

The Dayton Herald of December 17, 1904, in an article titled "Anniversary of Wright Experiments", sums up the activity of the two inventors during the past year, but the text is quite imprecise and this is the only useful information that can be extracted from it:

- The machine in question was an improvement over a number of machines.
- The apparatus had attained a speed of fifty miles an hour at an elevation of several hundred feet (an incorrect statement).
- The maximum distance covered by a single flight was nearly four miles, this having been accomplished about five weeks before December 17, 1904.
- The Wrights did not enter their machine in the St. Louis Exposition contests.
- Public tests were to be made at Simm's Stop in the early spring of 1905.

The Dayton News of the same day, December 17, 1904, also contains a story dealing with Wrights' trials, reporting they claimed successful flights for November 9th and December 1st, and that *there would be no experiments until the following spring*.

The most informative anniversary write-up belongs to the Press which states that:

- The new machine, measuring 20 feet from rear to front, and 40 feet from tip to tip, was the first to make complete circles and since September 20, 1904, twenty such round trips had been performed.
- The only changes in the mechanism of the 1904 flyer were made in the steering apparatus.
- The weight of the flyer was 900 pounds. The machine carried no gas bag being operated by means of aeroplanes, that served as wings to carry the machine through the air.
- The longest flights accomplished occurred on November 9th and December 1st, when the plane made almost three miles in five minutes.
- The Wright brothers' experiment station was situated in a field almost one mile square on the Torrence Huffman farm.
- All the experiments had been finished for the 1904 season.
- The Wrights had not made any public trial, and had no intention of making any in the near future. As a note, this is an affirmation that comes in conflict with what the same newspaper stated in the May 26, 1904, account in which it is written that "a Press reporter" saw the flight of that day.

These are the three articles discussed above:

1904-12-17, "Anniversary of Wright Experiments. Dayton Boys Commenced on Their Aeroplane Just One Year Ago Today.", The Dayton Herald, Ohio, US, December 17, 1904.

"Just one year ago today the Wright brothers, of this city, began a series of experiments with their aeroplane, and the experiments have been crowned with success. Their machine is said to be the best type of a distinct air-ship having absolutely no balloon attachment whatever. The Herald has previously given a minute description of the "Wright Flyer," the machine that has attained a speed of fifty miles an hour at an elevation of several hundred feet.

The maximum distance covered by a single flight is nearly four miles, this having been accomplished about five weeks ago. The present machine is an improvement over a number of machines with which Messrs. Orville and Wilbur Wright have experimented theoretically and practically for the last eight years.

The famous young Dayton mechanics were expected to enter their machine in the St. Louis Exposition contest of dirigible air-ships, but deemed it inexpedient. Public tests will be made in the early spring, where the former experiments have been invariably conducted — at Simm's Stop, on the D. S. & U., several miles east of the city."

1904-12-17, "Airship Yarn Pronounced False by the Wright Brothers, Who Say Their Machine Has Been Housed Since Dec. 1.", The Dayton Daily News, Ohio, US, December 17, 1904, col. 4, p. 2.

"Orville and Wilbur Wright, the airship inventors and enthusiasts, are reported to have made a flight of between three and four miles with their aerial frigate Friday, but the Wright brothers say that the ship has not been out of its house since Dec. 1, and only once before that date, on Nov. 9, for the past several months. On these dates, they claim, successful flights were made. There will be no experiments until next spring."

1904-12-17, "Trials Over for Season", Dayton Press, Ohio, US, December 17, 1904.

"The Wright flying machine made its first flight just one year ago today. Messrs. Wilbur and Orville Wright, who are the owners and inventors of the machine, have succeeded in reaching a higher state of perfection than any other inventors, who have attempted to solve the problem of aerial navigation.

Their work and trials have been carried on quietly. They have not made any public trial, and have no intention of making any in the near future.

The new machine, which is 20 feet from rear to front, and 40 feet from tip to tip, is the first machine to make complete circles. Since September 20, the Wrights have made 20 complete circles with the machine. The machine carries no gas bag, but depends entirely on its gasoline engine for propelling power. The weight of the flyer is 900 pounds.

The longest flights yet accomplished by the machine occurred on November 9 and December 1, when the flyer made almost three miles in five minutes. The Wright brothers experiment station is situated in a field almost one mile square on the Torrence Huffman farm on Huffman Hill. All the experiments have been finished for the present season and the flyer is being brought back to the city for the winter. The Wright flyer is the only machine that ever lifted a man off the ground, and is also the only flying machine ever accomplishing the purpose for which it was designated. It is operated by means of aeroplanes, that serve as wings to carry the machine through the air. A speed of 40 miles an hour can be obtained. The only changes in the mechanism of this year's flyer were made in the steering apparatus, the success of which has been thoroughly demonstrated by the ability of the machine to fly through the air in circles."

As a conclusion, out of 105 starts claimed by the Wrights for 1904, the newspapers wrote explicitly only about the flights of May 26th, June 23rd, November 9th and December 1st. For the last two dates, no witness name is mentioned by the papers. Concerning the 300-foot flight of June 23rd, the Dayton Herald of the following day made it clear that there had been "*no spectators at the exhibition except the Wrights*". Regarding what happened on May 26, 1904, despite the fact that the Dayton Press of that day enumerated a number of people, including an unnamed Press reporter, who saw the successful test, at 2 PM, the December 17, 1904, issue of the same newspaper made a conflicting statement according to which *the Wrights had not made any public trial*.

1904-05-26, "Flying Machine Given a Successful Test by Messrs. Wright This Afternoon.", Dayton Press, Ohio, US, May 26, 1904, col. 1-2, p. 6.

"The Wright flying machine was given a successful test this afternoon at 2 at Simms Station ...

Those who saw the test were Bishop Milton Wright, J. G. Feight, George Feight, Henry Webbert, Mr. and Mrs. Frank Hale, Mrs. William Werthner, a Press reporter and several others."

1904-12-17, "Trials Over for Season", Dayton Press, Ohio, US, December 17, 1904.

"The Wright flying machine made its first flight just one year ago today. ...

Their work and trials have been carried on quietly. They have not made any public trial, and have no intention of making any in the near future."

Bishop Milton Wright's diary

Milton Wright (1828 - 1917), the inventors' father, was a man who kept diaries every year. They contain entries, for nearly each day, consisting in notes related to his profession, family and various other things. The journal of 1904 includes a number of short records in connection with the aeronautical activity of his two younger sons.

At least as early as April 20, 1904, the old Wright became aware the brothers were building a flying machine near the location known as Simms Station. The evidence resides in three entries dated April 20th, 29th and 30th, all revealing he stayed at home while Wilbur alone, the first day, and then together with Orville went to that streetcar stop to work on their apparatus. Here are the three records:

• Wednesday, April 20, 1904

"I was at home all day. Wilbur went out to Sims to work on his flyer."

• Friday, April 29, 1904

"I was at home. The boys went to Sims to work on their machine."

• Saturday, April 30, 1904

"I was at home. The boys again went to Sims. ..."

The next relevant entries are those for May 23rd, 25th and 26th. M. Wright wrote down he had been present at Simms on each of these three occasions.

On Monday, May 23rd, he went to see a take-off but there was *too little wind*. The record suggests the plane did not leave the ground. Regarding some possible witnesses, he just noted he had gone there and come back "*with Lorin's*". (Lorin Wright was an elder brother of Wilbur and Orville. He was married and lived in Dayton with his family.) There is no word about other people who might have been present, and the entry does not shed light on whether the old bishop even saw the plane, at least resting on the ground.

The text of May 25th is quite similar. Again, he went to Huffman's farm with Lorin's, reaching the place at 2:30 PM. This time, a rain prevented the aeronautical demonstration. The bishop remarked that *many had been disappointed*, without developing. He returned to Dayton with the same Lorin's.

On Thursday, May 26th, he went to the testing grounds on the 9:00 AM streetcar. At 2:00 PM, Orville flew about 25 feet, and then Milton Wright returned on the 3:30 PM tram. The entry does not talk about other persons who might have seen the flight or, at least, might have been present at Huffman's meadow. It is not even obvious the inventors' father really saw Orville taking off and landing.

As for what happened on May 27th, the diary just states that the brothers went to work on their machine.

• Monday, May 23, 1904

"It rained early in the morning.

Went out to Simm's Station to see the brothers attempt to fly. Too little wind.

Went and came with Lorin's. Encountered rain on our return."

• Tuesday, May 24, 1904

"Tuesday the 24th

I was at home all day."

• Wednesday, May 25, 1904

"This is Wednesday's record.

At 2:30, we were at Huffman's farm at Simm's station to see an aeronautical flight, but a rain came up & hindered. Many were disappointed. I went and came with Lorin's."

[Note: The records for May 24 and 25, 1904, are swapped and the dates were corrected by hand.]

• Thursday, May 26, 1904

"Went at 9:00 car to Huffman farm. At 2:00 Orville flew about 25 ft. I came home on 3:30 car. It rained soon after."

• Friday, May 27, 1904

"I was at home. Went to town in the forenoon.

Wilbur and Orville went to work on their Flyer."

One might expect a lot more information, in the journal of Bishop Wright, corresponding to the day when he viewed, for the first time in his life, one of his sons rising from the ground in a heavier-than-air flying apparatus; not just a few words which only reveal his presence and that of Orville at the testing grounds. One thing is certain; the record does not confirm the existence of the witnesses (other than him) identified by the Press, people described by this Dayton newspaper as "*friends of the inventors*":

"The Wright flying machine was given a successful test this afternoon at 2 at Simms Station on the D., S. & U. traction line in the presence of a few invited friends of the inventors. ...

Those who saw the test were Bishop Milton Wright, J. G. Feight, George Feight, Henry Webbert, Mr. and Mrs. Frank Hale, Mrs. William Werthner, a Press reporter and several others." ("Flying Machine Given a Successful Test by Messrs. Wright This Afternoon.", Dayton Press, Ohio, US, May 26, 1904, col. 1-2, p. 6)

As a parenthesis, the August 16, 1905, entry of Milton's diary demonstrates that John G. Feight was an old friend of him:

• Wednesday, August 16, 1905

"John G. Feight, aged 74 to-day, died this morning, a little before 7:00. He has been our nearest neighbor since the beginning of 1871. Friendship never marred."

George Feight was the son of the before mentioned man.

Henry Webbert was another neighbor, who died on November 14, 1908. His son, Charles, owned the building at 1127 West Third Street where the two inventors had their bicycle shop. Mr. and Mrs. Frank Hale lived next door, at 1129. Mrs. William Werthner was the wife of a high school teacher, a colleague of Katharine Wright, the sister of Wilbur and Orville, who was also a teacher.

The diaries of M. Wright show that he had the habit to note down names of persons that were of some importance for him in a given day. In consequence, had all these witnesses, together with him, watched Flyer II leaving the ground for a distance of 25 feet, he would have recorded their names. The fact that he did not do it represents one more piece of evidence the flight of May 26, 1904, was not real.

Entries in the old bishop's journal, related to the aeronautical activity of his sons, also exist for the remaining of 1904. On June 18th, he went again to Simms. There are no particulars as to what he did there. Two days later, he wrote that his sons made "*some experiments with their flying machine*" and, on July 30th, that they had "*completed the reconstruction of their Flying machine*". The record of August 1, 1904, reveals that Wilbur and Orville *had gone to Simms, but found the weather unfavorable*. The next relevant entry, dated August 13th, contains numerical values related to three flights of that day, the longest measuring 1304 feet. Two days later, the bishop mentioned that the *boys had worked on their machine at Simms*.

• Saturday, June 18, 1904

"... Went in afternoon to Simms' Station. ..."

• Monday, June 20, 1904

"... The boys make some experiments with their flying machine. ..."

• Saturday, July 30, 1904

"At home. ... Wilbur and Orville completed the reconstruction of their Flying machine."

• Monday, August 1, 1904

"... The boys went out to Simms, but found the weather unfavorable to their experiments."

• Saturday, August 13, 1904

"... I was at home engaged as usual. Wilbur made two flights of 800 and 1304 feet respectively, & Orville one of 640 ft. The speed was 35 and 40 miles to the hour. They were made in Huffman's field at Sims Station, in the afternoon."

• Monday, August 15, 1904

"... The boys worked on their machine at Sims."

After a pause of two months and a half, the records related to the aeronautical activity at Simms reappear in the journal. On November 1, 2, 3, 8, 9 and 15, 1904, the bishop went to Simms. While the entries do reveal who of his sons flew and the length of each aerial trip, the old Wright fails to elucidate whether he

personally saw the plane moving at some height above the ground. He just implies he had witnessed the flights he mentioned.

• Tuesday, November 1, 1904

"Went out to the aeronautical grounds, at Sim's Station. Wilbur made one flight of $\frac{3}{4}$ of a mile.

The boy's faild to get the Flyer well into the air."

• Wednesday, November 2, 1904

"Went again to Sim's. Wilbur made one flight of $\frac{3}{4}$ mile."

• Thursday, November 3, 1904

"Went out to Sim's. Wilbur flew $\frac{3}{4}$ of a mile and landed breaking the machine some."

• Tuesday, November 8, 1904

"... went out on 11:00 car to Sim's Station. The boys made no flight. ..."

• Wednesday, November 9, 1904

"... I go on 11:00 car to Sims. At 2:00, Wilbur flew three (lacking one-fourth) miles in 5 minutes and four seconds. The distance was only limited by failure of engine."

• Tuesday, November 15, 1904

"... Went on 11 traction to Sim's. Wilbur at 4:00 made a two-mile flight. Orville had flown $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{8}$ mile earlier.

Reached home at 5:00."

A quite dubious entry is that of December 1, 1904. Milton Wright first noted down: "*At home all day. Wrote some letters. At Lorin's a half hour in the evening.*". The text is explicit and states unequivocally the bishop remained at his residence that day and then, in the evening, he visited Lorin's family. However, this statement comes in total contradiction with the next paragraph in which it is affirmed he *went to the Huffman's farm, on the 12:00 PM streetcar, and saw Orville flying two and $\frac{3}{4}$ miles, at 4:00 PM.*

• Thursday, December 1, 1904

"At home all day. Wrote some letters. At Lorin's a half hour in the evening.

I went to the Torrence Huffman's farm on 12:00 car, and saw Orville, at 4:00, fly two [the word "two" is barely readable] and $\frac{3}{4}$ miles. (two and $\frac{3}{4}$ miles)."

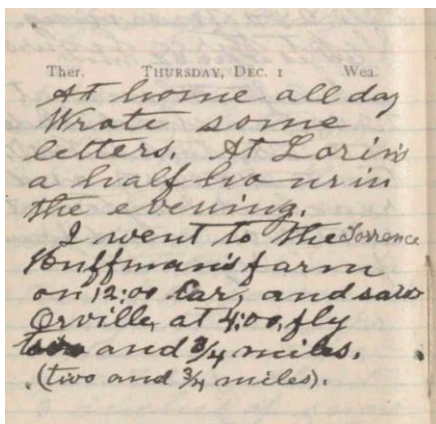


Fig. 11. The December 1st entry in Milton Wright's 1904 journal.

He could not have been at home all day and, simultaneously, for about four hours, near Simms Station, finally witnessing his youngest son, up in the air, circling the testing grounds. Also, it is worth pointing out that this is the only entry, of 1904, explicitly saying M. Wright saw a flight.

As a conclusion, the second part of the December 1st record has all the characteristics of a fake. In reality, the experimenters' father witnessed no flight, but added a text about it later (forgetting to cut the first paragraph of the entry). The motive for which he would have written a lie can be explained in a simple way. On December 2, 1904, the Dayton Journal published, under the heading "Wright

Flyer Glides through Air for Distance of Three Miles", an extensive article (already discussed) claiming, without quoting sources, a flight of three to four miles had been carried out the previous day. Sooner or later, some journalists from other publications could have visited the old bishop, while his boys were not at home, and questioned him about the December 1st flight. M. Wright needed a reminder to tell the same story to everybody.

The danger of a wave of inquiries from newspapermen was real. The December 22nd entry, of Milton's 1903 diary, represents evidence that reporters assaulted him that day, in the absence of his sons. They arrived from Kitty Hawk one day later, at 8:00 PM.

• Tuesday, December 22, 1903

"I was at home all day. Reporters were calling and asking for pictures of the machine and of the boys.

I wrote some letters."

• Wednesday, December 23, 1903

"I was at home. Wrote some. Bert Strang called in the interest of the Commercial Gazette. Katharine got a telegram from Orville, saying He and Wilbur would be at home to night. They came at 8:00.

They had some interviewers, on the way, but suppressed them."

It is worth noting that the entries of Nov. 9th and Dec. 1st served M. Wright at least one time, namely when he wrote to his niece, Mrs. Frank Petree, saying the two aviators performed flights of similar length and duration; Wilbur on the first mentioned date and Orville on the second. However, while the old bishop did state he had been present at the testing grounds, he did not say explicitly he had witnessed those two successful trials. Finally, his account reached the press which published it, as reflected in the next excerpt:

"We quote the following from a letter from their father, Bishop Milton Wright, of Dayton, to his niece, Mrs Frank Petree.

"Wilbur, on November 9th, celebrated Roosevelt's election by a flight of nearly three miles, in five minutes, and Orville did the same December 1st. I was there. They are improving their engine and will put the experience of 1904 into a new machine by April."

The boys are not using the balloon, but are making a real flying machine, one that supports itself in the air without any support from a gas bag." ("A Successful Flying Machine", The Holt County Sentinel, Oregon, Missouri, US, February 3, 1905, col. 5, p. 1)

According to his journal, on December 2nd, 5th, 6th and 7th, Milton Wright went again to the aeronautical grounds but there was no attempt at flight or he sighted no machine up in the air. Regarding December 9th, the old father wrote down he had gone to Simms but his sons had "*failed to get off in any flight*", just strongly suggesting he witnessed unsuccessful trials but without clearly saying he really saw the plane speeding up on the ground and then not getting airborne.

• Friday, December 2, 1904

"... I go to aeronautical, but owing to cold wind there was no attempt to fly."

• Monday, December 5, 1904

"Went to Huffman farm, but saw no flying."

• Tuesday, December 6, 1904

"Went to Aeronautical grounds in the afternoon, but there were no flights. ..."

• Wednesday, December 7, 1904

"Again, I went to "Aëronauts." No flight. ..."

• Friday, December 9, 1904

"I went at 1:00 to Sims. It was a damp-windy day. The boys failed to get off in any flight. I got home on 6:00 car. ..."

The Aeronautical ground is a very level field of eighty-seven acres, on Torrence Huffman's farm."

Only one more entry, related to the brothers' tests, exists in M. Wright's 1904 journal. The text states that Amos Ives Root came

and read his articles. The write-up (about that Sep. 20, 1904, circular flight) would appear in the Jan. 1, 1905, issue of *Gleanings in Bee Culture*, the periodical of Root, as already mentioned.

• Monday, December 19, 1904

"... Mr. A.I. Root came at 4:30. He read his articles for his bee Journal. He went on 8:00 car to Springfield. Mr. Root seems to be a fine old gentleman. He lives in Medina, Ohio."

The start of negotiations with the US War Department

Immediately after the 1904 flight season ended, on January 18, 1905, the Wright brothers wrote to Robert Murphy Nevin, member of the United States House of Representatives from Ohio, asking him to *ascertain whether their machine was a subject of interest for the American government*. In the letter, Wilbur and Orville presented, in a condensed form, their accomplishments, pretending that *the series of aeronautical experiments, upon which they had been engaged for the past five years, had ended in the production of a flying machine, of a type fitted for practical use, which flew through the air at high speed and landed without being wrecked. During the year 1904, one hundred and five flights were made at their experimenting station, on the Huffman prairie, east of Dayton. The inventors continued by emphasizing that, toward the end of the season, they succeeded in making two flights of five minutes each, in which they "sailed round and round the field until a distance of about three miles had been covered, at a speed of thirty-five miles an hour". The first was performed on November 9th and the second on December 1st.*

The Wrights explicitly stated that the *"numerous flights in straight lines, in circles, and over "S" shaped courses, in calms and in winds"*, of their apparatus, *had made it quite certain that flying had been brought to a point where it could be made of great practical use*. In other words, the two experimenters had solved the problem of aerial navigation (the airships of the time still struggled to come back to the starting place or reach a given destination).

After highlighting that their technical creation was suitable for *"scouting and carrying messages in time of war"* which could be a subject of interest for the US government, the Wrights announced they would be pleased of:

- *"providing machines of agreed specification, at a contract price",*
or
- *"furnishing all the scientific and practical information" they had accumulated, together with a license to use their patents.*

It can be remarked that the proposal failed to clarify what kind of contrivance the brothers experimented with and offered for sale. Was it a dirigible airship or a plane? The ambiguity of the text cannot be considered an oversight on their part as long as, in a January 15, 1906, letter to Frank S. Lahm (an American aeronaut living in Paris), the Wrights made this statement: *"The fact that the American public does not know the difference between a flying machine and an air-ship has been a great help to us in maintaining secrecy"*, which shows they were fully aware of the confusion, existent at the time, regarding human flight. They might have been afraid the US War Department would have stopped immediately any dialog with them had they said unambiguously their apparatus was a man carrying aeroplane, as long as similar machines, including the state-funded monoplane of Samuel Langley, had not given good results in front of reliable witnesses, to put it mildly. Another comment would be that the two Daytonians did not support their claims by any kind of evidence showing the aerial trips, mentioned in their official proposal, had really happened.

Anyway, whatever flying device the brothers possessed, they precisely specified it was for sale to the US government, on a

contract price and in accordance with a mutually agreed specification.

The second proposition of the Wrights was to provide the army with their accumulated *"scientific and practical information"* and a *license to use their patents, "thus putting the government in a position to operate on its own account"*. Therefore, they could offer for sale, as an alternative, not physical machines but knowledge.

Regarding this know-how, it is only certain that, before the day the proposal was written, January 18, 1905, the Wrights had applied for a single patent (in the US plus a number of foreign countries) which had already been granted in Great Britain (May 12, 1904) and France (September 1, 1904). In the US, their demand was still under consideration. Besides this, the patent only briefly mentions the invention could also be useful for powered aeroplanes, its text being illustrated with drawings showing just various views of a biplane glider. This is not a patent having as its main subject an airplane with motors and propellers and it would have been of some value only for particular situations like the case in which the American government desired to build Wright type gliders or, another possibility, just to utilize ailerons, based on the wing warping method, for various kinds of flying machines with or without engine.

Coming back to R. M. Nevin, on January 23, 1905, he promptly wrote to the brothers, announcing them that their proposal had been received and *he had already taken the matter up with the Secretary of War*. Unfortunately, three days later, on January 26th, the same politician representing Ohio was obliged to mail to Dayton a quite discouraging answer, a refusal, dated January 24th, he had received from the US Board of Ordnance & Fortification (the competent authority the offer of the two experimenters was finally referred to).

Given the vague character of the proposal, it is no wonder the Board politely turned it down, motivating that *it appeared from the letter of the two brothers that their machine had not been brought to the stage of practical operation* and further explaining that, because it had received many requests for financial assistance in connection with flying machines, the Board *"found it necessary to decline to make allotments for the experimental development of devices for mechanical flight"*, and only machines already brought *"to the stage of practical operation without expense to the United States"* would be considered. However, the decision, Wilbur and Orville received, left the door open by concluding that *as soon as the apparatus would have been perfected, the Board would have been pleased to receive further representations from the two brothers, in regard to it.*

As a note, despite the loose wording of the offer, the Board was well aware the two brothers intended to sell a powered apparatus (not necessarily an aeroplane) as long as the answer, Nevin received and forwarded to Dayton, starts with this introduction: *"Referring to your letter of the 21st instant [January 21, 1905] to the Honorable Secretary of War inviting attention to the experiments in mechanical flight conducted by Messrs. Wilbur and Orville Wright ..."*, the term "mechanical" being an obvious reference to an engine.

The two aeroplanists had no immediate reply for the War Department. They tried restarting the negotiations on October 9, 1905, after the alleged spectacular series of long duration circular flights, of their third biplane, that had ended four days before, on October 5th, but failed again in getting a positive reaction.

Eventually, their negotiations with the US government succeeded. However, only on February 10, 1908, a day well within the aviation age, the Board placed an order with the Wrights according to which a plane had to be delivered by August 28th, the same year. The two Daytonians fulfilled their contractual obligations, and got their money, in 1909, after being granted a few extensions of time.

Coming back to the 105 flights of the 1904 machine, it can be concluded that the US War Department acted properly by refusing to take any further action as long as, in their January 18, 1905, offer, Wilbur and Orville made extraordinary claims without supporting them with suitable evidence.

All letters of 1905 related to the negotiations discussed above can be found, ordered chronologically, in the chapter "Wright brothers - US War Department negotiations, January 18 - October 27, 1905".

The start of negotiations with the British War Office

On September 16, 1904, John Edward Capper, a British officer, wrote to the Wrights saying he had a letter of introduction from a certain Mr. Alexander (a fellow Englishman, interested in aeronautics, who had personally met the two inventors). An exchange of letters followed and finally, on October 17, 1904, Capper announced the two brothers that his plan was to reach Dayton in the evening of October 23rd and remain in the city around 24 hour.

He met the inventors and, according to the October 25, 1904, number of the Dayton Daily News, the motive of his visit was that "of conferring with the Wright brothers relative to their ideas of flying machines".

1904-10-25, "At the Hotel Algonquin are registered Lt. Col. and Mrs. Capper of London", The Dayton Daily News, Ohio, US, October 25, 1904, col. 3, p. 10.

"At the Hotel Algonquin are registered Lt. Col. and Mrs. Capper of London, England. Col. Capper is a well known officer in the English army and is here for the express purpose of conferring with the Wright brothers relative to their ideas of flying machines. Col. and Mrs. Capper will spend several days here. They are en route home from the World's Fair."

The Dayton Herald published a more dramatic article, stating that the Wrights' airship had reached an advanced stage of development and the British army planned to obtain it, assuming Colonel Capper's report would be favorable.

1904-10-24, "British Army Official Here. Col. WM. Capper Inspects the Flying Machine of the Wright Brothers.", The Dayton Herald, Ohio, US, October 24, 1904.

"The Wright Brothers have been constantly at work on the machine, making improvements till now it is nearing perfection. ...

It is understood that the British government intends to annex the flying machine for the army, and Colonel Capper is here to investigate the Wright machine. ...

If Colonel Capper's report is favorable, the British government will undoubtedly set about to have a large number of the machines manufactured."

On January 10, 1905, the two experimenters wrote to Capper, who had returned to England, reporting the progress they had made since his visit and inquiring whether he thought the British government would be interested in an offer in connection with their invention. The content of the letter can be summarized as follows:

- After the visit of Lt. Col. Capper, the Wrights completed some investigations of a peculiar phenomenon which gave them trouble when swinging short circles. They learned the cause, applied the proper remedy and considerably extended the length of their flights.
- On December 1, 1904, in honor of the hundredth flight of that year, the brothers made 4 circuits of their testing grounds in 4 min and 53 sec, covering a distance of almost 3 miles at a speed of 35 mph and carrying 70 pounds of dead weight, in the form of steel bars. A flight of 5 min and 4 sec was made a short time before.
- According to the Wrights, the 1904 season's results were so satisfactory that they already regarded the practicability of flying as fully established and considered their machine would be useful for scouting purposes.
- The brothers thought of making an offer to the British Government for delivering, in 1905, "a machine capable of carrying two men at a minimum speed of thirty miles an hour".

- Wilbur and Orville were ready "to give further consideration to matters of details" if Capper thought it probable that an offer of such character would have received consideration from his government.

On February 9, 1905, the British War Office wrote to the Wrights, informing them that the bureau had become aware of their January 10 letter "on the subject of a flying machine" and further communication would be addressed to them in due course. The message was accompanied by a printed *Memorandum for Inventors showing the conditions under which inventions were dealt with by the Department*.

Only two days later, on February 11th, the same Office wrote again, asking the brothers to submit a definite offer as to what they would be prepared to supply, and the terms including the services of an expert mechanic, at the same time making them aware that in the event of their offer not being acceptable, the Army Council did not bind themselves to any further action.

Shortly after, in a text dated February 15, 1905, and sent to Dayton, Capper acknowledged the receipt of Wrights' January 10 inquiry, explaining that his replay had been delayed because he first had to approach His Majesty's Government to see what their wishes in the matter might have been, and informing the brothers that he was aware a member of the government had already written to them.

On March 1, 1905, the Wrights already had a quite clear written offer which they sent to London, stating they were "ready to enter into a contract with the British Government to construct and deliver to it an aerial scouting machine of the aeroplane type of the following specifications:"

"The said machine to be capable of carrying two men of average weight and supplies of fuel for a flight of not less than fifty (50) miles.

The speed of said machine when flying in still air to be not less than thirty (30) miles an hour.

The said machine to be of sufficiently substantial construction to make landings without being broken, when operated with a reasonable degree of skill.

Before the said machine is accepted by the British Government, and before any part of the purchase price is paid, the constructors shall in the presence of representatives of the British Government demonstrate by trial flights that the specifications have been met, the number of trials to be optional with the constructors.

The purchase price of the machine shall be determined by the maximum distance covered in a single one of the said trial flights, and shall be computed at the rate of Five Hundred Pounds Sterling for each mile covered; provided that none of the trial flights reaches a distance of ten miles, the British Government shall not be obligated to purchase or accept said machine.

In case the machine is accepted, personal instruction in the use of the machine will be provided for those who may be selected by the Government, the compensation of said instructor to be fixed at two hundred (200) pounds per month; the services of said instructor to be continued for such period as the Government may elect not exceeding six months, except by consent of both parties." (Wright brothers, "Letter to the secretary of the British War Office", March 1, 1905)

The same proposal announced that, besides physical planes, Wilbur and Orville also had for sale their "expert knowledge of natural laws and original formulas" by which, according to them, it was "possible to compute the elements of flyer of any desired size or speed" with as much accuracy and certainty as was the case with steam ships. Furthermore, they could offer "some original discoveries relating to the action of screws" which would have proved "of value in marine engineering as well as in aeronautics". In other words, the Wrights were ready to insert in a possible contract an option on the purchase of all that they knew concerning the subject of aviation, including a license to operate under their patents. In addition, they explicitly mentioned that their British patent 6732 A.D. 1904 covered only some elementary features and the question of patenting other features was held in abeyance. At the same time, the two brothers were aware it would be difficult,

during negotiations, to fix a value for their “*expert scientific knowledge*” and in consequence they considered *it would be best to confine their proposition to a physical machine*.

Regarding the “*scientific knowledge*”, the same remarks made in the chapter “The start of negotiations with the US War Department” remain valid. The only thing they might have had a chance to sell was the aileron based on the wing twisting principle. They did not discover useful and original formulas, which could be utilized for designing planes, or new things about the action of propellers, as they claimed in the letter.

Nearly two months and a half passed before the War Office answered the offer. On May 13, 1905, a communication was sent to Dayton to inform the Wrights that *Colonel Foster, the British Military Attaché at Washington, had been asked to visit their Works, the two inventors being directed to “give him any necessary information and an opportunity of seeing the machine at work”*.

Nothing happened till October 19th when the brothers wrote again to the same London Office, revealing *that recent flights justified them to amend their March 1, 1905, proposition as to make the acceptance of the machine dependent upon a trial flight of at least 50 miles, instead of 10 miles as specified in the original offer*. In reply, a short communication, dated November 11, 1905, was sent to Dayton, the War Department just acknowledging the receipt of the new offer and saying that *the matter was receiving consideration*.

One week later, on November 18th, Col. Foster wrote to the Wrights saying he had their January 10 and March 1, 1905, letters and *he was prepared to visit them at Dayton to witness a flight so as to inform his war office of the fact that the machine made “such a satisfactory flight as to make it desirable for the Government to consider the matter of a contract”*.

The correspondence between the two inventors and Foster, plus his War Office, continued but the negotiations soon failed. The brothers were unwilling to show their plane and the representatives of the British government had no desire to enter talks with them in connection with an elusive airplane. Colonel Foster realized that a stalemate was reached and, in a message dated December 7, 1905, he clearly explained the reason behind this impasse:

“The fact seems to be that the War Office cannot commit itself to negotiations with a view of purchasing, unless sure that your invention gives the flight it claims, while you, on the other hand, do not wish to shew its flight until the W. O. have made some arrangement with you.

There is thus a deadlock.” (Col. H. Foster, “Letter to the Wright brothers”, Fort Leavenworth, Kansas, December 7, 1905)

About two months later, with its February 8, 1906, decision, the British War Office announced the two brothers that *the terms and conditions under which they could carry out flying trials in the presence of a representative of the Department could not be accepted*.

The Wrights reinitiated the dialog, coming with new proposals but up to, at least, the end of 1908 nothing came out of their negotiations with the British Army.

As a remark, not too much accent was put on the exchange of letters after October 19, 1905, because they are mainly related to Flyer III, and other Wright planes, which are not the subject of the present work.

The correspondence related to the negotiations presented above can be found, ordered chronologically, in the chapter “Wright brothers - British War Office negotiations, Sep. 16, 1904 - Feb. 8, 1906”.

The technical characteristics of Flyer I and II

From original documents dated between 1903 and 1908, left by the Wrights, (see the list of excerpts at the end of the current

chapter), it results that the 1903 and 1904 planes were similar, except their engine power and weight. Flyer 2 had a motor that could reliably provide 16-17 hp and mounted it weighed about 830 lb during its early flights and 900 lb after 70 lb of iron had been added. Flyer 1 had only 745 lb with pilot and it performed its December 17, 1903, flights using just 12 hp.

The technical characteristics of Flyer I, December 1903:

- Front elevator composed of two surfaces of 24 ft² each (48 ft² in total).
- Two superposed main wings that together had a surface of 510 ft². Their wingspan was “*a little more than 40 feet*”.
- One “*four-cylinder gasoline motor of four-inch bore and four-inch stroke*” which, during the flights of December 17, 1903, run at 1020 revolutions/min and developed 12 hp (where 1 hp = 745.7 W).
- The total weight of the apparatus, when ready for flight, was about 600 lb, and including the operator 745 lb.
- The average airspeed of the machine during the 59-second flight of December 17, 1903, was 30 mph.
- The plane had a pair of propellers placed just behind the main wings. Their efficiency was 66%.

The technical characteristics of Flyer II, 1904:

- *The same size as Flyer I.*
- One “*motor similar to the first, but of 1/8 inch larger bore. This engine at 1500 revolutions per minute developed 24 horse-power for the first 15 seconds, but only 16 to 17 horse-power after a few minutes’ run*”.
- The total weight was “*about 900 lbs., including a load of 70 lbs. in iron bars. A speed of more than 34 miles an hour was maintained for a distance of 3 miles with an expenditure of 17 horse-power*”, on December 1, 1904.
- The plane utilized the propellers of Flyer I.

Note: The Wright brothers used the 745.7 W imperial horsepower. This can be seen in Wilbur’s notebook H, 1902-1905, where, at page 5, he wrote “26.400 foot lbs per minute = .8 horse power”).

Therefore, the technical characteristics of both apparatuses are quite vague and of little use for anybody who would have wanted to build an airplane inspired from the two machines. If we add, to these sketchy details, the fact that no photo or clear technical drawing, showing a Wright powered flying device, was published before August 8, 1908, then we get the complete picture of two phantoms. (Flyer III and the May 1908 machine are as ghostly as them.)

This is the list of extracts from original documents written by the Wrights themselves, plus a December 18, 1903, article in the Dayton Daily News; from which the technical characteristics of Flyer I and II were compiled:

1903, O. Wright, “The 1903 Notebook of O. Wright”, 1903, pp. 11-12.

“Monday, Oct 19th”

... We completed surfaces for front rudder which measure 24 ft per surface. 48 ft altogether. Rudder surfaces weigh 6 lbs. Lower surface of machine weighs 93 lbs. Upper surface weighs probably 7 or 8 lbs less. Two surfaces spread 510 sq ft.”

1903-12-18, “Dayton Boys Emulate Great Santos-Dumont”, The Dayton Daily News, Ohio, US, December 18, 1903, p. 8.

“The “Wright Flyer” is a true flying machine. It has no gas bag or balloon attachments of any kind, but is supported by a pair of aero-curves or wings, having an area or 510 square feet. It measures a little more than 40 feet from tip to tip and the extreme fore and aft dimension is about 20 feet. The weight, including the body of the aviator, is slightly over 700 pounds. The machine is driven by a pair of aerial screw propellers placed just behind the main wings. The power is supplied by a gasoline motor designed and built by the Messrs. Wright in their own shop. It is of the four-cycle type and has four cylinders. The pistons are four inches in diameter, and have a four-inch stroke. At the speed of 1200 revolutions a minute the engine develops 16 brake horse power, with a consumption of little less than 10 pounds of

gasoline per hour. The weight, including carburettor and fly-wheel, is 152 pounds. The wings, though apparently very light, have been tested to more than six times the regular load, and it is claimed for the entire structure that it is a practical machine, capable of withstanding the shock of repeated landings, not a mere toy which must be entirely rebuilt after each flight."

1903-12-28, Wright brothers, "Letter to Carl Dienstbach", Dayton, December 28, 1903.

"We used a four cylinder engine (4" x4") of the four cycle type of our own design and construction. The engine speed while in flight was about 1035 turns to the minute on account of the gears used, and was not the maximum power of the engine. We had no propellers either below or above the machine to give it lifting power, but depended entirely upon two aero-curves, superposed, for that purpose. We used two air propellers, placed at the rear of the surfaces, to propel the machine forward. The weight of the machine and operator was 745 lbs. The area of the main lifting surfaces was 510 sq. feet. Our methods of control are entirely different from those used Lilienthal, Pilcher or Chanute, and were found to be equally effective in large and small machines. Our longest flight was 59 seconds from the time of lifting from the rail to that of landing."

1904-01-28, W. Wright, "Letter to Lawrence Hargrave (Australian aeronautical pioneer)", Dayton, January 28, 1904.

"Most of our time was taken up with the construction of a machine of 510 sq. ft. on which we mounted a gasoline motor. The total weight of the apparatus was about 600 lbs, and including the operator 745 lbs. The machine was finished so late in the year that we made only such trials as were necessary to determine whether the machine possessed the power of flight, and a capacity of control such as would make it reasonably safe in operation."

1904-03-14, W. Wright, "Letter to O. Chanute", Dayton, Mar. 14, 1904.

"We are hard at work getting ready for Spring. The new machines will be of the same size as the old one but will weigh a little more, 800 lbs. probably. By gearing the engine to run a little faster we will not only carry the additional weight but will have enough surplus to increase the speed to about 40 miles an hour."

1904-05-20, W. Wright, "Letter to O. Chanute", Dayton, May 20, 1904.

"Our indoor tests of the machinery show excellent results. With the same screws we used last year we get an increase in speed of 50 turns per minute, indicating an increase in power of more than one half. This is partly due to gearing the engine to run at higher speed per turn of screw, and partly to increase in efficiency of the engine itself."

1904-06-14, W. Wright, "Letter to O. Chanute", Dayton, June 14, 1904.

"This machine is entirely new, including engine and machinery. We are using the old screws."

1904-12-21, O. Wright, "Letter to C. Dienstbach", Dayton, Dec. 21, 1904.

"The two longest flights of the season were made on the 9th of November and the 1st of December. In each of these flights we made almost four complete circles and covered a distance of a little over four and one half kilometers, at a speed of about 35 miles an hour. In the flight of November 9th a weight of 50 lbs. (iron bars) were carried in addition to the weight of the operator; in the flight of December 1st, 70 lbs."

1906-01-19, W. Wright, "Letter to O. Chanute", Dayton, Jan. 19, 1906.

"We have no objection to the publication of information regarding the number, length, time, height and direction of our flights, nor anything relating to them which does not throw light on the construction of the machine or the methods and principles of operation. We do not object to saying that the machine is given initial speed by a run on a track before it rises into the air, and that it slides on the ground when it lands. Before the methods of control had been perfected some of the landings were rough, but in the later flights the machine landed easily and without damage. We think it would not be wise to either deny or confirm any published descriptions of the machine, or data of dimensions. You may say that the weights of the various power machines ranged from 750 to 925 lbs. and the horse power from 12 to 20. The speed of minimum power consumption is below that at which the machine usually flies. We think it best to say nothing about the patents for which we have applied."

1907-05, Wilbur and Orville Wright, "The Relations of Weight, Speed, and Power of Flyers", *Navigating the Air - A Scientific Statement of the*

Progress of Aeronautical Science up to the Present Time - By the Aero Club of America; Doubleday, Page & Company; New York, pp. 6-12.

"THE flyer of 1903 carried a four-cylinder gasoline motor of four-inch bore and four-inch stroke. Complete with magneto, radiators, tanks, water, fuel, etc., the motor weighed a little over 200 lbs.; and at 1200 revolutions per minute, developed 16 horse-power for the first 15 seconds after starting. After a minute or two the power did not exceed 13 to 14 horse-power. At 1020 revolutions per minute — the speed of the motor in the flights at Kitty Hawk on the 17th of December, 1903, — it developed about 12 horse-power.

The flyer of 1904 was equipped with a motor similar to the first, but of 1/8 inch larger bore. This engine at 1500 revolutions per minute developed 24 horse-power for the first 15 seconds, but only 16 to 17 horse-power after a few minutes' run. Complete with water, fuel, and other accessories, it weighed 240 lbs.

The same engine, with a few modifications in the oiling device and the carburetor, was used in all the flights of 1905. A test of its power made soon after the flights of October, 1905, revealed a gain of 3 horse-power over tests made just before mounting it on the flyer in 1904. This gain is attributed to the increased smoothness of the cylinders and pistons produced by wear. The small output of these engines was due to lack of experience in building gasoline motors. ...

A comparison of the flyers of 1903, 1904, and 1905 shows some interesting facts. The flyer of 1903 weighed, complete with operator, 745 lbs. Its longest flight was of 59 seconds' duration with a speed of 30 miles an hour and an expenditure of 12 horse-power. The flyer of 1904 weighed about 900 lbs., including a load of 70 lbs. in iron bars. A speed of more than 34 miles an hour was maintained for a distance of 3 miles with an expenditure of 17 horse-power. The flyer of 1905 weighed, including load, 925 lbs. With an expenditure of 19 to 20 horse-power it traveled over 24 miles at a speed of more than 38 miles an hour. The flights of 1904 and 1905 would have been slightly faster had they been made in a straight line, as were those of 1903.

In 1903, 62 lbs. per horse-power were carried at a speed of 30 miles an hour; in 1904, 53 lbs. at 34 miles an hour; and in 1905, 46 lbs. at 38 miles an hour. It will be noticed that the weight carried per horse-power is almost exactly in inverse ratio to the speed, as theory demands — the higher the speed, the smaller the weight carried per horse-power.

Since flyers can be built with approximately the same dynamic efficiency for all speeds up to 60 miles an hour, a flyer designed to carry a total weight of 745 lbs. at 20 miles an hour would require only 8 horse-power, or two-thirds of the power necessary for 30 miles an hour. At 60 miles 24 horse-power would be necessary — twice that required to carry the same weight at 30 miles an hour. At 120 miles an hour 60 to 75 horse-power would probably be necessary, and the weight carried per horse-power would be only 10 or 12 lbs. At such high speed the resistance of the operator's body and the engine is a formidable factor, consuming 64 times as much horse-power as at 30 miles an hour. At speeds below 60 miles an hour this resistance is almost negligible."

1908-09, Orville and Wilbur Wright, "The Wright Brothers' Aëroplane", *The Century Magazine*, New York, September 1908, vol. LXXVI, no. 5, pp. 641-650 (pp. 648-649).

"Our first propellers, built entirely from calculation, gave in useful work 66 per cent. of the power expended. This was about one third more than had been secured by Maxim or Langley."

As a comment, regarding the May 1907 article "The Relations of Weight, Speed, and Power of Flyers", it should be pointed out that the text is more an essay than a report containing experimental data. The two inventors claimed that, according to their measurements, *the weight carried per horse-power by Flyer 1, 2 and 3 was almost exactly in inverse ratio to their speed, as theory demands*, but the three sets of numerical values, the Wrights provided in support of their findings, just fit a simplified formula, $\frac{\text{Speed} \cdot \text{Weight}}{\text{Power}} \sim \text{ct.}$, used in basic aeronautical calculations, with which anybody can fabricate on paper similar results. If this primary data is arranged like in Tab. 5, it can easily be noticed (see the last column) that three quantities close to each other are obtained, but this is not a proof the other figures are authentic.

Tab. 5. The performances of the 1903-1905 aeroplanes as extracted from the article “The Relations of Weight, Speed, and Power of Flyers”.

Plane	Weight	Power	Speed	Weight Power	Speed-Weight Power
	(lb)	(hp)	(mph)	(lb/hp)	(s ² /m)
1903	745	12	30	62	0.506
1904	900	17	34	53	0.489
1905	925	19-20	38	46	0.478

Conclusions

The conclusions will be given as answers to a set of questions related to the 1904 plane, known as Flyer II, and its 105 claimed starts. The evidence taken into account consists in all the material presented and discussed in this work: letters, articles, diaries, etc.

Question: How many planes did the Wrights start building in 1904?

Answer: Three, as it results from the following citations:

- “Sent some of engine patterns to Harry Maltby for changes.” (O. Wright’s 1904 diary, Jan. 1st)
- “Will began work on hinges for 3 machines.” (O. Wright’s 1904 diary, Jan. 7th)
- “Spent morning in town; looking up work on patterns (Maltby) and getting castings for cylinders and pistons for 3 engines. ... Have decided to make some of the cylinders 4 1/8” ” (O. Wright’s 1904 diary, Jan. 11th).
- “Harry Maltby decides that he can not do our work on patterns for engine.” (O. Wright’s 1904 diary, Jan. 12th)
- “We are now starting the construction of several more of our engines, and hope to have another machine or two ready by early Summer.” (Orville Wright, “Letter to G. A. Spratt”, Dayton, Jan. 7, 1904)
- “We are at work building three machines with which we shall probably give exhibitions at several different places during the coming season.” (W. Wright, “Letter to O. Chanute”, Dayton, January 18, 1904)
- “We are hard at work getting ready for Spring. The new machines will be of the same size as the old one but will weigh a little more, 800 lbs. probably.” (W. Wright, “Letter to O. Chanute”, Dayton, March 14, 1904)
- “We have one machine finished, another approaching completion, and a third well started.” (W. Wright, “Letter to O. Chanute”, Dayton, June 21, 1904)

Question: How much information did the two brothers publish about the 1903, ’04 and ’05 planes, before August 8, 1908?

Answer: Up to August 8, 1908, Wilbur and Orville offered no clear picture or technical drawing related to the three machines, but just vague technical details of little use for other people who would have wanted to build flying devices similar to the Wright aeroplanes in question. A thorough discussion on this subject can be found in the chapter “The technical characteristics of Flyer I and II”, which also includes data about the 1905 apparatus.

Question: Could the undulations of the 1903 and 1904 planes represent strong evidence that these devices really flew?

Answer: No. The Wrights’ early gliders suffered from the same deficiency, namely an up and down sinuous course, as the Jan. 7, 1904, letter to G. Spratt demonstrates. As long as some of their unpowered apparatuses zigzagged, the Wrights could easily have invented the story with the undulations of Flyer I and II, because they had already known from practical experience that such a phenomenon could appear. In consequence, what the two experimenters told Spratt, on January 7th, concerning the behavior of the 1903 plane, and Chanute, on July 1st and 17th, regarding a similar drawback the second machine exhibited, is by no means a confirmation that the aeroplanes in question had really flown.

- “Our machine complete weighed a few pounds over 600 lbs, which with the weight of the operator made the total weight a little over 745 lbs. The length of our flights were limited only by our lack of acquaintance with this particular machine. The front rudder was so much more effective than those on our former machines that we always turned it too far. As a result the first

flights were composed of a series of undulations as were our first flights on our gliders. We were greatly pleased with the performance of the machine.” (O. Wright, “Letter to G. A. Spratt”, Dayton, Jan. 7, 1904)

- “On Saturday another trial was made in a wind averaging about 15 miles an hour. Through failure to keep at sufficient height, it [Flyer II] struck the ground in one of its undulations while going at full speed, and pointed slightly downwards. The struts which carry the front rudder were broken, and one of the wires trussing the skids under the machine, also a pine spar in the right wing.” (W. Wright, “Letter to O. Chanute”, Dayton, July 1, 1904)

- “We shifted the center of gravity backward as mentioned in a previous letter but the result was not satisfactory. We are now engaged in reconstructing some of the parts and think we will thus stop the tendency to undulation which has marked our flights with power machines. It will probably be two weeks before another trial is made.” (W. Wright, “Letter to O. Chanute”, Dayton, July 17, 1904)

Question: Did Wilbur write, in his letters or notebooks, about physically impossible flights that could not have taken place?

Answer: Yes. In his August 28, 1904, letter to O. Chanute, he reported the air and ground speed of his plane plus the headwind speed for two flights. By studying the two sets of three values each, it results that the machine was accelerated by the intensity of the current of air against which it flew. Wilbur himself explicitly stated: “We find that the greatest speed over the ground is attained in the flights against the stronger breezes”. Also, his entry for August 13, 1904, in the Logbook E, contains, besides the experimental measurements made during the two trials reported to Chanute, data corresponding to a third flight obeying the same strange finding. In reality, a headwind slows down a plane. Had the apparatus really flown on Aug. 13th, the two brothers could not have recorded the flight distances and times Wilbur noted down, and in consequence the three trials represent just imaginary successful tests created on paper in accordance with a misconception the inventor had.

Question: How did the Wright brothers measure that maximum airspeed of 70 ft/s mentioned in Wilbur’s August 28, 1904, letter to O. Chanute?

Answer: It is not known. The onboard Richard anemometer - chronometer was not able to indicate instantaneous speeds. The instrument just integrated the airspeed which divided by the flight time gave the average airspeed during the trial.

Question: What was the reason for building a catapult?

Answer: From the arguments offered by Wilbur to G. Spratt, it appears the catapult was intended for:

- (1) throwing Flyer II above an airspeed limit (30 mph in the presence of a headwind) from which the apparatus sped up easily, by itself, to 45 mph;
- (2) accelerating the aeroplane quickly, along the available short rail, independently of the presence or absence of the wind, to above its take-off speed.

“We have made forty five starts with our 1904 Flyer. Unless the relative speed at starting is 27 miles in a calm and two or three miles more than that in a wind, the machine will gradually slow down till unable to fly. After the relative speed passes thirty miles the velocity accelerates till a relative speed of 45 to fifty miles is reached. We found it difficult in practice to get a speed down the track greater than 20 miles an hour, so that unless we had a wind of about 10 miles we were not sure of being able to fly for a lull in the wind would let us drop below the real flying limit. ... We have now finished a starting apparatus which gives a speed at start of 27 miles an hour in a dead calm, and expect shortly to begin circling.” (W. Wright, “Letter to G. A. Spratt”, Dayton, Sep. 10, 1904)

Regarding (1), the influence of Langley’s wrong law on Wilbur is visible. It does not mean he believed the discovery, claimed by this well known researcher of that time, was true in totality for any speed but he thought the drag decreased after the plane accelerated to over 27 - 30 mph, a phenomenon that allowed the machine to reach 45 mph.

Langley's Law: "if in such aerial motion, there be given a plane of fixed size and weight, inclined at such an angle, and moved forward at such a speed, that it shall be sustained in horizontal flight, then the more rapid the motion is, the *less* will be the power required to support and advance it." (S. P. Langley, "Experiments in Aerodynamics", Published by the Smithsonian Institution, City of Washington, 1891, p. 3)

The hypothesis above is not entirely incorrect. For a given range of small airspeeds it can be true. However, Langley said nothing about wind. Once in flight, the lull in the wind, Wilbur feared about, would have decreased the airspeed of the plane only in an extreme situation of an abrupt drop in the intensity of the headwind, and even in such a case the apparatus would have accelerated quickly toward its previous airspeed. For extremely low heights of flight the machine could have fallen enough distance to touch the ground before regaining its former airspeed. However, even if Flyer II had obeyed Langley's Law, the headwind would not have had any contribution in increasing the airspeed of the machine.

Concerning (2), the catapult and the headwind would have had similar effects. Both of them would have aided the plane to reach the take-off speed before it had run out of track.

The explanations given by Wilbur to Spratt, about the purpose of the launch mechanism and the behavior of his machine during those 45 reported trials, remain unclear and confusing, betraying imaginary powered flights.

Question: Did Wilbur believe that the drag of Flyer II, while in flight, became, at times, greater than the thrust of the propellers, when the headwind speed decreased?

Answer: From the way he formulated (in his August 28, 1904, letter to O. Chanute) the explanation regarding the difficulty of maintaining flight against a weak wind, it can be inferred that W. Wright apparently thought the thrust of the machine reduced as the headwind diminished its intensity, which is a misconception.

"When the wind averages much below 10 ft per second it is very difficult to maintain flight, because the variations of the wind are such as to reduce the relative speed so low at times that the resistance becomes greater than the thrust of the screws. Under such circumstances the best of management will not insure a long flight, and at the best the speed accelerates very slowly. ... Our starting apparatus is approaching completion and then we will be ready to start in calms and practice circling." (W. Wright, "Letter to O. Chanute", Dayton, August 28, 1904)

If the plane is in horizontal flight and the headwind drops suddenly from V_w to zero (an extreme case) the instantaneous airspeed of the plane, V_a , will decrease instantly to $V_a - V_w$ but the aeroplane will accelerate to its former V_a , while losing some altitude because the airspeed falls below that necessary for horizontal flight, but Thrust – Drag will remain positive.

Question: Did the engines of the 1903-1905 flyers have a throttle?

Answer: The Wright brothers do not mention such a feature in their letters of publications.

Question: Did Wilbur and Orville really build a testing facility near Simms Station in 1904?

Answer: Most likely they constructed it. However, the evidence comes from unreliable sources: the two inventors themselves, their father, the Dayton Press and Daily News, Octave Chanute, Amos Root.

• Evidence from Wilbur and Orville:

- "We are about ready to commence setting up our new machine. We have arranged for an experimental station about 8 miles east of Dayton and so will not go to Kitty Hawk this Spring." (W. Wright, "Letter to O. Chanute", Dayton, March 29, 1904)

- "Bad weather has delayed the completion of our new building so that we have not yet commenced setting together the new machine, but hope to begin soon. It will probably be close to the first of June before we make any flights." (W. Wright, "Letter to O. Chanute", Dayton, April 10, 1904)

- "We will probably begin taking our things out to the new building tomorrow." (W. Wright, "Letter to O. Chanute", Dayton, April 14, 1904)

- "The fact that we are experimenting at Dayton is now public, but so far we have not been disturbed by visitors." (W. Wright, "Letter to O. Chanute", Dayton, June 5, 1904)

- "We are in a large meadow of about 100 acres. It is skirted on the west and north by trees. ... Also the ground is an old swamp and is filled with grassy hummocks some six inches high so that it resembles a prairie dog town. This makes the track laying slow work. While we are getting ready the favorable opportunities slip away, and we are usually up against a rain storm, a dead calm, or, a wind blowing at right angles to the track." (W. Wright, "Letter to O. Chanute", Dayton, June 21, 1904)

• From Octave Chanute:

- "Mem. Dayton Oct 15/04 ...

On 15th in presence of O.C. flight #71.

420 metres = 1377 ft – in 23 4/5 seconds

speed 57.4 fs per second = 39 miles per hour

wind 6 miles per hour, diagonal to start"

(O. Chanute, "Mem. Dayton Oct 15/04", October 15, 1904)

• From Milton Wright: All entries in his 1904 personal journal in which he says he went to Simms or that his sons carried out some aeronautical activity there.

• From the Dayton Press:

- "The Wright flying machine was given a successful test this afternoon at 2 at Simms Station on the D., S. & U. traction line in the presence of a few invited friends of the inventors. ... Those who saw the test were Bishop Milton Wright, ... , a Press reporter and several others." ("Flying Machine Given a Successful Test by Messrs. Wright This Afternoon.", Dayton Press, May 26, 1904, col. 1-2, p. 6)

- "it is probable that the shed which had been erected on the field to protect the machine, will be removed to some other place, and the machine will be taken apart and placed in position there." ("Wright Boys Make Repairs. Thursday's Experiment Unqualified Success. Lack of Power the Cause of Sudden Descent.", Dayton Press, May 27, 1904)

• From the Dayton Daily News:

- "To a News reporter one of the brothers made the statement that certain improvements and changes were being made in the machine at Simm's which himself and brother thought would be soon completed." ("Flyer Is Being Altered and Improved by the Wright Brothers in Preparation for Contest in St. Louis", The Dayton Daily News, Sep. 20, 1904, col. 5, p. 12)

• From Amos Root: The entire evidence, regarding the presence at Huffman's field, in 1904, of this witness from Medina, Ohio, given in the book "A. I. Root, the liar number four after the Wright Brothers and their mentor, Octave Chanute".

Question: Did the Wright brothers themselves mention that their 1904 tests had been made in secrecy?

Answer: Yes, multiple times. Wilbur, in letters sent to O. Chanute, G. Spratt and C. Dienstbach, emphasized he and his brother experimented far from the eyes of the public and the newspapers helped them by not making too much noise about their trials.

- "So far we have not been subjected to the slightest annoyance from visitors or newspapers. I think the reporters are not aware of what is going on." (W. Wright, "Letter to O. Chanute", Dayton, May 5, 1904)

- "The fact that we are experimenting at Dayton is now public, but so far we have not been disturbed by visitors. The newspapers are friendly and not disposed to arouse prying curiosity in the community." (W. Wright, "Letter to O. Chanute", Dayton, June 5, 1904)

- "Up to the present we have been very fortunate in our relations with newspaper reporters, but intelligence of what we are doing is gradually spreading through the neighborhood and we are fearful that we will soon have to discontinue experiment. ... As we have decided to keep our experiments strictly secret for the present we are becoming uneasy about continuing them much longer at our present location." (W. Wright, "Letter to O. Chanute", Dayton, Oct. 5, 1904)

- "We prefer however that you do not tell ... that we are experimenting here, nor that we are making flights. We are not showing the machine nor letting

the public know what is going on.” (W. Wright, “Letter to G. A. Spratt”, Dayton, Oct. 18, 1904)

- “Through the courtesy of our local newspaper reporters, we have been enabled to carry on our experiments this year within a short distance of our city without the knowledge of this fact becoming generally known.” (O. Wright, “Letter to Carl Dienstbach”, Dayton, Dec. 21, 1904)

Octave Chanute

Question: Did Octave Chanute believe the Wrights had a flight capable plane?

Answer: No. He had serious doubts. This mistrust is visible in his ironic remarks in connection with the more and more spectacular aerial trips announced by Wilbur:

- “I am glad to see that the newspapers have not yet found you out. I hope your luck will continue and I ardently wish for your success.” (O. Chanute, “Letter to W. Wright”, Chicago, May 26, 1904)

- “I hope that your immunity from premature publicity may continue. I do not quite understand whether your experiments are made with last year’s or this year’s machine.” (O. Chanute, “Letter to W. Wright”, Chicago, June 8, 1904)

- “Meantime I hope that you will use great caution in your experiments, and will not run into a cow. I shall be glad to know how you are progressing.” (O. Chanute, “Letter to W. Wright”, Chicago, June 25, 1904)

- “I hope you will have good luck, and keep out of the newspapers.” (O. Chanute, “Letter to W. Wright”, Chicago, July 4, 1904)

- “... I expect ... to receive a letter from you advising me of your final success.” (O. Chanute, “Letter to W. Wright”, Chicago, July 31, 1904)

- “I feel confident that once you get a good start you will make a phenomenal flight.” (O. Chanute, “Letter to W. Wright”, Chicago, August 14, 1904)

- “I have been thinking it not unlikely that you should be called upon to go to Japan. It could well afford to give you and your brother \$100,000 for a few months work in reconnoitring. Santos Dumont would preferably be called upon by Russia, as that country follows the French lead.” (O. Chanute, “Letter to W. Wright”, Chicago, Dec. 26, 1904)

- “In addition to the great feat of inventing a practical flying machine the Wright brothers have, in my judgment, performed another improbable feat by keeping knowledge of the construction of a machine, which can only be operated in the open, from the incredulous but Argus-eyed American press.” (Octave Chanute, “Chanute on the Wright Brothers’ Achievement in Aerial Navigation”, Scientific American, New York, Munn & Co., April 14, 1906, vol. XCIV, no. 15, col. 1, p. 307)

Question: Did Octave Chanute see the 420-meter flight of October 15, 1904?

Answer: Definitely not. There exists an aide-memoire, handwritten by him and bearing the title: “Mem. Dayton Oct 15/04”, where he mentioned he had witnessed the performance in question. L’Aérophile, in its December 1905, issue, published a letter of Chanute to the French captain F. Ferber, in which the mentor of the Wrights said he had been the spectator of a small flight of half a kilometer, without elaborating. The April 14, 1906, number of the Scientific American reproduced a letter of the old engineer, addressed to the journal, containing detailed information about what he viewed on October 15, 1904. However, he evidently lied because, at least up to January 31, 1906, he had not seen any powered flight

of a machine built by the two Daytonians. The following fragment, from a letter of Wilbur to him, leaves no room for interpretation:

“The fact is that all or nearly all that you know from personal knowledge relates to the construction of our machine. The performances you have not seen.” (W. Wright, “Letter to O. Chanute”, Dayton, January 31, 1906)

Question: Why is O. Chanute missing from the list of witnesses communicated to C. Dienstbach, on November 17, 1905?

Answer: The absence of Wrights’ mentor from the group of people who spotted, at various dates, the two inventors driving powered aeroplanes, can be easily explained by the fact that the German journalist, and the Editor of his paper, could have questioned Chanute (a well known contributor to the *Illustrierte Aëronautische Mitteilungen*); and the brothers were unsure about his reaction. Despite the fact they already knew about the intention of the Chicago-based engineer to dishonestly inform Capt. Ferber that he had viewed one of their aerial trips, Wilbur and Orville were still not aware the French captain would send Chanute’s eyewitness account to L’Aérophile, making it public.

Bishop Milton Wright

Question: Did the father of the two inventors explicitly write in his 1904 diary that he had witnessed flights at Simms Station?

Answer: Yes, a single time. His Dec. 1st entry contains a short note stating that he went to Huffman’s farm, on the 12:00 car, and saw Orville flying 2¾ miles, at 4:00 PM. Unfortunately, the inventors’ father also wrote down he had stayed at home all day and in the evening visited the family of his son Lorin. He could not have been simultaneously at his domicile and for about four hours at Simms (see Tab. 6).

Question: Did Milton Wright view the flight of May 26, 1904?

Answer: He implies he did. His own journal reveals he was at Simms and Orville flew, but the old bishop just strongly suggests he was a spectator of the trial, without saying it explicitly (see Tab. 6). Also, according to the May 26th number of the Press, he saw the short hop of 25 feet in length, together with other people.

Question: Can Bishop Wright be considered a credible witness of any of the flights claimed by Wilbur and Orville for 1904?

Answer: No. As can be seen in Tab. 6, all entries in his 1904 diary (either hinting or explicitly stating he witnessed flights) look unreal. They lack any kind of personal impressions, things that a father would have written in his journal, given the astonishing, out of the 1904 world, aerial demonstrations performed by his sons. He just limited to write down mainly numerical values, like in the Aug. 13th record, which evidently has as its source the data in Wilbur’s notebook E, because the old bishop spent that day at home. From his entries the reader learns that he went to Simms multiple times and noted down figures matching with good approximation Wilbur’s and Orville’s records in their logbooks, as if the brothers told him what to write. Milton’s entries have more the aspect of reminders that would have allowed him to tell the same story to anybody, including the journalists, who might have inquired about the aeronautical activity of his sons.

Tab. 6. The 1904 entries, of M. Wright’s diary, in which (an exception being that of Aug. 13th) the old bishop suggests or unequivocally states that he witnessed flights or take-off attempts, near Simms Station. The corresponding notes of Wilbur and Orville, if available for a given day, were added for evaluating how well the data in Milton Wright’s personal journal corroborates the records of his sons.

Date	Milton’s 1904 Diary	Wilbur’s Notebook E	Orville’s Notebook G	Comments
May 26	“Went at 9:00 car to Huffman farm. At 2:00 Orville flew about 25 ft. I came home on 3:30 car. It rained soon after.”	No record. (The entries containing data about the trials of Flyer II start on Aug. 2, 1904.)	No record. (The tests made before Nov. 2, 1904, are not documented.)	The Press says M. Wright was a witness. The length of the flight and the time of the day, when the event occurred, recorded in the old bishop’s diary are identical to those written in the Press, but none of the other spectators, identified by the newspaper, is mentioned by M. Wright. “The Wright flying machine was given a

Date	Milton's 1904 Diary	Wilbur's Notebook E	Orville's Notebook G	Comments
				successful test this afternoon at 2 at Simms Station ... The machine, manned by Orville Wright, rose in the air about 12 feet and sped along for about 25 feet. ... Those who saw the test were Bishop Milton Wright, J. G. Feight, George Feight, Henry Webbert, Mr. and Mrs. Frank Hale, Mrs. William Werthner, a Press reporter and several others." ("Flying Machine Given a Successful Test by Messrs. Wright This Afternoon.", Dayton Press, May 26, 1904)
Aug. 13	"... I was at home engaged as usual. Wilbur made two flights of 800 and 1304 feet respectively, & Orville one of 640 ft. The speed was 35 and 40 miles to the hour. They were made in Huffman's field at Sims Station, in the afternoon."	" 28] <u>Second Flight</u> W.W. 1304 ft. ... Rel. Speed 45.4 [ft/s] 29] <u>Third Flight</u> O.W. 640 ft ... Rel. Speed 59 [ft/s] 30] <u>Forth Flight</u> W.W. 784 ft ... Rel. Speed 49 [ft/s]"	No record.	The descriptions match well. As Milton Wright says he was at home and does not suggest in any way he also went to Simms, the figures he wrote in his journal could not have come from other source than his two younger sons themselves. (45.4 ft/s = 30.95 mph; 59 ft/s = 40.22 mph; 49 ft/s = 33.4 mph.)
Nov. 1	"Went out to the aeronautical grounds, at Sim's Station. Wilbur made one flight of ¾ of a mile. The boy's faild to get the Flyer well into the air."	"Pulled stake from ground and ran down track with O.W. partly on. Broke forward struts on right side."	No record.	There is a good match between the two entries.
Nov. 2	"Went again to Sim's. Wilbur made one flight of ¾ mile."	" 75] 3 rd Trial W.W. Distance Circle. Anem { 1290 meters. " 1: 26 $\frac{2}{5}$ "	"1290 m. 1: 26 $\frac{2}{5}$ "	Acceptable approximation. The 0.75 mile of M. Wright is close to the 1290 m = 0.8 mi of Wilbur and Orville.
Nov. 3	"Went out to Sim's. Wilbur flew ¾ of a mile and landed breaking the machine some."	" 80] W.W. Anem { 1325 " 1: 27 $\frac{2}{5}$ "	"1325 1 27 $\frac{2}{5}$ "	Acceptable approximation. The 0.75 mile of M. Wright is close to the 1325 m = 0.82 mi of Wilbur and Orville.
Nov. 9	"... I go on 11:00 car to Sims. At 2:00, Wilbur flew three (lacking one-fourth) miles in 5 minutes and four seconds. The distance was only limited by failure of engine."	" 82] 2 nd trail W.W. <u>3 Pictures</u> Almost four rounds of field. Time 5 min. 4 sec. Engine probably heated. No Anem. records. Brown & Reed of D.S.&U. present. 83] 3 rd trial. O.W. Wind slightly from rear. Anem. { 115 " 11 $\frac{2}{5}$ "	"Nov. 9 th WW. No record in An. 5.04. Almost 4 rounds. Nov. 9 th OW Wind slightly from rear. An. { 11 $\frac{2}{5}$ s. " 115 m.	Distance provided but not measured. - The flight duration matches that in his sons' logbooks but the quite precise distance, 2.75 mi, written by M. Wright, has an unknown source. As a remark, the value comes close to that published by the Press of Dec. 17, 1904: "Their work and trials have been carried on quietly. They have not made any public trial, and have no intention of making any in the near future. ... The longest fights yet accomplished by the machine occurred on November 9 and December 1, when the flyer made almost three miles in five minutes." ("Trials Over for Season", Dayton Press, Ohio, Dec. 17, 1904)
Nov. 15	"... Went on 11 traction to Sim's. Wilbur at 4:00 made a two-mile flight. Orville had flown 1/2, 1/3 and 1/8 mile earlier. Reached home at 5:00."	"Nov 16 th OW 84] Anem { 820 m " 56 $\frac{4}{5}$ sec Picture W.W. { 53 $\frac{1}{5}$ " 495 ft. 85] 2 nd Flight. OW. Anem { 535 m " 1 $\frac{1}{5}$ sec. 40 $\frac{1}{5}$ sec. Picture WW. 45 sec 86] 3 rd Flight. OW. 650 ft over ground No anem. record Time 19 $\frac{1}{4}$ sec Gasoline turned too low in last three flights. Stalled. 87] 4 th Flight W.W. Gasoline in 3 rd Niche Time 3 min 10 $\frac{3}{4}$ sec. 2 $\frac{1}{4}$ rounds of field No anem. record. Unable to stop turning."	"Nov. 16 th OW. An { 820 m " 56 $\frac{4}{5}$ " 53 $\frac{1}{4}$ " 495 ft WW { 535 " 40 $\frac{1}{5}$ " 45 3 rd Flight O.W. Over ground 650 ft. No anem. record Wind about 3-4 mi Time 19 $\frac{1}{4}$ sec Gasoline turned low and machine each time stalled. 4 th Flight. W.W. Gasoline in 2 nd niche. Time 3: 10 $\frac{3}{4}$ sec. 2 $\frac{1}{4}$ rounds of field. No anem. record. Almost dead calm."	- Wilbur mentioned two witnesses (Brown and Reed of Dayton, Springfield and Urbana traction line) but not his father. Orville wrote nothing about the presence of other people who might have seen the impressive flight of 5 min 4 sec. A possible misunderstanding. Orville's three flights of: 820 m = 0.51 mi; 535 m = 0.33 mi; 650 ft = 0.123 mi, match almost perfectly the lengths recorded by M. Wright. However, the distance covered during Wilbur's aerial demonstration was not measured. We can just make guesses assuming that the old bishop misinterpreted "2 $\frac{1}{4}$ rounds of field" as a "two-mile flight". He also attributed a wrong date, Nov. 15th instead of 16th, to the four trials.
Dec. 1	"At home all day. Wrote some letters. At Lorin's a half hour in the evening. I went to the Torrence Huffman's farm on 12:00 car, and saw Orville, at 4:00, fly two and ¾ miles. (two and ¾ miles)."	" 100] 3 rd Flight. O.W. { 4515 m. " 5:08 sec. ? "	"Dec 1 st OW. { 4515 m. ,, " 5:08	Conflicting statements. The old bishop could not have been at home all day and simultaneously, for about four hours, at Simms Station. Acceptable approximation. The distance of 2.75 miles noted down by M. Wright comes close to the 4515 m = 2.8

Date	Milton's 1904 Diary	Wilbur's Notebook E	Orville's Notebook G	Comments
Dec. 9	"I went at 1:00 to Sims. It was a damp-windy day. The boys failed to get off in any flight. I got home on 6:00 car. ... The Aëronautical ground is a very level field of eighty-seven acres, on Torrence Huffman's farm."	" 104] 1 st Flight W.W. No start. Shut off gasoline from force of habit. 105] 2 nd Flight W.W. Front rudder loose at lower end of skids. Unmanageable"	No record.	mi of Wilbur and Orville. There is a good match between the two entries.

Remark: For better understanding the sometimes cryptic figures in the brothers' notebooks E and G, read the chapter "The trials no. 14 to 105 as recorded in the Wrights' notebooks".

Question: Is there strong evidence that the May 26, 1904, flight really happened?

Answer: No.

Arguments in support of the flight:

- The May 26th exclusive article in the Press according to which an unnamed reporter of the publication, together with the following witnesses: Bishop Milton Wright, J. G. Feight, George Feight, Henry Webbert, Mr. and Mrs. Frank Hale, Mrs. William Werthner, saw the flight. Similar articles appeared across the US but they do not identify the spectators by name. Most of them are just a short press release.
- The May 26th entry in Bishop Wright's diary, where he strongly implies he saw Orville leaving the ground for a distance of 25 feet.
- The May 27, 1904, letter of Wilbur to O. Chanute in which he mentions that the "*machine rose six or eight feet but the power was insufficient and it came down*", during an experiment that occurred the previous day.

Arguments against the existence of such a flight:

- The anniversary article in the Press stating that the Wrights had not made any public trial, up to December 17, 1904, contradicting the May 26th statement of the same paper.
- The absence from M. Wright's May 26th entry of at least some of the witnesses listed by the Press, people who were known by the Wright family.
- The December 21, 1904, letter to Carl Dienstbach in which Orville said that *he and his brother had made some flights in every month since June, excepting July*, a formulation which suggests that no flight occurred in May.

Question: Is M. Wright marked as present in Wilbur's or Orville's notebooks E and G, during any of the 105 starts claimed for 1904?

Answer: No. According to his personal journal, Bishop Wright was at Huffman's field on: May 23rd, 25th, 26th; June 18th; Nov. 1st, 2nd, 3rd, 8th, 9th, 15th; Dec. 1st, 2nd, 5th, 6th, 7th, 9th. None of the two logbooks contain any reference to him.

Georges Spratt

Question: Did Georges Spratt believe that the Wrights flew in 1904?

Answer: The replies of Spratt to the brothers' letters do not seem to be ironic. It is uncertain whether he considered the two Daytonians told him the truth. Despite the increasingly impressive aerial trips reported to him, he just limited to wish the two aeroplanists success with their work:

- "I was exceedingly glad to receive your letter, and know from you the results of your trials. I am very glad of your success indeed, and hope you will continue to have success, unattended with any accidents of a serious character ... You will be able to take the St. Louis prize, I believe, and not require the assistance of the promoter." (G. A. Spratt, "Letter to the Wrights", Chester, CT, Jan. 18, 1904)
- "Your letter came to hand some time ago, I had however given up all expectation of receiving another letter from you. I was pleased to learn of your trial direct from you, for I had seen a notice of a failure, in the Scientific American, and I was anxious to know the cause. ... Wishing you the best of success with your attempts ..." (G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, July 23, 1904)
- "Wishing you success with your work ..." (G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, Aug. 28, 1904)
- "Yours of 10th received, glad you are having better practice, wish you the best possible success." (G. A. Spratt, "Letter to the Wright brothers", Coatesville, PA, Sep. 20, 1904)

- "I hope you are making better progress and having better success with your work than I am having." (G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, Nov. 13, 1904)

- "Altho it is rather late in answering your letter, let me congratulate you on the success of your summer's experiments. I am glad of your success and feel confident you can do more next summer. I want to see you advance the work as rapidly as possible." (G. A. Spratt, "Letter to W. and O. Wright", Coatesville, PA, Feb. 9, 1905)

Flights, carried out after May 1904, mentioned by the newspapers

Question: Did the newspapers write about other flights of 1904, besides that of May 26th?

Answer: Yes. They mentioned the following aerial trips:

• **June 23, 1904:** A long hop was performed, in the absence of any witness.

"The Wright Bros.' flying machine was given a successful test at Simms Station, east of the city, yesterday afternoon. There were no spectators at the exhibition except the Wrights. The machine arose from the track to a height of 15 feet, and then sped through the air to a distance of nearly 300 feet." ("Flying Machine's Successful Flight. Wright Brothers Make an Ascent Yesterday Afternoon with Excellent Results.", The Dayton Herald, June 24, 1904, col. 4, p. 13)

• **November 3, 1904:** Possible, the 1325-meter (recorded by the onboard Richard anemometer) aerial trip of Nov. 3rd, existent in Wilbur's notebook E, which also refers to serious damages suffered by the apparatus at the end of the trial. However, the available newspaper account is imperfect, to say the least.

"SPRINGFIELD, O., Nov. 5. — (Spl.) — For several years Wright Bros., of Dayton, have been working on an airship, which they thought they had perfected. Yesterday it was tried for the first time, and after sailing through the air for several miles it fell on the tracks of the Dayton, Springfield & Urbana Traction line, near Osborn, and was badly wrecked." ("WRECKED. Wright Brothers' Airship Sailed Several Miles, but Met Disaster in the End.", The Cincinnati Post, Ohio, Nov. 5, 1904)

• **December 1, 1904:** The report does not talk about spectators who might have admired the impressive show.

"... a flight was made yesterday and a distance of three or four miles was made with perfect ease and precision. ... The remarkable speed of fifty miles an hour was maintained throughout the flight ... The Wright Brothers, by whom the flyer was conceived and perfected, feel that they have accomplished a great achievement ... The flight was made at a height of about forty feet above the ground. ... As soon as the weather becomes such as to justify a flight will be made and the public will be invited to witness it." ("Wright Flyer Glides through Air for Distance of Three Miles", The Dayton Journal, Ohio, Dec. 2, 1904)

• **Sep. 20, Nov. 9 and Dec. 1, 1904:** Long distance and duration circular flights. Nothing is said about possible onlookers that might have been present.

- "The maximum distance covered by a single flight is nearly four miles, this having been accomplished about five weeks ago. The present machine is an improvement over a number of machines with which Messrs. Orville and Wilbur Wright have experimented theoretically and practically for the last eight years." ("Anniversary of Wright Experiments. Dayton Boys Commenced on Their Aeroplane Just One Year Ago Today.", The Dayton Herald, Dec. 17, 1904)

- "the Wright brothers say that the ship has not been out of its house since Dec. 1, and only once before that date, on Nov. 9, for the past several months. On these dates, they claim, successful flights were made." ("Airship Yarn Pronounced False by the Wright Brothers, Who Say Their Machine Has Been Housed Since Dec. 1.", The Dayton Daily News, Dec. 17, 1904, col. 4, p. 2)

- "Messrs. Wilbur and Orville Wright, who are the owners and inventors of the machine, have succeeded in reaching a higher state of perfection than any other inventors ... Their work and trials have been carried on quietly. They have not made any public trial, and have no intention of making any in the near future. The new machine ... is the first machine to make complete circles. Since September 20, the Wrights have made 20 complete circles with the machine. ... The longest flights yet accomplished by the machine occurred on November 9 and December 1, when the flyer made almost three miles in five minutes." ("Trials Over for Season", Dayton Press, Dec. 17, 1904)

Question: Is there strong evidence that the circular flight of September 20, 1904, did not happen?

Answer: Yes. The Sep. 20th article in the Dayton News, written after a reporter of the publication talked to one of the brothers, does not even suggest the Wrights were so close to such a feat. On the contrary, the text reveals the inventors were just perfecting their machine and thought they would finish it before long.

"To a News reporter one of the brothers made the statement that certain improvements and changes were being made in the machine at Simm's which himself and brother thought would be soon completed. ... the inventors of the machine are reticent about stating when their next trial will take place." ("Flyer Is Being Altered and Improved by the Wright Brothers in Preparation for Contest in St. Louis", The Dayton Daily News, Sep. 20, 1904, col. 5, p. 12)

Negotiations with the US and Great Britain war departments

Question: Why did the 1905 negotiations with the US and Great Britain governments fail?

Answer: Both war offices wanted to see flights, before taking any further action, and the Wrights were unwilling to show their apparatus in the air or on the ground without some form of contract.

The decision of the US government:

"It is recommended the Messrs. Wright be informed that the Board does not care to formulate any requirements for the performance of a flying machine or to take any further action on the subject until a machine is produced which by actual operation is shown to be able to produce horizontal flight and to carry an operator." (T. C. Dickson, "Letter to the Wright brothers", War Department, Board of Ordnance & Fortification, Washington, DC, October 27, 1905)

Col. H. Foster's (British military attaché in the US) letter and the resolution of his W. O.:

- "The fact seems to be that the War Office cannot commit itself to negotiations with a view of purchasing, unless sure that your invention gives the flight it claims, while you, on the other hand, do not wish to shew its flight until the W. O. have made some arrangement with you. There is thus a deadlock." (Col. H. Foster, "Letter to the Wright brothers", Fort Leavenworth, Kansas, December 7, 1905)

- "the terms and conditions specified under which you could carry out flying trials in the presence of a representative of this Department cannot be accepted." (British War Office, "Letter to the Wright brothers", London, S. W., February 8, 1906)

Final conclusions

Question: What are the most important arguments that the Wright brothers did not fly in 1904?

Answer:

• In a letter to O. Chanute, dated August 28, 1904, but also in his 1904-1905 Logbook E, at page 8, Wilbur furnishes precise details about a series of flights which show that the groundspeed of the plane increased with the headwind intensity. The alleged trials are

physical impossibilities and could not have happened. They were invented on paper based on wrong beliefs.

• People who claimed they saw flights in 1904 but in reality lied:

- O. Chanute did not witness the 420-meter aerial trip above the ground of October 15, 1904, but pretended he saw it.

- Amos Ives Root did not see the circular flight of September 20, 1904, made by Wilbur, but maintained, till the end of his life, he was its spectator.

• The unreliable 1904 diary of Milton Wright:

- The contradictory statements in the Dec. 1st entry. The first paragraph says the old bishop was at home all day and the second that he left for Simms at 12:00 and saw Orville flying at 4:00 PM.

- M. Wright strongly implies he saw a few other flights but without saying it explicitly.

- The records in his journal, regarding the flights at Huffman's field, show mainly numerical values, without any kind of personal impressions a father would have written had he seen his sons flying a heavier-than-air apparatus, a feat no one had accomplished before.

- The logbook G of Orville (kept on the machine) does not mention witnesses at all for the 1904 flights and that of Wilbur (labeled E), also it contains the names of a few bystanders, does not say anything about the presence of Milton Wright.

• The only newspaper, the Press of May 26th, which identified by name a number of people who saw the short hop of the same day and specified that one of its own reporters (unnamed) was also present, made a conflicting statement on Dec. 17, 1904, revealing that the brothers *had not made any public trial, and had no intention of making any in the near future.*

• The absence, from the 1904 newspaper articles, of identifiable spectators of the inventors' 105 starts at Huffman Prairie (except in the May 26th number of the Press).

• Flyer II could not be No. 2 because Flyer I, 1903, had not been completed as of May 1904, according to the Wilmington Messenger (Wilmington, NC, May 26, 1904, col. 1, p. 6).

• The general attitude of O. Chanute. He repeatedly wrote ironic passages, in his letters to W. Wright, expressing his surprise that the brothers could have flown so many times without being remarked by the entire press in the US.

• The absence of O. Chanute from the list of 1903-1905 witnesses communicated by the Wrights to C. Dienstbach, in a letter dated November 17, 1905.

• The dubious technical characteristics, of the three aeroplanes built between 1903 and 1905, which closely follow a simple theoretical relation, $\frac{\text{Speed} \cdot \text{Weight}}{\text{Power}} \sim \text{ct.}$, used in elementary aeronautical calculations.

• The absence from the publications of 1904 of any technical drawings or pictures showing Flyer I or II. In fact, the Wright powered machines started to have a clear face for the public only on August 8, 1908.

The flights of 1904, all of them, remain just pure claims of low credibility, made by the Wrights, without being backed by any reliable independent confirmation. On the contrary, all the existing evidence, the main subject of this book, demonstrates that no powered flight took place that year at Huffman's field, or at Kitty Hawk, in December 1903. What the brothers had was, at most, a device unable to take off, either unaided or accelerated by a catapult. The two Daytonians, mainly Wilbur, sent dishonest letters (to Chanute, Spratt, Dienstbach, Root and others) pretending aerial trips of various lengths and durations, and they also communicated similar lies to the newspapers.

W. Wright - O. Chanute correspondence, Jan. 14 - Dec. 26, 1904.

1904-01-14, O. Chanute, "Letter to W. Wright", Chicago, January 14, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., January 14th 1904

Dear M^r Wright.

Your letter dated Jan^y 8th, addressed simply to Chicago, only reached me last night, after having apparently passed through the hands of several mail-carriers. I enclose the envelope.

I am amazed at the impudence of M^r Herring in asking for 1/3 of your invention. While I could wish that you had applied for patents when first I urged you to do so, I think that your interests are quite safe. The fact that M^r Herring visited your camp, in consequence of circumstances which I subsequently regretted, will certainly upset any claims which he may bring forth. I suppose that you can do nothing until an interference is declared. If it is, please call on me, and in the meantime try to find out who is his Patent Attorney.

In the clipping which you sent me you say: "all the experiments have been conducted at our own expense, without assistance from any individual or institution." — Please write me just what you had in your mind concerning myself when you framed that sentence in that way.

Yours truly
O. Chanute

1904-01-18, W. Wright, "Letter to O. Chanute", Dayton, January 18, 1904, 2 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	January 18, 1904.

Dear Mr. Chanute:

Your letter of 14th inst is at hand. I regret that the oversight in addressing the envelope of my last should have made such trouble in the delivery of my letter.

You seem to regard the Herring letter with more seriousness than we do. We do not anticipate any trouble in the Patent Office from him, and do not think he has had any intention of interfering there.

The object of the statement, concerning which you have made inquiry, was to make it clear that we stood on quite different ground from Prof. Langley, and were entirely justified in refusing to make our discoveries public property at this time. We had paid the freight, and had a right to do as we pleased. The use of the word "any", which you underscored, grew out of the fact that we found from articles in both foreign and American papers, and even in correspondence, that there was a somewhat general impression that our Kitty Hawk experiments had not been carried on at our own expense &c. We thought it might save embarrassment to correct this promptly.

We are at work building three machines with which we shall probably give exhibitions at several different places during the coming season. We may decide to enter one at St Louis, and have written for copy of the revised rules & regulations. When these come we will give the matter serious consideration, and if we find that the objectionable features of the original rules have been eliminated we may decide to make a try for it. Otherwise we will see what we can do elsewhere than inside the Fair Grounds, if we go to St Louis at all.

Orville and I may go to Springfield for a few hours some day this week, but otherwise shall probably be at home steadily for some time.

Yours truly
Wilbur Wright.

W. Wright, Jan 18/04, Explains things. [note of O. Chanute]

1904-01-20, O. Chanute, "Letter to W. Wright", Chicago, January 20, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILLINOIS.

CHICAGO, ILL.,

Jan 20th 1904

Dear M^r Wright

I have your letter of 18th. I am greatly pleased that you now contemplate entering your machine at S^t Louis. I trust that you will develop it in sufficient time and that you will carry off the main prize.

I was somewhat puzzled by your telegram at S^t Louis. You talked while I was in camp of giving your performance, if successful, all the publicity possible, and you knew that I would not divulge the construction of your machine, as I have never disclosed more than you, yourself, have published. Your telegram indicated a change of policy which you can more fully impart when I see you.

I now think of going to Cincinnati thursday night, and could probably call on you friday afternoon or saturday. Please wire me in case you are not to be at home.

Yours truly
O. Chanute

1904-01-26, O. Chanute, "Letter 1 to W. Wright", Chicago, January 26, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Jan^y 26th 1904

Dear M^r Wright.

My attention was called yesterday to a clever piece of "journalism" by which you are made to appear to have given an interview to the Chicago Chronicle. I enclose it herewith.

You are lucky to have the plans of your machine made for you by the newspaper men. This gives you time to get your patents.

Yours truly
O. Chanute

1904-01-26, O. Chanute, "Letter 2 to W. Wright", Chicago, January 26, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Jan^y 26th 1904

Dear M^r Wright

I have seen M^r Willard A. Smith, Chief of the Dept of Transportation, World's Fair, and mentioned the points which you raised concerning the rules for the Aeronautical Contests. He says that it was not the intention of the Advisory Committee (Himself, Prof^r Woodward, M^r C. D. Mosher and Santos Dumont) who framed these rules to have them interpreted as you have done.

That if you will write him a letter stating the points concerning which you are in doubt he will have a ruling made by the advisory committee, which will be binding upon the International Jury, as to the interpretation to be given these rules so far as they apply to flying machines.

Yours truly
O. Chanute

I mail separately a map of the Exposition grounds assigned to Aeronautics, and copies of the rules. M^r Smith's address is Manhattan Bldg-Chicago.

1904-02-13, W. Wright, "Letter to O. Chanute", Dayton, February 13, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	February 13, 1904.

Dear Mr Chanute:

Your two letters of Jan 26th received. Also copies of rules and map of Exposition grounds, and several newspaper clippings for which we thank you. We have a letter from Mr. Smith giving an official interpretation of the rules on the points we talked of when you were in Dayton. I see that in one of the papers you sent us, Santos Dumont is quoted as saying the distance is to be from twenty to thirty miles. Do not the rules say plainly that the distance specified in the rules is the

total distance to be traveled? i e Fifteen to twenty five Kilometers? It surely cannot mean twice this distance.

Orville & I are intending to go down to St Louis next week, if we can arrange to see Mr Smith there at that time, and inspect the grounds and surroundings.

Yours truly
Wilbur Wright.

W. Wright, Feb 13/04, Going to S' Louis. [note of O. Chanute]

1904-02-15, O. Chanute, "Letter to W. Wright", Chicago, February 15, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Feb 15th 1904

Dear M^r Wright

I have your letter of 15th. I know of no proposal to change the length of the course (10 to 15 miles) as set forth in Sec. III paragraph (c) of the rules.

Santos Dumont has a reputation for making rash statements. When to this is superinduced the general rashness of the newspapers we get remarkable results.

I enclose a translation of Captain Ferber's last letter. I had sent him the Scientific American article and your statement as given on Jan 5. You will note that your success with a motor has stirred up several others besides himself to experiment. I expect that several new types will result, but you are so far in advance that they cannot catch up.

I have received from several persons requests for information as to the construction and details of your dynamic machine, and have answered that it is different in arrangement from the 1902, and that you desire to keep the construction to yourself for the present.

Yours truly
O. Chanute

1904-01-27, Ferdinand Ferber, "Translation by O. Chanute, for the Wright brothers, of a letter received by him from Captain F. Ferber", Nice, France, January 27, 1904, 2 pages.

Translation.

Nice Jan^y 27th 1904

Dear Sir.

I thank you heartily for your letters of Jan^y 1st & 7th which have interested me very much.

When I learned on the 21st of December that Wright had succeeded with his motor I was at first quite annoyed at not having been able to take this first step myself. But now, just think that this success of Wright is doing me lots of good, and is much to my advantage. I believe that people are now saying: "Why that Captain was not such a fool after all, as the other chap has met with success."

I would like to know whether Wright had already begun on his motor last June, or whether it was the news that I was on the point of experimenting with one which determined him to apply a motor himself?

Archdeacon is very active and hence I believe that not fewer than 6 apparatus of the 1902 Wright type are now being built in France.

I believe we will see a great movement.

Next Monday I am to give a lecture at Lyon upon gliding experiments from Lilienthal down.

Yours truly
(sig) Ferber

1904-03-01, W. Wright, "Letter to O. Chanute", Dayton, March 1, 1904, 2 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	March 1, 1904

Dear Mr. Chanute:

Your letter of Feb. 15 was received. I wonder if Captain Ferber has any real conception of the difficulties he would have had to surmount in order to have been the first to "take this step."

Orville and I went down to St Louis last month and took a look at the aeronautical grounds and surrounding country. We were not expecting ideal conditions, but we found things even less favorable than we anticipated. I do not know that there would be serious danger to life, but much of the ground over which the course must be laid out is such as to make serious damage to the machine in case of a forced landing, almost inevitable. It would probably be necessary to win the prize in three trials, or not at all. As there are no consolation prizes for flying machines, like those provided for the airships, we would have to win the grand prize, or, get nothing. It is a tough proposition. However, when we get out again with our machine, and have fully tested its reliability for long flights, we will see whether it will pay to enter. The conditions are such that we wish to know that we will win before we finally decide to go for it. If we enter, it will be for the purpose of winning; not for the purpose of seeing how close we can come to it.

Last week we received a foreign letter and after turning the pages round and round to see which way the letter looked best, we finally concluded that it was written in modern Greek. After some trouble to find any one able to read it, we finally discovered that it was intended for some one else! So the hope of unearthing a Greek aeronautical enthusiast went glimmering.

Yours truly
Wilbur Wright.

Wilbur Wright, March 1/04, Examined grounds S' Louis. [note of O. Chanute]

1904-03-03, O. Chanute, "Letter to W. Wright", Chicago, March 3, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., March 3rd 1904

My dear M^r Wright

I have your letter of 1st inst. I wrote to Capt Ferber that he would infallibly have broken his neck if he had tried his dynamic apparatus without previous practice.

I hope that you will succeed so well when you resume experiment that you will see your way to entering for the grand prize. You are mistaken however as to there being no "consolation" prizes for flying machines. There are three of them if you can contrive to go slow enough.

I enclose two French clippings, which please return. One of them amused me so much that I made a translation of it. I do not know the author but I have seen articles signed by him in the "Aérophile." I presume that he is a friend of the editor and that he feels sore because you are not ready to disclose the construction of your last machine. I admire his advice to discard the American types of machines, and to try others with lower centers of gravity.

I will send you in a few days reprints of my paper to the Am. Assⁿ. Adv^t Science. [American Association for the Advancement of Science]

Yours truly
O. Chanute

1904-03-03, O. Chanute, "Translation of an article published in "Revue Sportive", January 30th 1904 [attachment to the March 3, 1904, letter to W. Wright].", Chicago, March 3, 1904, 4 pages.

Translation of an article published in "Revue Sportive" January 30th 1904

Peel your eye!

Quite recently sensational news, originating beyond the Atlantic, came, like a pebble cast into the frog pond, to plunge into stupefaction the Aeronautical World in Europe. An automobile aeroplane with a rider had gone against the wind five kilometers without touching the ground.

With good reason we were sceptics; and believed that the adventure, purposely muddled, resembled in many points the "secret" of La Fontaine. Now that we have the detailed report of the experiment communicated to the "Aérophile" by Wright Brothers, it appears that the flight of 5 kilometers, an experiment in itself very interesting, must nevertheless be reduced to about 900 meters of flight in 60 seconds.

At the time of a lecture at the Aero-club by M^r O. Chanute known as an orator, and imitator of Wright Brothers, we learned in detail the mode of operation of the experimenters as well as the apparatus employed. Flights of 200 or 300 meters were said to be covered without the least danger,

inasmuch as the only accident during an entire season was a torn pair of breeches.

At the request of a group of sportsmen and scientists the lecturer, once back in America sent to the Aero-club a memoir in which the length of the aerial flights singularly decreased, as the glides of 300 meters are now only jumps of 75 - 100 and 150 meters; Moreover experiments first presented as inoffensive now justify, according to the promoter, the presence of a doctor, and he adds that a group of aviators, by combining, might usefully employ a surgeon. "This is charming."

From so many queer facts, from so much obscurity, willful is our opinion, the truth is that the American Aviators are lulling us to sleep, and intend to keep for themselves the glory of being the first to drive through the air an apparatus "heavier than air," automobile and mounted.

By sending us the plans of their Hargrave boxes, of their aeroplanes with two surfaces, more or less stable, and advising us to copy and imitate them, they know that they would mislead us into a blind alley, while they could try other apparatus.

Hence they maintain secrecy as to the construction of the Aeroplane which has succeeded best. What we are certain about is that this Airship is not built according to the principles which have been communicated to us.

Operating on a desert plane and starting from dunes lost among unknown regions, working without witnesses, without photographs other than their own, the Wrights can hide their secret as long as they like; and when their apparatus will be finally perfected we shall be amazed to learn that these good Yankees have beaten us on our own ground. Therefore the duty of French Aviators is not to try to copy the apparatus which they have communicated but to study others, with single surfaces or with several surfaces with a lower center of gravity. Let us keep our eyes peeled for we are at a turning point in Aeronautical history.

Georges Blanchet

1904-03-14, W. Wright, "Letter to O. Chanute", Dayton, March 14, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	March 14 1904

Dear Mr. Chanute;

We were very much amused at the French articles which you enclosed in your letter of 3rd of March. We have been trying to decide whether the joke is on us, or on you, or on the French. Anyhow there is evidently a joke loose somewhere, and we have had several good laughs over it.

The copies of your address before the American Association for the Advancement of Science have reached us, and been read with a great deal of pleasure. We thank you for so kindly sending them. This address is fully up to the high mark which you have set in your former writings and is the clearest statement of the existing state of the art that has been published.

We are hard at work getting ready for Spring. The new machines will be of the same size as the old one but will weigh a little more, 800 lbs. probably. By gearing the engine to run a little faster we will not only carry the additional weight but will have enough surplus to increase the speed to about 40 miles an hour.

Yours truly
Wilbur Wright.

W. Wright, March 14/04, Returns clippings. See enclosed clipping – Wright. [note of O. Chanute]

1904-03-19, O. Chanute, "Letter to W. Wright", Chicago, March 19, 1904, 1 page.

O. CHANUTE, CONSULTING ENGINEER, 413 E. HURON ST., CHICAGO, ILLINOIS.	WOOD PRESERVING A SPECIALTY. CHICAGO, ILL.,	March 19 th 1904
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My dear M^r Wright

I have yours of 14th inst. M^r Santos Dumont has visited S^t Louis; has had the rules slightly modified, and will enter the race. I figure that with his 60 to 70 H.P. he can obtain a speed of 28 to 32 miles per hour.

I had a letter from M^r Herring a month ago, stating that if I have any information on the subject of flying machines he would like to get hold of

such matter for his paper, "Gas Power." I am ashamed (almost) to say that I have not answered him.

I send a clipping from the London Times which you can keep.

I believe that you receive the "Aérophile." I see by the last number (February) that M^r Tatin is advising the French Aviators not to copy the Americans servilely, but to strike out on new lines. This may lead to further progress, providing that nobody gets hurt.

I have heard nothing further from Capt Ferber.

Yours truly
O. Chanute

1904-03-29, W. Wright, "Letter to O. Chanute", Dayton, March 29, 1904, 3 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	March 29, 1904

Dear Mr. Chanute,

Your letter of 19th inst. is read with interest. My calculations based on a comparison of the #6 and #7 give Santos Dumont a speed in still air of between 24 and 25 miles an hour. There will be a loss in starting, landing and making turns, but nevertheless with every thing working perfectly he ought to be able to make the St Louis course at an average speed of 18¾ miles, when the wind does not exceed 8 miles an hour. I think 20 miles would have been beyond his limit about nine times out of ten, unless the conditions at St Louis prove superior to those at Paris. The changes in the rules do not affect us one way or the other but we approve of them because we would like to see some one knock down that prize.

Have you noticed in Moedebeck's German paper that Mr. Herring is setting up a claim to be an independent discoverer of gliding simultaneously with Lilienthal, [and the pioneer in everything that has been or will yet be discovered in flying?] He is an amusing "cuss."

We are about ready to commence setting up our new machine. We have arranged for an experimental station about 8 miles east of Dayton and so will not go to Kitty Hawk this spring. This reminds me that you once spoke of desiring to exhibit your Multiple wing and Oscillating wing machines at St Louis. I had intended to see to having them completely packed before we left camp last fall, but our hurried departure prevented. We have been so busy since that the matter escaped our minds. Shall we arrange to have them sent to St Louis at once?

I enclose a fake story which a friend of our machinist, Mr. Taylor, clipped from a Nebraska paper and sent to him. It seems to have started on the Pacific Coast and made its way eastward. Not all fakes are so harmless. The N.Y. Independent some time ago published what purported to be an original article entitled "The Experiments of a Flying Man, by Wilbur Wright." It consisted of about four pages of verbatim extracts from my W.S.E. addresses and a summary of newspaper reports concerning our 1903 experiments. It turned out to be the work of a rascal named Willey of Baltimore, who pretended to have been authorized by me to supply the article. The Independent apologized in a subsequent number for this and one other fake article by Ex Minister to Columbia, Beaupre. It also published a fake article which Dr. Herran, the Columbian minister to the U.S., repudiated, but he has not obtained a public apology. All were the work of this Willey.

Yours truly
Wilbur Wright.

W. Wright, March 29/04, Sundry subjects. [note of O. Chanute]

1904-03-30, O. Chanute, "Letter to W. Wright", Chicago, March 30, 1904, 1 page.

O. CHANUTE, CONSULTING ENGINEER, 413 E. HURON ST., CHICAGO, ILLINOIS.	WOOD PRESERVING A SPECIALTY. CHICAGO, ILL.,	March 30 th 1904
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Dear M^r Wright

Did you get a copy of the "Illustrierte Aeronautische Mitteilungen" (Moedebeck's paper) for March 1904? — It contains an article which, from the rough rendering I have received verbally, throws a side light upon the claim of M^r Herring to obtain an interest in your invention. If you have not the paper, I will get the article translated.

The same paper contains a 4 page article upon your achievement, and gives a photograph and a diagram, taken from New York Herald, 17-1-04, which purports to show your machine. This shows a horizontal propeller under the front of the apparatus. Is this correct?

I mailed you yesterday some clippings which show Maxim's merry-go-round. Please return them to me after you have duly smiled.

Yours truly
O. Chanute

1904-04-09, O. Chanute, "Letter to W. Wright", Chicago, April 9, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., April 9th 1904

Dear M^r Wright

I duly received yours of March 29th. It seems to have been crossed by mine of 30th and I have been waiting for an answer to that before having the article on Herring in the March Ill. Aer. Mitt. translated. From the tenor of your letter I inferred that you have the February issue of the same paper, which gave Herring a 7 page notice. I now enclose a clipping from the Boston Journal concerning the same "amoosing cuss."

I am indignant at the forgery perpetrated by the man Willey, and I am willing to spend some money in punishing him if the laws of Maryland permit. I send you his letters to me and copies of my answers. I suggest that you consult a lawyer and advise me of what can be done.

I thank you for the offer to forward the multiple winged and the oscillating wing machines to St Louis, but I think that under the circumstances we had better give that up. Moreover these are your machines and I only meant to borrow them when gliding machines were still the best that had been produced.

Yours truly
O. Chanute

1904-04-10, W. Wright, "Letter to O. Chanute", Dayton, April 10, 1904, 2 pages.

Wilbur Wright
Orville Wright

Van Cleve
Manufacturers
of Bicycles

Established in 1892

Wright Cycle Company

1127 West Third Street Dayton, Ohio, April 10, 1904

Dear Mr Chanute;

Your letter of March 30th and the newspaper clippings relating to the Maxim "flying Dutchman" have been received and we have "duly smiled."

We had seen, through the Courtesy of Major Moedebeck, a copy of his paper containing the article on Mr. Herring. So far as we can see there is nothing in his picture which conflicts with any of our claims, even if his own story did not make it very apparent that he had been so lax in completing his invention along the lines indicated as to constitute an abandonment of it. It certainly has caused us no worry so far. Our patents have been filed already in England, France, Belgium, Germany, Austria and Italy, and probably Russia, though we have no word yet regarding the last.

We recently wrote Mr. Smith asking that the words "starting point" be interpreted as including the entire aeronautical enclosure, and he writes that this will be conceded. As this gives the entire enclosure for starting, and the entire enclosure together with a fifty yard strip outside the fence for landing, the conditions are thus made much less severe than if more strictly interpreted. The only question now is whether we can make sure that the engine will run twenty minutes under full load without any serious risk of making a single stop in three trips.

Bad weather has delayed the completion of our new building so that we have not yet commenced setting together the new machine, but hope to begin soon. It will probably be close to the first of June before we make any flights.

Yours truly
Wilbur Wright.

Wilbur Wright, April 10/04, Progress Patents, machine. [note of O. Chanute]

1904-04-14, W. Wright, "Letter to O. Chanute", Dayton, April 14, 1904, 1 page.

Wilbur Wright
Orville Wright

Van Cleve
Manufacturers
of Bicycles

Established in 1892

Wright Cycle Company

1127 West Third Street Dayton, Ohio, April 14, 1904.

Dear Mr. Chanute:

Your letter of the 9th inst. is received. The Illustrated Aeronautical Record, (German) which we have, is the March number. We have not seen the February number to which you refer. Mr. Herring would seem to have a cinch on the St Louis prize for flying models, if he can substantiate his claims published in the Boston Journal.

I had thought for a while of going after Willey in the United States Court but after the Independent had published a statement saying that he had failed to substantiate the claim he had made to it that the article was authorized by me, I had about concluded to wait till we had occasion to make a further statement regarding our 1903 machine, and then expose him specifically. It is doubtful if he is financially responsible to an extent that would justify us in undertaking a damage suit. We thank you for your kind interest in the matter.

We will probably begin taking our things out to the new building tomorrow.

Yours truly
Wilbur Wright.

Wilbur Wright, April 14/04, Herring-Willey. [note of O. Chanute]

1904-04-15, O. Chanute, "Letter to W. Wright", Chicago, April 15, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., April 15th 1904

Dear M^r Wright.

I have your letters of 10th & 14th, and the clippings returned by you. Thanks.

I mail separately the February number of Moedebeck's journal. I undertook to have an abstract made for you of the article on Herring, page 54, but the translator made such a mess that I send you the original. I think Herring is mainly endeavoring to find a financial backer.

It will be very well for you to expose Willey when you have occasion to describe your 1903 machine, but my idea was that he might have made himself liable to a criminal prosecution for forgery. I now intend to interview a lawyer about it, and will advise you of the result.

I am glad to learn that your new machine is now approaching completion. I see by the French papers that Archdeacon of Paris has a gliding machine completed and is about to test it on some sand hills near the sea coast at Berk, south of Boulogne. I hope that nobody will be hurt.

I mail a letter just received for you from England.

Yours truly
O. Chanute

1904-04-17, O. Chanute, "Letter to W. Wright", Chicago, April 17, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., April 17th 1904

My dear M^r Wright

Some weeks ago I saw in the foreign press dispatches that M^r Deutsch had offered a prize of \$5000 to the first aviator who would fly by power a closed circuit of 1 kilometer, and that M^r Archdeacon of Paris had added a like sum thereto.

The Aerophile for March, received today, confirms this news, and states that it is proposed to add Various other Subscriptions so as to raise a "Grand prize of Aviation" of \$100,000; the details to be ruled upon by the French Aero-club and to be published later.

There is nothing said thus far about confining the award of the prize to French Aviators, although I believe that is what is in the mind of the present subscribers, but it will be well to keep your eye on this prize and to perform the feat before official witnesses so as to obtain affidavits establishing a record.

I will advise you further when I learn more. Do you think it would be wise to write to some of my friends to enquire into the status?

Yours truly
O. Chanute

1904-04-24, W. Wright, "Letter to O. Chanute", Dayton, April 24, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	April 24, 1904

Dear Mr. Chanute:

It had not occurred to me that Willey could be prosecuted under the criminal law. It was my general impression that criminal forgery had reference to legal documents only, and that such forgery as Willey perpetrated would have to be reached by a damage suit like any case of fraud.

A letter from Mr. Hollands mentions that a former letter about a year ago was never answered. I think that he has forgotten that he wrote to you, instead of to me, and that the answer was returned through you. He certainly did not write directly to me unless the letter was lost in transmission.

The French prize of aviation is certainly interesting and we shall be glad to know more of the details as they become known. It is probable that the flight must be made in France, but this would be no insuperable objection if the prize be sufficient to justify a trip to Europe.

Work on the new machine is progressing and we hope to have it finished in three or four weeks.

Yours truly
Wilbur Wright.

W. Wright, April 24/04, Holland's letter. [note of O. Chanute]

1904-04-27, O. Chanute, "Letter to W. Wright", Chicago, April 27, 1904, 1 page.

O. CHANUTE, CONSULTING ENGINEER, 413 E. HURON ST., CHICAGO, ILLINOIS.	WOOD PRESERVING A SPECIALTY.
CHICAGO, ILL.,	April 27 th 1904

Dear M^r Wright.

I have yours of 24th. I think that M^r Hollands must refer to some letter written since I saw him in England a year ago, and which has failed to reach you. The previous correspondence was in February, June and November 1902 and the information then sent has been used by him.

I have heard nothing more as to the proposed French prize for Aviation, but I have a letter from Capt Ferber, who says that Archdeacon has begun his experiments in gliding near Berk. No great progress had been made up to the 14th. Ferber himself could only cover 9 meters, and a pupil of his, M^r Voisin did somewhat better, and hovered for 5¼ seconds at one time. Ferber naively remarks that he is surprised that you are not ready to sell him a motor machine, but he does not mention that he is now building a new one of his own. That is stated in L'Aérophile which says it is to be of 50 square metres surface, to weigh 225 kilos, with a motor of 10 horsepower. Archdeacon is also said to contemplate a motor machine. I should expect such premature attempts to come to grief and make a market for your patents.

Yours truly
O. Chanute

1904-05-05, W. Wright, "Letter to O. Chanute", Dayton, May 5, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	May 5, 1904.

Dear Mr. Chanute:

Your letter of Apr. 27th has been received. I hope the French aviators will be very cautious with their preliminary work and not allow themselves to attempt long or high flights until they are sure they have abundant control. I apprehend that they will start with larger machines than they should.

A three days trip to Huntington Indiana in connection with that church trouble has delayed our work on the machine somewhat, but we expect to be ready for a trial in about ten days. We are looking forward to the pleasure of a visit from you about that time if your engagements will permit. We will keep you informed as the machine approaches completion, and hope there will be no disappointment like that of last year.

So far we have not been subjected to the slightest annoyance from visitors or newspapers. I think the reporters are not aware of what is going on.

Yours truly
Wilbur Wright.

W. Wright, May 5/04, Invitation to Exp^{ts}. [note of O. Chanute]

1904-05-07, O. Chanute, "Letter to W. Wright", Chicago, May 7, 1904, 1 page.

O. CHANUTE, CONSULTING ENGINEER, 413 E. HURON ST., CHICAGO, ILLINOIS.	WOOD PRESERVING A SPECIALTY.
CHICAGO, ILL.,	May 7 th 1904

Dear M^r Wright.

I have yours of 5, and I thank you heartily for the invitation to witness your forthcoming experiments. I am, however, now building two tie-treating plants, and may not be able to get away on a fixed date.

I enclose a French clipping which please return. Archdeacon seems to have obtained very short glides, and is going to rebuild his apparatus. He states that I did not furnish enough information.

I have a letter from Drzewiecki who states that his machine will not be completed for months, as he is going to S^t Petersburg on naval affairs.

I have a letter from Nimführ in Vienna, who says that Alexander has lately been there and said that some American Aviators, whose name he would not give, "have done very much better than the Wright Brothers." — What does that mean?

I have advised Major Moedebeck that the pictures of your machine which he republished from the N.Y. Herald are not correct, and that the notices which his New York correspondent sent him of Herring are given to a man who attempted Blackmail.

Yours truly
O. Chanute

1904-05-15, W. Wright, "Letter to O. Chanute", Dayton, May 15, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	May 15, 1904.

Dear Mr. Chanute,

Your very interesting letter of the 7th inst. together with the newspaper clipping have been received. The fact that the first letters of the words along the edge of the column are missing, almost got Orville "up a tree" but he finally got it translated all right. The French seem to possess the virtue of hopefulness, at least for the present. If they possess perseverance in equal measure something of value may result.

We had a letter from Mr. Silberer, of Vienna, some time ago in which he sent his respects to you, and announced that Mr. Nimführ was no longer connected with his paper, or the aeronautical club, as secretary. We inferred that their relations were somewhat strained.

It seems to be a case of going away from home to hear the news all around: Prof Langley, according to the "Independent," announces that a Russian captain has made successful flights with an aerodrome, reaching a speed of 60 miles an hour; while from Europe comes mysterious news of great things in America. Do you think that Mr. Herring has been working Mr. Alexander, and possibly "pulled his leg"?

The "Flyer No. 2" is approaching completion; another day ought to see it about finished. We will probably spend a day or two making indoor machinery tests before attempting a flight, and if all goes well will resume out door practice before the end of this week.

Yours truly
Wilbur Wright.

W. Wright, May 15/04, Machine nearly done. [note of O. Chanute]

1904-05-16, O. Chanute, "Letter to W. Wright", Chicago, May 16, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., May 16th 1904

Dear M^r Wright.

I have your welcome letter of yesterday, and write at once to wish you a great success. I hope to be kept advised of the results.

That M^r Silberer has fallen out with M^r Nimführ is no discredit to the latter. His reference to M^r Alexander's utterances may cover either M^r Whitehead or M^r Herring, but most probably the latter.

To compensate Orville for that mutilated French clipping I send you one in English. Pray keep it.

Do you receive the "Aerophile"? The number for April just received contains an account of Archdeacon's experiments, much like the clipping from "L'Auto," but more in detail. I can send the Aerophile if desired.

Yours truly
O. Chanute

1904-05-20, W. Wright, "Letter to O. Chanute", Dayton, May 20, 1904, 1 page.

Wilbur Wright
Orville Wright

Van Cleve
Manufacturers
of Bicycles

Established in 1892

Wright Cycle Company

1127 West Third Street Dayton, Ohio, May 20, 1904

Dear Mr. Chanute

Your letter with N.Y. Press clipping received. The description of Archdeacon's machine as "a man lying on his stomach in the door of a chicken coop" is good.

We have had almost constant rain for the past six or seven days and have not had opportunity to make any trial yet. But intend to make some flights Monday if the weather is good. We hope your engagements will permit you to be present.

Our indoor tests of the machinery show excellent results. With the same screws we used last year we get an increase in speed of 50 turns per minute, indicating an increase in power of more than one half. This is partly due to gearing the engine to run at higher speed per turn of screw, and partly to increase in efficiency of the engine itself.

Yours truly
Wilbur Wright.

Wilbur Wright, May 20/04, Invitation to tests. [note of O. Chanute]

1904-05-26, O. Chanute, "Letter to W. Wright", Chicago, May 26, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., May 26th 1904

Dear M^r Wright.

I am glad to know, from your letter of 20th that the indoor tests of your machinery have resulted so well, and I am anxious to come down to see your first flights.

Unfortunately some questions, important to my wood preserving business, have come up in a bunch to detain me, and I do not know how soon I can dispose of them.

Santos Dumont has broken his 60 HP motor and must make the race with 40 H.P. He accordingly cabled to have the speed limit reduced to 15 miles an hour, and this has been granted with conditions stated in enclosed clipping, which says that he accepts them. He seemed to be inclined to withdraw when his motor broke. No other man, with the least chance of winning has yet entered the lists at S^t Louis and the management realizes that it will have to allow entries to be made subsequent to June 1st.

I am glad to see that the newspapers have not yet found you out. I hope your luck will continue and I ardently wish for your success.

Yours truly
O. Chanute

1904-05-27, W. Wright, "Letter to O. Chanute", Dayton, May 27, 1904, 2 pages.

Wilbur Wright
Orville Wright

Van Cleve
Manufacturers
of Bicycles

Established in 1892

Wright Cycle Company

1127 West Third Street Dayton, Ohio, May 27, 1904.

Dear Mr. Chanute,

Your letter of 26th rec'd. Can you find out whether entries in St Louis Contest positively close June 1st? If so we would be glad to know by telegraph. We wish to enter but not just yet.

We took the machine out Monday but just as we were ready the wind died out to ¾ meter per second and as we only had a little over a hundred feet of track, of course we were unable to obtain supporting speed. On Wednesday we again took it out but were driven in by rain. Again on Thursday we took it out and again the rain compelled us to take it in, but in the afternoon we again took it out. Once more a rain came up but before it broke we made a start. The engine was not working right but there was no time to see what the trouble was then. The machine rose six or eight feet but the power was insufficient and it came down. We found today that one of the iridium spark points had become detached and only three cylinders were working.

We broke several pine spars, which we had been compelled to use on account of not being able to obtain spruce in time. It will take a week to make repairs. We had the luck to get the machine under cover just as the storm broke upon us. We will inform you when we are ready again.

If Mr. Smith is in St Louis please inform me.

Yours truly
Wilbur Wright.

W. Wright, May 27/04, First trials of machine. [note of O. Chanute]

1904-05-28, O. Chanute, "Letter to W. Wright", Chicago, May 28, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., May 28th 1904

Dear M^r Wright

I have yours of 27th. M^r Willard Smith told me last week that the time for entries would be indefinitely extended beyond June 1st, for those who could otherwise comply with the rules.

He is in S^t Louis to-day but I am to see him monday and will get an official statement.

Yours truly
O. Chanute

1904-05-30, O. Chanute, "Letter to W. Wright", Chicago, May 30, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., May 30th 1904

Dear M^r Wright

The time for entry in the Aeronautical Contests is to be extended from time to time as seems most judicious.

I saw M^r Willard Smith this morning. He has your letter and will write to you.

M^r Santos Dumont is to sail on the 11th of June, and will try to make his first flight within that month.

M^r Herring proposes to enter the race but is not ready to make his deposit.

Yours truly
O. Chanute

1904-06-05, W. Wright, "Letter to O. Chanute", Dayton, June 5, 1904, 1 page.

Wilbur Wright
Orville Wright

Van Cleve
Manufacturers
of Bicycles

Established in 1892

Wright Cycle Company

1127 West Third Street Dayton, Ohio, June 5, 1904.

Dear Mr. Chanute,

Your letters of May 28 & 30 received. We thank you for so kindly obtaining the information we desired. We had also written Mr. Smith but were uncertain whether we would reach him promptly. We have made repairs in our machine and expect to be ready for trial on Thursday of this week. After a few flights we will know better what we will wish to do about entering at St. Louis. I have written Mr. Smith that we wish to test the machine, before taking up the matter of entering the race.

The newspaper reports seem to indicate that Santos-Dumont had made no flights as yet, but only shop tests of the machinery. He will probably not sail for America without a thorough trial of his new system of hanging his engine below the car, so that it would seem doubtful whether he does much flying at St Louis before August. Is his shed finished?

The fact that we are experimenting at Dayton is now public, but so far we have not been disturbed by visitors. The newspapers are friendly and not disposed to arouse prying curiosity in the community.

Yours truly
Wilbur Wright.

W. Wright, June 5/04, Will experiment on 9th. [note of O. Chanute]

1904-06-08, O. Chanute, "Letter to W. Wright", Chicago, June 8, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., June 8th 1904

Dear M^r Wright

I have yours of 8th. I understand that M^r Santos Dumont has been making tests which are kept out of the newspapers, and is to sail June 11th.

The shed at S^t Louis is said to be nearly up, and the hydrogen plant is being erected, so that competitions may begin in July.

I hope that your immunity from premature publicity may continue. I do not quite understand whether your experiments are made with last year's or this year's machine.

Yours truly
O. Chanute

1904-06-14, W. Wright, "Letter to O. Chanute", Dayton, June 14, 1904, 1 page.

Wilbur Wright
Orville Wright

Van Cleave
Manufacturers
of Bicycles

Established in 1892

Wright Cycle Company

1127 West Third Street Dayton, Ohio, June 14, 1904.

Dear Mr. Chanute:

I have your letter of June 8th. It would seem quite probable that Santos-Dumont has made private trials as you suggest. A man of his experience would not be likely to make such a mistake as that which Winton made in the Gordon-Bennett automobile race last year. If as the newspapers report, he is bringing his 60 h.p. motor, he should have little difficulty getting inside the 15 mile limit, as it would require less than half the power necessary for 20 mi.

We certainly have been "Jonahed" this year, partly by bad weather, and partly by being compelled to use pine spars in our wings which cause breakages difficult to repair quickly. We now have spruce in the central sections and do not anticipate further trouble from that source. The weather, we do not have any power over, but hope to find a good day soon. We should have made a trial today but for threatening weather. We made a trial last week but made an awkward start and struck the ground after about 60 ft. This machine is entirely new, including engine and machinery. We are using the old screws.

Yours truly
Wilbur Wright.

W. Wright, June 14/04, Delayed in tests. [note of O. Chanute]

1904-06-17, O. Chanute, "Letter to W. Wright", Chicago, June 17, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., June 17th 1904

Dear M^r Wright

I have yours of 14th inst. From recent French clippings I note that Santos Dumont (who will probably reach New York to-day) did make some preliminary tests of his N^o 7 before sailing. He found that he had to change the position of his motor, and place it on the girder. He has a new 60 H.P. motor which works well, but he is going to change his suspension wires when he gets to S^t Louis, in order to get farther away from the gas vent of the gas.

Three new gliding machines of modified construction are being constructed in France. Preliminary trials in light winds gave no good results with 2 of them.

I thought that your new machine was to be a duplicate of that of 1903, so that either one could be experimented with in case of breakages. Is this not so?

I rather suspect that your experimental ground is not as favorable as that at Kill Devil Hill. Do you contemplate resorting to the latter spot, in order to work out your machine so that you can compete for the S^t Louis prize?

Yours truly
O. Chanute

1904-06-21, W. Wright, "Letter to O. Chanute", Dayton, June 21, 1904, 3 pages.

Wilbur Wright
Orville Wright

Van Cleave
Manufacturers
of Bicycles

Established in 1892

Wright Cycle Company

1127 West Third Street Dayton, Ohio, June 21, 1904

Dear Mr. Chanute,

Your letter of June 17th received. You are quite right in thinking our Kitty Hawk grounds possess advantages not found at our present location, but we must learn to accommodate ourselves to circumstances. At Kitty Hawk we had unlimited space and wind enough to make starting easy with a short track. If the wind was very light we could utilize the hills if necessary in getting the initial velocity. Here we must depend on a long track, and light winds or even dead calms. We are in a large meadow of about 100 acres. It is skirted on the west and north by trees. This not only shuts off the wind somewhat but also probably gives a slight down trend. However this matter we do not consider any thing serious. The greater troubles are the facts that in addition to cattle there have been a dozen or more horses in the pasture and as it is surrounded by barb wire fencing we have been at much trouble to get them safely away before making trials. Also the ground is an old swamp and is filled with grassy hummocks some six inches high so that it resembles a prairie dog town. This makes the track laying slow work. While we are getting ready the favorable opportunities slip away, and we are usually up against a rain storm, a dead calm, or, a wind blowing at right angles to the track. Today we had our first decent chance, but as the margin was very small, we were not skilful enough to really get started. The first two flights were for a distance of a little more than a hundred feet, and the third, two hundred and twenty five feet. On this one Orville almost got away, but after about 200 ft he allowed the machine to turn up a little too much and it stalled it. He had a speed of about 18 miles on leaving the track, but the rise necessary to gain a little room for maneuvering reduced this to about 16 miles, and as the wind was blowing only 8 miles and unsteady at that, the resistance was too high to permit rapid acceleration, owing to the great angle of incidence required. To get started under such conditions requires perfect management. We are a little rusty. With a little more track and a little more practice we hope to get a real start before long and then we will see what the machine can really do in the way of flying. The machine landed nicely each time without any injury at all.

We have about concluded to enter the St Louis contest but are reluctant to do this formally, until we are certain of being ready in time. We have one machine finished, another approaching completion, and a third well started. As these are built to measure the parts are interchangeable, and even a rather serious accident would not necessarily throw us out of the contest. If the Exposition people will hold the door open till we get ready, there is yet hope that there may be a real contest for the grand prize. If there is an intention to set a definite limit to the acceptance of entries we would be glad of ample warning of the limit set. It is true that the tortoise beat the hare in a great historic race, but if the hare can open its eyes a little sooner next time or keep from breaking its legs or neck, it might turn the tables on the tortoise next time in a rather surprising way. In a light wind we ought to cover the course in eighteen or twenty minutes easily.

Yours truly

Wilbur Wright.

W. Wright, June 21/04, Describes grounds & tests. [note of O. Chanute]

1904-06-25, O. Chanute, "Letter to W. Wright", Chicago, June 25, 1904, 2 pages.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., June 25th 1904

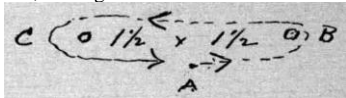
Dear M^r Wright.

I have your letter of 21st, upon my return from S^t Louis, where I spent a couple of days with the Exposition officials and M^r Santos-Dumont.

The latter asked for a number of additional concessions and after a good deal of discussion the following were finally agreed on last evening.

1°. The distance is to be 6 miles instead of 10 miles.

2° The L shaped course is given up, and the course is to have but two turnings: starting at A, turning at B. & C.



3° The time is to be taken in the air upon crossing the line at A. leaving out the time of starting & landing.

4°. In consideration of these concessions, M^r Santos Dumont agrees to make 10 additional flights after completing the 3 record flights upon which he means to stand as entitling him to the 70% of the prize. He is in addition to make an exhibit flight on the 4th of July if the weather permits. Hence he is obligated to make a minimum of 14 flights to entitle him to the full prize.

I presume that the same conditions will apply to all the contestants. The jury is to consist of the General Commissioner for Brazil, the Gen^l Commissioner for England & myself.

It is my judgment that, in order to give contestants a chance to perfect their apparatus, the time for formal entries will be extended from time to time clear up to September 1st, and that the requirement that a flight of a mile and return shall have been previously made will be strictly insisted on. There have been some 90 applications, of which 5 have paid their entrance fees, but none of them seem to me to stand any show against Santos-Dumont, who will meanwhile maintain the interest in the Aeronautic Competition.

You had better obtain from M^r Smith an official ruling upon the time of formal entry. He understands the difficulties involved in perfecting an apparatus and a motor which is apt to heat unduly.

Meantime I hope that you will use great caution in your experiments, and will not run into a cow. I shall be glad to know how you are progressing.

Yours truly
O. Chanute

M^r Santos Dumont says that he does not know of any French contestants who are coming over.

1904-07-01, W. Wright, "Letter to O. Chanute", Dayton, July 1, 1904, 2 pages.

Wilbur Wright Van Cleve
Orville Wright Manufacturers
 of Bicycles
Established in 1892
Wright Cycle Company
1127 West Third Street Dayton, Ohio, July 1, 1904

Dear Mr. Chanute,

Your letter of June 26th has been received. It would seem that Santos Dumont understands that he has the Exposition officials at his mercy, and is disposed to take advantage of that fact, by exacting easier conditions for the grand prize competition. We hope he will hold them up a few more times. If we should get into the race, the changes he has secured will be more to our advantage than his own.

The injury inflicted upon the Dumont air ship is a rather strange affair. I think I will suspend judgment awhile and await developments.

Since my last letter we have made but three trials, two of Thursday of last week and one on Saturday. On Thursday the starts were made facing a barbed wire fence about 350 ft from the end of our track. There was not sufficient time to make the turn after getting well started and it was necessary to turn off the engine after going 264 ft. In the second flight the tail was injured in landing. On Saturday another trial was made in a wind

averaging about 15 miles an hour. Through failure to keep at sufficient height, it struck the ground in one of its undulations while going at full speed, and pointed slightly downwards. The struts which carry the front rudder were broken, and one of the wires trussing the skids under the machine, also a pine spar in the right wing. The repairs would have required about three days, but all the experiments with our 1903 and 1904 machines having shown that the center of gravity was rather too far forward, we decided to shift the engine, man, and water tank to the rear. As this necessitated cutting down the length of the axles, and supports carrying the screws, about three days more time is added. We will probably finish tomorrow but may not take the machine out till after the Fourth.

Our transmission has given perfect satisfaction and we are certain it will continue to do so. You probably remember that we were uneasy on this point last year. Except for the loss of a sparking point on one occasion, the engine has met every requirement.

Yours truly
Wilbur Wright.

W. Wright, July 1/04, Made 3 more trials. [note of O. Chanute]

1904-07-04, O. Chanute, "Letter to W. Wright", Chicago, July 4, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., July 4th 1904

Dear M^r Wright

I have yours of 1st inst.

The author of the injury inflicted upon the Santos Dumont air ship is still unknown. The present theory is that it was done by a secret personal enemy of his. He sails for France on the 7th, and expects to be back with the repaired balloon in 6 or 8 weeks, leaving his men & machinery in S^t Louis.

This incident leaves the rules as they were, as the object of making concessions was to get an exhibition on the 4th of July, and subsequent weeks, in order to increase the gate receipts. No public announcement had been made of the concessions made to Santos Dumont.

He told me that he was not afraid of you, as he knew how tedious and slow is the working out of a new machine.

I hope you will have good luck, and keep out of the newspapers.

Yours truly
O. Chanute

1904-07-17, W. Wright, "Letter to O. Chanute", Dayton, July 17, 1904, 1 page.

Wilbur Wright Van Cleve Established in 1892
Orville Wright Manufacturers Wright Cycle Company
 of Bicycles
1127 West Third Street Dayton, Ohio, July 17, 1904.

Dear Mr. Chanute,

Your letter of July 4th is received. It is to be regretted that the prospect of a race at St Louis is vanishing into thin air, yet it causes us no surprise. When I first studied the rules, I said they were not fair to the competitors. Orville said they were fair because the persons offering a prize had a right to set any conditions they pleased, and if they chose to put the expense on the competitors, while they themselves pocketed the gate receipts in any event, and probably never would have any prize money to pay, the competitors had no right to complain because they were under no obligation to compete unless they wished. I replied that it might be fair, but that the promoters would have trouble getting any one to enter under such conditions. When the prize is for the best man, competitors will take chances, but when it is a race to make a certain time no one enters unless he feels confident from previous experience that he can make the time required.

We shifted the center of gravity backward as mentioned in a previous letter but the result was not satisfactory. We are now engaged in reconstructing some of the parts and think we will thus stop the tendency to undulation which has marked our flights with power machines. It will probably be two weeks before another trial is made.

Yours truly
Wilbur Wright.

W. Wright, July 17/04, Discusses rules -, Progress machine. [note of O. Chanute]

1904-07-31, O. Chanute, "Letter to W. Wright", Chicago, July 31, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., July 31st 1904

My dear Mr Wright

I received yours of 17th just as I was leaving for New York in the search for Creosote and I only got back last night.

I have to go to Paris, Ill to-night to look after the construction of my new tie treating plant. I expect to be back here on the 4th or 5th of August, and to receive a letter from you advising me of your final success.

I do not know how aeronautics are progressing at S' Louis, not having seen Mr Willard Smith for three weeks. Just before going East I gave to Mr Avery a note of introduction in order that he might confer as to a possible exhibition of the "Double Surfaced" machine of 1896 in gliding action, so as to furnish some aeronautical attraction, but I have not learned the result of the interview. As this is Sunday I probably will not see Avery until my return home.

If you are quite through with the article on Herring in Moedebeck's "Ill' Mitteilungen" (I think it was the February number,) kindly send it back to me to keep my file unbroken.

Yours truly
O. Chanute

1904-08-08, W. Wright, "Letter to O. Chanute", Dayton, August 8, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	August 8, 1904.

Dear Mr. Chanute,

Your letter of July 31st received. I beg your pardon for my neglect in failing to return the "Ill. Mitteilungen" promptly. I will send it at once, and thank you for the loan of it.

During July we made but two trials of the Flyer No 2, and they were of more value for the lessons they taught than for exhibition purposes. After reconstructing some parts of the machine we resumed practice last week and made two trials Tuesday, two on Thursday, two on Friday and three Saturday. One of the Saturday flights reached 600 ft. which is the best we have done with the new machine so far. We have found great difficulty in getting sufficient initial velocity to get real starts. While the new machine lifts at a speed of about 23 miles, it is only after the speed reaches 27 or 28 miles that the resistance falls below the thrust. We have found it practically impossible to reach a higher speed than about 24 miles on a track of available length, and as the winds are mostly very light, and full of lulls in which the speed falls to almost nothing, we often find the relative velocity below the limit and are unable to proceed. It is a pity we cannot trade a few of our calms to Prof. Langley for some of his windy days that used to trouble him so. It is evident that we will have to build a starting device that will render us independent of wind, and we are now designing one. Mean while we will take advantage of days when there is suitable wind.

Yours truly
Wilbur Wright.

Wilbur Wright, Aug 8/04, Development of machine. [note of O. Chanute]

1904-08-14, O. Chanute, "Letter to W. Wright", Chicago, August 14, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., August 14th 1904

Dear Mr Wright.

I have yours of 8th, and I feel gratified that you are approaching a success, for I feel confident that once you get a good start you will make a phenomenal flight.

Avery has made little progress towards his proposed gliding experiments. He was bluffed by the gasoline hoist men from whom he tried to hire an

engine. They wanted to sell one, and my absence from home stopped negotiations.

I go down again to Paris, Ill, to-night, and will not be back till the last of the week.

Aeronautics are languishing at S' Louis. Even those who have paid their entrance fees are not coming forward with their machines, and Mr Myers has been let go as there was nothing for him to do.

I hear nothing from Europe and I can only hope that the present lull is the precursor of a breezy time in Aeronautics later.

Yours truly
O. Chanute

p.s. you are to keep the "Knowledge" I sent.

1904-08-28, W. Wright, "Letter to O. Chanute", Dayton, August 28, 1904, 2 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	August 28, 1904.

Dear Mr Chanute,

Your letter of Aug. 14th received. Also the copies of "Knowledge," for which please accept our thanks. Unless Major Baden-Powell adds some balancing and steering device to his gliding apparatus, I fear he will have some exciting experiences before he progresses very far.

I presume that it is Mr Avery's plan to rise as a Kite, then cut loose and glide down. If there is time to perfect details and obtain practice the plan would seem to be feasible.

Since the first of August we have made twenty five starts with the #2 Flyer. The longest flights were 1432 ft., 1304 ft, 1296, ft. and 1260 ft. These are about as long as we can readily make on our present grounds without circling. We find that the greatest speed over the ground is attained in the flights against the stronger breezes. We find that our speed at starting is about 29 or 30 ft per second, the last 60 ft of track being covered in from 2 to 2¼ seconds. The acceleration toward the end being very little. When the wind averages much below 10 ft per second it is very difficult to maintain flight, because the variations of the wind are such as to reduce the relative speed so low at times that the resistance becomes greater than the thrust of the screws. Under such circumstances the best of management will not insure a long flight, and at the best the speed accelerates very slowly. In one flight of 39¼ seconds the average speed over the ground was only 33 ft per second, a velocity only about 3 ft per second greater than that at starting. The wind averaged 12 ft per second. In a flight against a wind averaging 17 ft per second, the average speed over the ground was 42 ft per second, an average relative velocity of 59 ft per second, and an indicated maximum velocity of 70 ft per second. We think the machine when in full flight will maintain an average relative speed of at least 45 miles an hour. This is rather more than we care for at present.

Our starting apparatus is approaching completion and then we will be ready to start in calms and practice circling.

Yours truly
Wilbur Wright.

W. Wright, Aug 28/04, Reports progress. [note of O. Chanute]

1904-09-05, O. Chanute, "Letter to W. Wright", Chicago, September 5, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Sept 5th 1904

Dear Mr Wright

I have yours of Aug 28th, and congratulate you on the good progress you have made.

Mr Avery started for S' Louis last night, to make arrangements to compete for the gliding prizes. He is to use an electric motor, and a portable Railroad track and car. It will probably take him two or three weeks to get his plant together and make his preliminary experiments, which are to take place in the early morning. As he is not well off I am furnishing him the funds, and have therefore declined to act on the International Jury, for that concourse at least.

I enclose a translation of a letter just received from Capⁿ Ferber. He seems to have been called to the headquarters of the Aeronautical department of the French Army at Chalais-Meudon. I have no doubt that he will have a lovely time with Col. Chas. Renard, who has lately been publishing a lot of papers on aviation. I suppose that you have the Ferber pamphlet.

Yours truly
O. Chanute

1904-08-23, Ferdinand Ferber, "Translation by O. Chanute, for the Wright brothers, of a letter received by him from Captain F. Ferber.", Chalais-Meudon, France, August 23, 1904, 2 pages.

Translation.

Chalais-Meudon
August 23rd 1904

Dear M^r Chanute

I hope that you are well. I sent you some time ago my little pamphlet.

I begin to get settled here and to obtain certain things, but the beginnings have been hard. I was compelled to start anew all my installations and I, having been here four months, am hardly ready to experiment. For an aerodrome I have secured a wire 30 metres long sloping 10 metres, from the end of which I can glide with considerable initial velocity.

I still have my apparatus N^o 5 without motor, and my N^o 6 with motor, but I am departing little by little from the Wright type: by remaining seated, by rising the front rudder, by using two steering vertical rudders at the sides, and by having a tail. I have altered my screws by reducing their diameter and increasing their pitch, as well as their speed of rotation.

I read some two months ago that Wright had made at Dayton an experimental flight; but only 30 metres long. Also that Herring had exhibited an apparatus with two screws. What is the truth about all this?

Yours very truly
(sig) Ferber

P.S. Major Baden-Powell of London seems to me to be working in a good direction.

Archdeacon is building a motor machine.

1904-09-18, W. Wright, "Letter to O. Chanute", Dayton, September 18, 1904, 2 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	Sep 18, 1904

Dear Mr Chanute,

Your letter of Sept 5th received. Mr. Avery has undertaken a very difficult task in attempting to make glides of 400 ft under such conditions as must be encountered at St Louis. If he fails it will be no discredit to him, while if he succeeds he will be worthy of the highest honor. It is a truly great undertaking, and we wish him success.

We had a copy of the Ferber pamphlet through the kindness of the author and were much interested in it. We were also greatly amused in studying the attitudes of the spectators as shown in the photographs of their glides. Our own pictures are almost lacking in "human interest." Since Capt. Ferber is attached to the aeronautical department of the service I presume he will have much better opportunity to carry on experiments than before, though he will be handicapped by being compelled to submit to some interference from his superior officers.

Is any progress being made with the aeronautical congress which was to be held at St Louis next month? We received an announcement that such a congress was to be held, but have seen no notice regarding it in any of the papers.

The starting apparatus which I mentioned in a former letter was finished and tried for the first time on Sept 7th. Up to the present time we have made eleven starts with it. It seems to operate perfectly and exactly according to calculation so far as we can measure. On Wednesday, Sept 15th, we made our first attempts to encircle the field but did not quite succeed though on both trials a distance of half a mile was covered. In the second trial the machine rose after partly landing and came down slightly crosswise. As the speed was above 35 miles several of the wires staying the skids were broken and let the latter fold sidewise. The damage was not very serious, and is almost repaired. Considering the fact that we have made fifty starts and landings with this machine, it is yet in remarkably good shape.

Yours truly

Wilbur Wright.

Wilbur Wright, Sep 18/04, Success of launching. [note of O. Chanute]

1904-09-30, O. Chanute, "Letter to W. Wright", Chicago, September 30, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Sep 30th 1904

Dear M^r Wright

Thanks for your most interesting letter of 18th.

I have been head over heels in the effort to get my tie-treating plant at Paris completed. I have been there much of the time and go down again to-night.

Avery has not got started yet, the Exposition having been very backward in furnishing him the required facilities. The most rigid economy is being practised.

The Aeronautical Congress is to make a bluff at being held on the 4th. There are very few papers and I am not advised as to the prospective attendance.

Yours truly
O. Chanute

1904-10-05, W. Wright, "Letter to O. Chanute", Dayton, October 5, 1904, 2 pages.

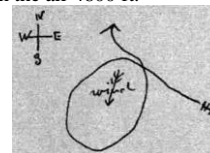
Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	October 5, 1904.

Dear Mr. Chanute,

Yours of the 30th September received. The newspapers report that the Aeronautical Congress at St Louis has been abandoned. It seems that every aeronautical feature of the Exposition has been a failure so far. It seems a real pity, yet as we have done little ourselves for success I do not know that we have any right to blame anyone else. Possibly there would have been more show, if the conditions attached to the various prizes had been less exacting. In the gliding, and flying model classes, as well as in the grand competition, the minimum requirement was so severe as to exceed all records of human attainment under similar conditions. The natural tendency was to discourage entries.

I have a very full realization of the difficulty of the task which Mr. Avery has undertaken, which difficulty is greatly increased by the shortness of the time at his disposal. Yet men have overcome difficulties before, and I hope that this may be true in this case. In any event my sympathies and best wishes go with him in the undertaking.

I think I mentioned in a former letter that we had made two attempts to circumnavigate the field where our present experiments are being made, but that neither was successful. On the 20th of September we renewed the attempt and on the second trial succeeded. The sky was overcast and a heavy rain separated the two attempts, but the wind was fairly steady and had a velocity of 7 or 8 miles an hour on the ground and about 10 miles at a height of 15 or 20 ft from the ground. The distance over the ground was about 4100 ft and through the air 4800 ft.



About two thirds of the flight was more or less to windward. The wind was blowing almost from the north. Since we have been making longer flights and getting more practice the machine is becoming much more controllable and now seems very much like our gliders at Kitty Hawk.

Up to the present we have been very fortunate in our relations with newspaper reporters, but intelligence of what we are doing is gradually spreading through the neighborhood and we are fearful that we will soon have to discontinue experiment. If your business will permit you to visit us this year it would be well to come within the next three weeks. As we have decided to keep our experiments strictly secret for the present we are becoming uneasy about continuing them much longer at our present location.

In fact it is a question whether we are not ready to begin considering what we will do with our baby now that we have it.

Yours truly
Wilbur Wright.

W. Wright, Oct 5/04, Further progress. [note of O. Chanute]

1904-10-12, O. Chanute, "Letter to W. Wright", Chicago, October 12, 1904, 1 page.

O. CHANUTE, CONSULTING ENGINEER, 413 E. HURON ST., CHICAGO, ILLINOIS.	WOOD PRESERVING A SPECIALTY. CHICAGO, ILL.,	Oct 12 th 1904
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Dear M^r Wright

I have just returned from the St Louis Exposition and find here yours of 5th.

I expect to go to Cincinnati thursday night and to call on you friday afternoon (14th) or Saturday.

Yours truly
O. Chanute

1904-10-15, O. Chanute, "Mem. Dayton Oct 15/04", October 15, 1904, 1 page.

Mem. Dayton Oct 15/04

On 14th Wrights made 3 flights.

1220 metres = 4001. fs — Less than an circle

1495 " = 4903 " — full circle

1505 " = 4936 " — more than circle

Alighting safely each time —

On 15th in presence of O.C. flight #71.

420 metres = 1377 ft — in 23 4/5 seconds

speed 57.4 fs per second = 39 miles per hour

wind 6 miles per hour, diagonal to start

Slewed around in landing & was broken

will take about one week to repair

speed at landing 45 to 50 miles an hour

operator not hurt.

Wright think machined arched too much and speed too great across wind.

Mem^r Wrights, Oct 15/04.

1904-11-15, W. Wright, "Letter to O. Chanute", Dayton, November 15, 1904, 2 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	Nov 15, 1904.

Dear Mr. Chanute,

Could you loan us for a few days a copy of the Moëdebeck Handbook? Our attorney informs us that a reference to it has been made by the German patent office. It may be found that the reference is contained in the chapter on aviation of which we have an English translation, but as time is pressing I thought it might be well to secure the book if possible before going to Springfield to see the attorney. The American office has again rejected our claims but in doing so has suggested that the objections might be removed by slight changes in the wording of the claims which in nowise affect them for our purposes; so it seems probable that we will get all that we have claimed.

Three days sufficed to repair the damage the machine received the day you were here, but owing to the funeral of our neighbor and bad weather, it was ten days before we were able to make another trial. The changes made to remedy the trouble which caused Orville's misfortune gave the machine an unfamiliar feeling, and before I had gone far I ran it into the ground and damaged it again. On Nov 2nd we circled the field again, and repeated it on the 3rd. On the 9th we went out to celebrate Roosevelt's election by a long flight and went around four times in 5 min. 4 sec. We unfortunately failed to set the recording anemometer and so did not get a measure of distance, but it was evidently a little over three miles. The trouble in righting the machine

after swinging a short circle is evidently corrected. The machine landed without any injury and was put back on the track for another trial, but the wind had been working more and more to the south and we were unable to get another start.

The newspapers report a little whirl of excitement at St Louis. The performance of the Baldwin machine is creditable though not remarkable, while the work of Knabenshue stamps him a man possessing qualities placing him in the first rank. It was also reported that Mr Avery had sprained his ankle. I hope it was nothing serious.

Col. Capper stopped off at Dayton on his way East and spent a day with us. We were much pleased with him, and also Mrs Capper, an unusually bright woman. It would seem that Mr. Herring has been in correspondence with the English war department, though I think little progress has been made.

Yours truly
Wilbur Wright.

W. Wright, Nov 15/04, Further progress. [note of O. Chanute]

1904-11-19, O. Chanute, "Letter to W. Wright", Chicago, November 19, 1904, 1 page.

O. CHANUTE, CONSULTING ENGINEER, 413 E. HURON ST., CHICAGO, ILLINOIS.	WOOD PRESERVING A SPECIALTY. CHICAGO, ILL.,	Nov 19 th 1904
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Dear M^r Wright

I returned last night from a prolonged absence, starting my Paris Plant.

I send you herewith the Moëdebeck Pocket Book, and I also enclose a French clipping which lays down the rules for the \$10.000 prize for a power flying machine. This prize you can win if you choose to go to France to do so.

M^r Avery sprained his ankle and withdrew from the contest for the gliding machine prize at S^t Louis. His tow line (hemp) had been used without his knowledge by some of the kite fliers and had been frayed in three places by rubbing over the roofs of the buildings. He did not examine it, notwithstanding my repeated injunctions, and when he had risen some 40 feet the line parted. He came down hurriedly and landed on the asphalt walk so that his ankle twisted and was sprained. He is getting over it, but greatly regrets not winning the prize, which he says would have been as easy as picking the money on the street.

Yours truly
O. Chanute

1904-12-20, W. Wright, "Letter to O. Chanute", Dayton, December 20, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	December 20, 1904

Dear Mr. Chanute

We finished our experiments several weeks ago and have now dismantled the machine. During the season one hundred and five starts were made. The best flights since my last letter were on Nov 16th and Dec 1st, the flights being 2¼ turns of the field on the first named date, and almost four rounds on the last. Although 70 lbs of steel was carried in this last flight to balance the machine it was still insufficient and the flight was made with pressure on the top side of the front rudder. We succeeded in curing the trouble caused by the tendency of the machine to turn up too much laterally when a short turn was made.

We saw our attorneys a few days after writing you and found that none of the references cited were of any serious importance. The citation to the Moëdebeck Handbook related to your "double deck" machine and its tail. We think the patents will be allowed though in Germany it will be necessary to take out separate patents for the various features, instead of including every thing in one patent as in American practice.

I am returning the Moëdebeck book and the French clipping relating to prizes. We thank you for the loan of them. Whether we go to France depends on how well it fits in with our other plans, which are not yet matured.

Yours truly
Wilbur Wright.

W. Wright, Dec 20/04, Closed season's work. [note of O. Chanute]

1904-12-26, O. Chanute, "Letter to W. Wright", Chicago, December 26, 1904, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Dec' 26th 1904

My dear M^r Wright.

I have yours of 20th, and I congratulate you heartily upon the successful results of your improvements and the safe progress that you have made in controlling your machine. I wish you still more success and a happy new year. I trust that it will not pass without bringing you a material reward. Please convey my congratulations to your brother, to your father and to your sister.

I have now a curiosity to know what are your final conclusions as to the power actually required for artificial flight, and whether you hope to reduce it. I am under the impression that birds use less power than you have found necessary.

I have been thinking it not unlikely that you should be called upon to go to Japan. It could well afford to give you and your brother \$100,000 for a few months work in reconnoitring. Santos Dumont would preferably be called upon by Russia, as that country follows the French lead.

Have you got my "January" number of Moedebeck's Illⁱ Aero^{ch} Mitt^a — you returned the "February" number, but I do not find the January issue.

Yours truly
O. Chanute

W. Wright - O. Chanute correspondence, Nov. 7 - 8, 1905.

1905-11-07, O. Chanute, "Letter to W. Wright", Chicago, November 7, 1905, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Nov 7th 1905

Dear M^r Wright.

I received this morning a letter from Cap^t Ferber, of which I enclose a faithful translation.

I also enclose my answer to him, and a translation of that. You had better compare them.

If the answer is what you desire, please mail it. If it is not shaped as you like, return it to me, with indication of your desires.

I should like to have copies of your late correspondence with our own War Department, if you feel that you can trust my judgment to use it, or not to use it as circumstances may warrant.

Yours truly
O. Chanute

1905-10-26, F. Ferber, "Letter to O. Chanute (translation made by O. Chanute for the Wright brothers).", Chalais, France, Oct. 26, 1905, 2 pages.

Translation Chalais Oct 26th 1905

Dear Sir.

I am uneasy in having no news from you, but I hope that you are in good health.

The informations which I have from Wright are so magnificent that they need confirmation by some authority.

They are said to have gone on the 1st, 2nd, 3rd & 5 Oct on flights of 24 to 39 kilometers.

But, as they have played the mysterious for the last 2 years, nobody here will believe them when I show their letter, and it must be admitted that this is only natural.

I am answered: if they had made such performances it would be known. The American Press is such a babler that it would rather have exaggerated, and yet nothing has appeared anywhere.

I now come to ask you whether the facts have been proved and whether a newspaper has mentioned them.

If it were true, it would be magnificent, and I would go to Dayton, to verify the facts first and to buy afterwards.

Please accept, my dear sir, the expression of my best sentiments.

(sig) Cap^t Ferber

1905-11-07, O. Chanute, "Translation made by O. Chanute, for the Wright brothers, of a letter he indented to send to Capt. Ferber.", Chicago, November 7, 1905, 2 pages.

Translation. Chicago Nov 7th 1905

Dear Captain Ferber.

I have just received your letter of October 26th.

I believe that you can grant all your confidence to what the Wrights have written to you concerning their performances.

I have seen, with my own eyes, only a little flight of half a kilometer but they have advised me of the progress they have made from week to week and their intimate friends who have seen the long flights of the beginning of October confirmed the facts verbally last week when I was in Dayton to see a projected flight of 60 kilometers in one hour which could not take place because of a great storm.

The Wrights followed the example of France, which preserved secrecy upon its progress with Navigable balloons since 1885. They arranged with the press at Dayton.

It is true that there was an indiscretion and one article was published, but its circulation was suppressed.

The Wrights intended to write to you about the 4th November.

I beg that you will let me know at what time you expect to come to America.

Accept, dear sir, the expression of my best sentiments.

(sig) O. Chanute

1905-11-08, W. Wright, "Letter to O. Chanute", Dayton, November 8, 1905, 1 page.

WILBUR WRIGHT
ORVILLE WRIGHT
WRIGHT CYCLE COMPANY ESTABLISHED IN
1127 WEST THIRD STREET 1892
DAYTON, OHIO

November 8th 1905

Dear Mr Chanute,

Your letters of Nov 4th & 7th have been received. We also have the samples of waterproof glue and thank you very much for sending them.

Saturday was an ideal day for record breaking but we were too disgusted to care to make use of it. Yesterday we went out and dismantled the machine. If necessary we could set it together again in two or three days, but we have no thought now of further experiments at our present grounds.

Regarding the letter to Capt. Ferber we have no suggestion to make except that it would be better to mail it at Chicago rather than Dayton. We have written him hearty congratulations on his success and assured him that we regard it an advantage rather than a disadvantage to us, since the possession of a practical machine by the French makes it imperative for other European governments to come to us at once.

We will send copies of the American correspondence within a few days. You can show it to any one except newspaper men. We think it would not be best to make it public just at present.

Yours truly
Wilbur Wright.

Wilbur Wright, Nov 8/05, Letter to Ferber, Have dismantled machine. [note of O. Chanute]

Letter of F. Ferber to O. Chanute, dated Dec. 1, 1905.

1905-12-01, F. Ferber, "Letter to O. Chanute (translation made by O. Chanute for the Wright brothers).", Chalais, France, December 1, 1905, 2 pages.

Ferber to Chanute. [note of Wilbur Wright]

Translation Chalais Dec 1st 1905

Dear Sir

I have your letter. It is a beginning towards authentication, for you say that you have seen a flight of about 500 metres; this is something. It enables me already to say more than I have done.

This question of authentication is of the greatest importance, and you must make the Wrights so understand. A government cannot engage to pay 1,000,000 for a thing that nobody has verified, because if it proves to be a "bluff" the government would be ridiculed.

A syndicate of private individuals might do so at a pinch and this I am also taking up.

It is under the prompting of these ideas that I have asked the Wrights whether they would receive a commission, concerning whom they might take all the precautions they wished: — distances, no photographing &c., — but in any case allowed to see a starting up, a little flight and a landing.

I think they must do something of the kind, and if they suspicion us, they must do so before some savants of your own country; such as yourself, Langley, Rotch &c., who are recognized authorities in the world, and upon whose assertions it is possible to gather the sum which they ask.

In any case I am working it up; but it goes slow because of the lack of confidence.

Yours truly
(sig) Ferber

W. Wright - O. Chanute correspondence, Jan. 17 - Feb. 3, 1906.

1906-01-17, O. Chanute, "Letter to W. Wright", Chicago, January 17, 1906, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., January 17th 1906

Dear M^r Wright.

I have yours of 15th inst. I believe the "Transportation club" of New York consists chiefly of Railroad men. I had an invitation and sent regrets.

I enclose a letter from M^r Pedley, manager of "The Car." It is easy to answer that no photos are to be obtained, but if I make a "few remarks" I wish them to be such as to forward your interests. My theory as to the way the U.S. government affair got into the "Automotor journal" differs from your own. I surmise that someone of the Ordnance Board was foolish enough to mention the matter to the British attaché and that he transmitted the information to England. What is the status of your negotiations?

I return your clippings and add some of my own. The French are very lively and amusing, and you will be still more tickled with the enclosed translation of a letter from Roux, whose pamphlet I had sent to you last summer. Pray tell me how to answer him?

I foresee that you will go to Kittyhawk. That will be cheapest. At what date are you to deliver the French machine?

I would like to know more accurately how much you meant to release (last November) in absolving your friends from their obligation to keep secret the results of the past season's experiments. Thus far I have limited myself to assurances of your perfect truth and reliability.

Yours truly
O. Chanute

1906-01-19, W. Wright, "Letter to O. Chanute", Dayton, January 19, 1906, 2 pages.

WILBUR WRIGHT
ORVILLE WRIGHT

WRIGHT CYCLE COMPANY ESTABLISHED IN
1127 WEST THIRD STREET 1892
DAYTON, OHIO

January 19, 1906

Dear Mr. Chanute,

Your letter of 17th is received. The letter of M. Roux is quite amusing. You may safely assure him that the difficulties we have met since our first flights in 1903 relate entirely to matters not discussed or even mentioned in his recent pamphlet.

The French are to make the final deposit not later than April 5th 1906; and we are to deliver the machine not later than August 1st 1906. There are no recent developments in the English and American negotiations, and we do not expect any till after the French have acted more definitely.

We have no objection to the publication of information regarding the number, length, time, height and direction of our flights, nor anything relating to them which does not throw light on the construction of the machine or the methods and principles of operation. We do not object to saying that the machine is given initial speed by a run on a track before it

rises into the air, and that it slides on the ground when it lands. Before the methods of control had been perfected some of the landings were rough, but in the later flights the machine landed easily and without damage. We think it would not be wise to either deny or confirm any published descriptions of the machine, or data of dimensions. You may say that the weights of the various power machines ranged from 750 to 925 lbs. and the horse power from 12 to 20. The speed of minimum power consumption is below that at which the machine usually flies. We think it best to say nothing about the patents for which we have applied. We make no concealment of our reasons for wishing to sell in some other way than as a patented commercial invention. We prefer to sell to governments because we can thus secure a sure return, sufficient to satisfy us, without delay, and without burdening our future with business responsibilities and the tedious law-suits which are always necessary to maintain a valuable invention by patent. We wish to be as free as possible for further scientific explorations.

We enclose another bunch of French papers in which the combat deepens. We have had an invitation to join in the fray but shall keep out of it entirely.

Yours truly
Wilbur Wright.

Wilbur Wright, Jan 19/06, What to say publicly. [note of O. Chanute]

1906-01-20, O. Chanute, "Letter to W. Wright", Chicago, January 20, 1906, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Jan^y 20th 1906

Dear M^r Wright.

I return your clippings. They are not as amusing as the last lot and descend to personalities, but the French are evidently uncertain whether you are a pretender or no.

You do not say whether you advise my giving the "Car" an account of your performances, or a polite refusal. Please advise me promptly.

I remember that you were in doubt when I asked you whether to make a statement to the Am. Association for the Advancement of Science, but some publicity has occurred since, and you may now desire that something shall appear in England.

Yours truly
O. Chanute

1906-01-22, W. Wright, "Letter to O. Chanute", Dayton, January 22, 1906, 1 page.

WILBUR WRIGHT
ORVILLE WRIGHT

WRIGHT CYCLE COMPANY ESTABLISHED IN
1127 WEST THIRD STREET 1892
DAYTON, OHIO

January 22 1906

Dear Mr. Chanute,

I have yours of 20th inst. We see no objection to your writing for the "Car" if it suits your convenience. We have ourselves written several letters to the editor of the "Aérophile" which will probably be published, or at least the information they contain will become public in some form. I enclose these since they will give you a better idea of what we are willing to let out than we could convey otherwise. You will note that we avoid talking very much about the machine itself, and as far as possible mention no points likely to arouse much discussion, or require further explanation.

We failed to receive any French papers by the last mail which usually reaches New York about the end of the week. I return clippings.

Yours truly
Wilbur Wright.

Wilbur Wright, Jan^y 22nd/06, Writing for "the Car" by oc. [note of O. Chanute]

1906-01-28, O. Chanute, "Letter to W. Wright", Chicago, January 28, 1906, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Jan^y 28th 1906

Dear Mr Wright.

You enthused so very little over the subject of my writing for "The Car," that I made up my mind to refuse Mr Pedley any information as well as the photo. I was puzzling in what polite terms I might do so when the Aeronautical Journal came in. The "remarkable" way in which Orville's letter was received, (Alexander & Capper being present) has changed my mind and I will write to Pedley so as to confirm the truth of your statements in a few days.

Now, here is more fun. I enclose a letter from the Austrian Aeronautical Society in which able and distinguished gentlemen, in a fever of curiosity, offer to trade off "diplomas" for a "schematic sketch" and description of your machine. They really deserve that I should send them the "schematicals" of the "No-Name" series, which by the way I never meant for you to return, but I will write instead a very respectful and modest letter, declining the proffered honor as being quite unworthy of it.

Have you been advised of the honor intended for you, and have you anything to suggest?

I am both amused and annoyed with the incident, as the men are really prominent in Vienna, and believe in you.

I have only two clippings this week, and send them.

Yours truly
O. Chanute

1906-01-31, W. Wright, "Letter to O. Chanute", Dayton, January 31, 1906, 2 pages.

WILBUR WRIGHT
ORVILLE WRIGHT

WRIGHT CYCLE COMPANY ESTABLISHED IN
1127 WEST THIRD STREET 1892
DAYTON, OHIO

January 31 1906

Dear Mr Chanute,

Your letter of 28th has been received. We have read the communication from the Vienna society of aviation and are thankful to say that we have not been embarrassed by a letter of similar nature. If we had received such a request we would have been "stumped" for a reply. We sympathize with you.

You have not exactly grasped our idea in regard to the article for the "Car." The fact is that all or nearly all that you know from personal knowledge relates to the construction of our machine. The performances you have not seen. We have not felt at liberty to impose upon you the task of vouching for things you have not seen, while forbidding you to talk of the things you really do know.

We regard the publication by Capt. Ferber of our private letter to him of November 4th (see last Aerophile) as simply outrageous. It is the worse from the fact that he deliberately includes the direct reference to Russia, Austria and the German Emperor, while striking out all embarrassing references to his "bluff," and making other changes in the letter. The complaint we made to Fordyce was before this crowning atrocity had come to our knowledge. We intend to have satisfaction some time. I enclose our carbon copy of the original letter, which please return. I am not certain that I requested the return of the carbon duplicates of the Besançon letters when you are through with them. They are all we have. I also enclose Ferber's letter. It seems that Mr. Fordyce was quite right when he told us at Dayton that he would have the opposition of Archdeacon and Santos Dumont to contend with on his return to Paris. He remarked that the former was not taken seriously by any one who knew him.

Our last foreign clippings are not of special interest so I include a few from America some of which you have no doubt already seen.

Have you received the January number of the Ill. Aero. Mitt., - the German paper? Ours is not yet here.

Yours truly
Wilbur Wright.

P.S. You are at perfect liberty to inform correspondents that the French contract is not exclusive. Three months after the machine is delivered we are free to begin deliveries to any other country.

A letter from Mr. Dienstbach describing the aero-club show says: "One wall of the exhibition room had been preserved for flying machine pictures divided under these heads: Lilienthal - Herring - Wright Bros. - Langley - Maxim - Pilcher, from left to right in the same order."

I was under the impression that I had learned somewhere that you had conducted some experiments about 1896 or 1897. Possibly my memory is at fault.

W.W.

Wilbur Wright, Jan 31st/06, Sends Ferber letter, Returns Austrian letter.
[note of O. Chanute]

1906-02-03, O. Chanute, "Letter to W. Wright", Chicago, February 3, 1906, 1 page.

O. CHANUTE,
CONSULTING ENGINEER,
413 E. HURON ST.,
CHICAGO, ILLINOIS.

WOOD PRESERVING
A SPECIALTY.

CHICAGO, ILL., Feb'y 3rd 1906

My dear Mr Wright.

I have yours of Jan'y 31. I herewith mail you the Ill. Aero. Mitt for January.

I think that I now grasp your idea about "the Car." I will write to Pedley and to the Austrians, probably to-morrow, other business having hitherto prevented.

I return the letters to Besançon and to Capt Ferber. Also Ferber's own letter with a translation as faithful as I can make it. He is not reliable, as I hinted to him myself. He should not have published your letter, and yet the account which he gives of the state of opinion in France (which is different from what I supposed) renders it probable that it was for your best interests that he should leak. I think it not impossible that he will try to make a flight himself before April 5th and get hurt.

Are the French to send their operators to be instructed by you in this country? You might be at a disadvantage if you had to go abroad before receiving your money.

Yours truly
O. Chanute

I am very much amused to learn how Herring arranged the exhibits. I sent the Aero-club all told 15 models.

Wright brothers - G. Spratt correspondence, January 7, 1904 - February 9, 1905.

1904-01-07, O. Wright, "Letter to G. A. Spratt", Dayton, January 7, 1904, 4 pages.

Dayton, Ohio, Jan. 7th, 1904.

Dear Doctor:

Your letter congratulating us on our success was awaiting us on our return from Kitty Hawk, and we had expected to write thanking you long before this, but have delayed writing till we could write more fully the particulars of our trials. We are receiving letters of congratulation from a number of people, many of whom we do not know personally, but none please us so much as those from friends who are acquainted with our work and take a personal interest in it.

I presume Will told you in his last letter of the second breakage of the propeller shaft, and of my coming home to make others. Upon my return we immediately set the parts together again and were ready the next day for a trial, but it was not till Monday, Dec. 14th that the conditions were suitable. On that day we had but 4 to 8 miles of wind, so that with only 60 feet of track, we knew it would not be possible to get the necessary speed for a start on the level. Consequently we took the machine to the north slope of the big hill, and after a few preliminary tests to see that all the parts were working properly, we laid the track about one hundred feet from the bottom on the hill. (I should have mentioned that at the first start of the engine two small boys, who had come over with the life savers, beat a hasty retreat over the top of the hill for home.) When all was ready, the tossing of a coin decided that Will was to make the first trial. On slipping the noose that held it at the top of the track, the machine shot forward as from a cannon. Just before reaching the end of the track, Will turned the rudder and the machine began rising at an alarming rate, and was soon higher than the point from which it had started at the beginning of the track. In this sudden rise so much speed had been lost that it had barely enough left to support it. Will delayed too long before turning the rudder to bring it down, and then when he did, he turned it too far, and the machine made a dive and struck the ground. Two of the pieces in the frame work that supported the front rudder were broken, but the skids under the machine, of which we had been so much afraid, were not injured in the least. As this whole flight had occupied only three and one-half seconds of time, and as the landing was on the hill, not much was shown except that the front rudder was much more powerful than any we had had before, and that the end control too was more effective. A flight

could easily have been made with our glider over the same course; yet the fact that the machine had appeared to rise to a height greater than that of the highest part of the track, indicated, at least, that the power of the motor was sufficient to lift.

Tuesday was spent in making the repairs. Wednesday we got the machine out with the intention of attempting a start from the level beside our camp; but after spending an hour or two trying to get the track and the wind in the same direction at the same time, we gave it up for the day. The next morning when we got up the wind was blowing 25 to 30 miles from the north. After giving notice to the men at the Life Saving Station that we were ready for another trial, we took the machine to a point about two hundred feet west of camp and laid our track. The inclosed clipping gives an account of what followed.

That we had quite a surplus of power was shown by the fact that on leaving the rail we could rise eight or ten feet in going forward about fifty feet. Of course this really amounted to about 150 feet through the air. Our engine ran at 1030 revolutions to the minute, which is not much, if any more than three fourths of its maximum power. Our machine complete weighed a few pounds over 600 lbs, which with the weight of the operator made the total weight a little over 745 lbs. The length of our flights were limited only by our lack of acquaintance with this particular machine. The front rudder was so much more effective than those on our former machines that we always turned it too far. As a result the first flights were composed of a series of undulations as were our first flights on our gliders. We were greatly pleased with the performance of the machine.

After you left the weather grew gradually colder, and for the last three or four weeks before we left we had ice in the ponds about camp nearly every night. Our stove, however, stood up to its duty heroically, and with the aid of the jugs of hot water we passed the nights quite comfortably. But the cold winds froze up a good deal of our enthusiasm for flying!

Since our return we have been receiving daily offers of stocking our company for us from some of these professional promoters, who would like to get the chance to swindle some of the people who think there is an immense fortune in the flying machine. Even our friend Herring has made us a very generous offer, a copy of which I am making for your amusement. We have had requests from a great many of the better magazines and papers for accounts of our experiments, but for the present we desire to keep all the principles and details of our machine strictly secret, and for this reason have had to refuse them all. We are now starting the construction of several more of our engines, and hope to have another machine or two ready by early Summer. We see nothing to prevent us, with a few minutes of practice, from making flights of considerable distances, though we are not saying this to everybody, as we do not like to blow too much about what we can do before we do it. We are not certain as yet as to the place where we will do our practicing this Spring, but whether it be at Kitty Hawk or some place else, we would be glad to have you with us again, and for a longer time than you staid this year.

Hoping to hear from you soon, I remain
Your friend,
Orville Wright

1904-01-18, G. A. Spratt, "Letter to the Wright brothers", Chester, CT, January 18, 1904, 4 pages.

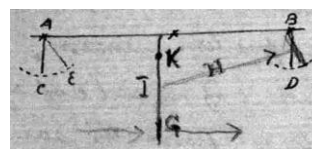
Chester, Ct. Jan. 18, 1904

My Dear Friends, -

I was exceedingly glad to receive your letter, and know from you the results of your trials. I am very glad of your success indeed, and hope you will continue to have success, unattended with any accidents of a serious character, - even litigation, etc. brought about by those who have spent nearly the last dollar on other things. You have evidently struck home there! One might consider that letter a threatening demand for the privilege of giving to a rightful owner 2/3 of a property he will likely come to possess. He is, as you say, very generous, but if I were you I do not believe I would accept his kind offer!! - I believe the course you are taking is a wise one.

You will be able to take the St. Louis prize, I believe, and not require the assistance of the promoter.

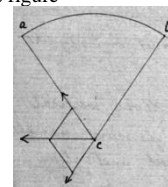
Let me call your attention, again to the placing of those vertical tail vanes. Suppose you hinge one to each of the forward uprights nearest the spar ends, (one on each wing tip) and allow them free swing as a weather vane, excepting that they may be forced inward automatically by turning the tip for lowering.



A. and B. = wing tip forward uprights, A.C. and B.D. = vertical vanes. When wing tip at A is twisted on the spar to bring it downward vane A.C. is swung in the direction A E, while vane B.D. remains inoperative. This seems to me will accomplish all your present arrangement of vertical vanes will. It allows the vanes to have a longer leverage, and therefore reduces the area necessary, and they will have a less retarding effect to the machines velocity. They are here placed behind a necessary framing piece and present no extra head resistance, and do away with the after out rigging entirely. They may perhaps tend to flutter which I believe can be overcome easily. - Also if the front rudder be placed farther from the flying surfaces, controll may be easier because of slower action and smaller surfaces be effective, - but it is needless for me to tell you that.

I made another observation the other day while leafing over the Standard dictionary for scraps of information while in an idle mood. I am now prepared to defend my "center of resistance" and my reasonings based on it, but will call it the "meta-center" which is a boat builder's term, but from the definition it seems to be the same point which has so often forced itself to the front and compelled me to use it as a base for noting results. I am sorry I did not know of the existence of such a term before.

It seems I cannot get an opportunity to prove that c. of cylinder problem, but here is an argument I want you to overthrow if you can. You say that in free motion there is no tendency for the surface to rotate around the c. of weight when coincident with c. of cylinder, but there is a tendency for the c of weight when coincident with c of cylinder to be rotated around the surface, i. e referring to this figure



supposing it to be moving freely through the air towards the right, that there is no tendency for surface a b to be forced around c, but there is, for c to be forced around a. b. Now, at b there is a force communicated to c (c of weight) in direction b c, at a the force is c a, the resultant of these forces is in the direction of the arrow, and I believe in every case is in direct opposition to the direction the object is moving, and tends to retard c, but since there is no tendency for the surface to rotate about c, the result is a retarding of the whole, and their relative position remain. And if the surface rotates around the coincident points c of w. and c of cyl. in falling as it has done for you, I believe it is from the same cause that makes a flat surface wobble when dragged down by a weight, for the relations of curvature between the surface and air currents may vary.

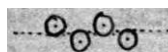
While with you last fall, I believe I heard Orville say he wondered how wire is straightened for use from the coil. I have, with a friend who works in the plating department, visited the Brook's establishment where bent wire forms are manufactured, hooks, screw eyes, etc, etc. They have some very interesting machinery, and I noticed two styles of wire straighteners in use, before introducing them the workmen told me they used to stretch the wire in the yard with a clamp and lever, in pieces the length of the yard.

The one kind it appears - (for I did not ask many questions concerning them) is used for wire that is being cut in short lengths, while another style was being used on longer wire, this one was straightening wire that was being formed into a piece like this



the shank being about 14 or 18 inches long, and I sighted along these wires to see how straight they are and they are not perfect but only bowed about 1/2 or 3/4 the diameter of the wire in that length. It was about a 14 guage I should judge.

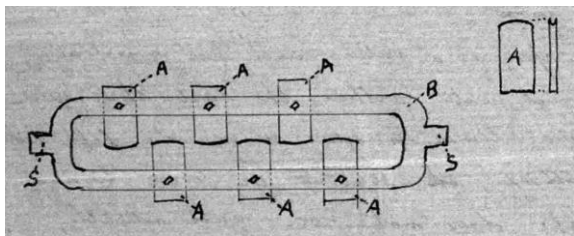
Well, the first style was two sets of grooved wheels arranged in this fashion



one set of four followed by four more, set perpendicular to these on the same line, and the wire drawn through them, each wheel presses the wire

out of a straight line and each wheel is adjusted to the right pressure by set screws. The principle seems to be to re-bend the wire.

The second style seems to be on the same principle but instead of wheels there are four or six flat metal plates or bars *A* with one end arched and grooved to receive the wire, and fastened very securely, with set screws and wedges into a revolving frame (*B*) this frame is mounted on hollow spindles *S*.



The wire is fed from the coil through the hollow spindles and through the grooves at the end of pieces *A* each one of which press the wire out of a straight line, and the feed of the machine drags the wire through while this is very rapidly revolving on its spindles. This straightener is enclosed in a cast steel chest with a snap latch lid, for if it should burst I expect the vicinity would be dangerous. I was careful not to ask too many questions, for while looking at a machine, which was making piano pins at a rapid rate and rounding both ends at the same time and tossing the finished pin into a box, I was approached and asked to give my past history in regards to mechanical lines, this I learned later was because the machine was new and I looked at it too long, when I found this out I offered to look at some of the old ones just as long. I do not know whether the straightener is a secret or not, I thought it best not to ask anything about it, and opened one that was not running to see what it was like. One of the men had before this noticed my curiosity and opened one for me while running and smiled when I could only see semitransparent rays of reflection in an otherwise empty chest, – it was a smile that implied there was a joke not far off. He seemed to have a pleasing satisfaction in showing me ‘how it worked.’ Ignorance is not bliss, but there are sometimes certain privileges that go with it.

I have sent a description of my proof that curved surfaces in straight winds and straight surfaces in curved winds give equal results etc, to Mr Langley. I sent it four or five days ago. I changed my mind about sending it so many times that it was very much delayed, and now I sometimes wish I hadn't sent it. I tried to make it interesting to him by hinting that it might explain some of that ‘lateral work of the Wind’ or at least have a relation to it. But since it is sent I anxiously await his reply, – and yet I suppose it makes little difference what that reply is.

I am accomplishing as little here as I would if I had stayed at home, but probably my time amounts to more in general, for the old folks here need some one to look after them, especially during winter weather, but I very much wish I had some tools and shop room, etc, etc, etc, etc.

My mother-in-law is an old lady (74) as spry as a kitten and has a cottage at the sea shore twelve miles from here, and until within the last three years walked the distance there and back several times a year when she felt like spending a few days or weeks in the cottage, she walked, or tried to walk last summer but gave out, and as she does not possess great wealth, objects to paying horse hire to be carried there and back, and besides this prefers to walk, and gather flowers and observe nature at her leisure, and when I told her that you were bicycle manufacturers, she was extremely anxious for me to enquire of you what a light tricycle could be obtained for, she weighs only 90 lbs. and thinks if she could only get a light weight tricycle either new or second hand she would be able to go the distance independent of all objections. She has been debating about the value of the ‘Duplex’ or some connecting bars for two bicycles and trying to get a companion to ride with her, – Are they practical? The roads here are splendid for such riding, they are graded and macadamized nearly everywhere. Do you make tricycles or ever run across second hand ones that might be suitable? And what are they worth?

We will probably return home in March, and begin the spring farm work.

With best wishes for your future success in all respects

Geo A. Spratt.

1904-07-23, G. A. Spratt, “Letter to Wilbur and Orville Wright”, Coatesville, PA, July 23, 1904, 2 pages.

Mr. Wilbur and Orville Wright

Coatesville, Pa, July 23, 1904

Dear Friends, –

Your letter came to hand some time ago, I had however given up all expectation of receiving another letter from you. I was pleased to learn of your trial direct from you, for I had seen a notice of a failure, in the Scientific American, and I was anxious to know the cause. And when you told me you were about ready for another attempt I kept watch of the cherry trees, especially those up along the road for they are large dark ones and the best eating cherries on the place, and I knew you would get the best if you came for them at all. But they are all gone now and you have not come.

We have been very busy with harvest lately, and father is having a new building 32' x 28' started, the carpenter work of which he expects me to do, and so very probably I will get nothing done in, aeronautical-work lines, however I have my mind on such things more than on the work about the farm, in fact that work has my heart and head and the farm claims my muscles, and I am always hoping for a change that will give me more opportunity for experiment, and I envy such strength and energy as you two display.

I am attempting to build a machine however and have ordered most of the material, maybe I will get it built and maybe I won't, but I am doing what I can in that line.

If I should happen to go to the ‘Worlds Fair’ I will visit you, but it will be a happen so if I go. I would very much like to see you in your shop and have a visit with you, and I thank you for the invitation, and if ever opportunity presents, I would be very much pleased to have you here whether you come by rail or air ship, walk, drive, or automobile.

Wishing you the best of success with your attempts

Your Friend

G. A. Spratt.

Add to my address R, F, D, I.

P.S. My husband, I see, has forgotten that I was included in your kind invitation to visit you, so I will just add my thanks and regrets. Hope we may have the pleasure of entertaining you both here some time, heaving heard so much about you I feel almost acquainted already.

Yours Sincerely

Mrs. M. Spratt

1904-08-16, W. Wright, “Letter to G. A. Spratt”, Dayton, August 16, 1904, 3 pages.

Dayton, O. Aug 16, 1904

Dear Dr. Spratt,

Your letter of July 25th received. Glad to know that you are still on deck. I had begun to worry a little when one of my letters was unanswered, and another seemed about to meet the same fate.

We have been quite busy for several months with our machine, but until recently most of our time was spent in taking out broken pine pieces and substituting spruce. I think I told you that we were unable to get spruce at the time we built this machine. Pine is utterly worthless for flying machines. Up to Aug 1st we had made but fourteen trials; since then we have made seventeen more. So far our longest flight is only 1304 ft. in 39¼ seconds, which though farther over the ground than our longest flight at Kitty Hawk is not its equal in duration of time or distance through the air. We are however working under much less favorable conditions so far as grounds and atmospheric conditions are concerned. We have found difficulty in getting satisfactory starts owing to the fact that the winds are usually very light by spells, and the new machine requires a higher relative speed for starting than the old one. It lifts at a speed of 23 or 24 miles an hour but the angle is so great that the resistance exceeds the thrust and the machine soon stalls. Between 25 and 30 miles it is a case of nip and tuck between them; but after the relative speed reaches 30 miles, the thrust exceeds the resistance and the speed accelerates till a velocity of forty five or fifty miles is reached. So far the highest speed attained is forty five miles, but it may exceed this when we get to making longer flights. We are proceeding very cautiously; and do not intend to attempt any thing spectacular until we know that it is safe, and that we know all of the machines peculiar tricks.

Please give our respects to Mrs Spratt and thank her for us for the kind invitation to visit your home. If convenient opportunity presents itself, it will give us great pleasure to accept it.

Yours truly

Wilbur Wright.

1904-08-28, G. A. Spratt, “Letter to Wilbur and Orville Wright”, Coatesville, PA, August 28, 1904, 3 pages.

Coatesville, Pa. Aug 28, 1904.

My dear Friends Wilbur and Orville, -

It seems that an explanation concerning our correspondence is in order. Did you never received a letter posted at Chester Ct. about the middle of last March which contained a description of a new idea I had for superposing surfaces; the result of my correspondence with Mr Langley; a description of the methods of straightening wire used in the Brook's shops; Asking you advice concerning tricycles in behalf of my Mother-in-law; and referring to the letter I had just previously received from you containing the copy of Mr Herring's letter,? - these will call it to mind if you receive it.

To this letter of Herring's I referred in a somewhat joking frame of mind, and have often wondered if I sent the letter and neglected to put in the frame, and you received it flat and had taken offence or distrusted me. I have resolved surely never to try to joke in a letter again, especially will I never send one of the dry kind, and no other kind unless of course extra good opportunity presents.

I also suggested a change in the position of your vertical tail to the wing tips and gave my reasons, which I have thought you might have considered an intrusion.

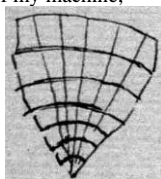
You may have answered this letter, however, if so I have never received it.

But letting the interval drop, for I have done very little excepting think, and occasionally testing a thought before a fan or with a hastily made model, I will let you know of the present.

I have spent more time at work on my full sized machine within the last few days than I expected to get for this work and have been making good time, the last two days my wife has been helping me put the machine together out on the barn floor. I have a pulley up in the comb of the barn and have my machine suspended at a convenient height by means of the hay rope and at night I pull machine tools, and pieces up next to the roof and the floor is clean and machine out of reach of man and chickens.

I am more thoroughly than ever convinced that my plan of placing the c. of weight, near the c. of construction of the arched surfaces is correct, for altho you say your model would not show it, mine do and there is a lack of clearness between us somewhere, and I am building the machine on such basis. Also I am placing my surfaces very close together, probably too close, but I cannot make a model accurate enough to prove anything in a wind of unknown velocity, and cannot regulate my wind, so I am risking the theory in the full sized machine, if too close I can cut out every other one.

This is a rough end view of my machine,



it is 7' 4" high 5' fore & aft \times 20' long. There are 7 surfaces each being arcs about the same center which is the lower spar and wires radiate from this center to support the surfaces. The surfaces are spaced, (the first 15" from lower spar, or center) 9" 10" 11" 13" 15" 15" each surface wider than the one below it. The c. of weight is to be brought, (by the placing of the weight of the operator), to a point above the center where the drift of the machine balances, which point is to be measured on a vertical line. The tail is also to be placed to the rear of this point.

But since you are not inclined to accept this theory I will not go into the detail of construction, unless you so desire, for it is only applying what we have already talked over, with the only outcome that you make me wonder why you do not get the results I do or see the thing my way, for nature is fixed and one of us is making a mistake, and since you are busily doing well it falls to me to find out which one of us it is, - of course too I think it's you, for I have no trouble with my models, they do just what I want them to, and act as I expect every time - but the superposing is a venture, I cannot prove it by models but I see nothing wrong with it, and I believe it involves a point that has never been tested.

We are building the machine upside down, and have the bottom spar hung to a stiff beam held by the rope and already have four surfaces attached, and if I can only get the time steady, probably two more days will see the body completed, - it is very slow work attaching so many little wires.

I am still inclined to believe I can operate it by fastening a line to a distant fence post, and I believe this design and adjustment of weight and pressure centers will render such a method of manipulation possible, and I have used much surface that I may obtain sufficient lift in low winds and

have slow movements of the machine to contend with, and drift will not be an objection inside a limit.

Wishing you success with your work

Yours

Geo A Spratt

1904-09-10, W. Wright, "Letter to G. A. Spratt", Dayton, September 10, 1904, 2 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company Sept 10 1904
1127 West Third Street	Dayton, Ohio,	

Dear Dr Spratt,

Your letter rec'd., and glad to know that you are still making progress. Your letter from Chester, Ct. was received all right. I answered it something like ten days or two weeks later, giving further ideas on the automatic stability of locating center of gravity at center of curvature; offering such assistance as we might be able to give in case you decided to apply for position at the Smithsonian Institution; stating that we had never made or sold bicycles of the style you inquired about and really knew too little to give competent advice; and inquiring the address of the Philadelphia lumber yard where you found spruce. This letter was inclosed in one of our regular envelopes and sent to Chester, Connecticut. As it never came back, I supposed it had been delivered, but from your letter I now infer that it was lost on the way. If so I am as sorry as you could be for the failure to get spruce led us to use pine spars and cost us fully a months time for three men in repairs.

You are quite right in relying on your own judgment about the stability of arcs loaded at the center of curvature. You, of course, have studied the matter more carefully than we have, and if the models confirm you in your view, you ought not give up your own opinion for that of another. I wish though that there was some easier way of testing the matter satisfactorily than building a large machine. I fear you will find it hard to handle so large a machine without the help of several men, and you will probably find exasperating wind conditions just when you want to do anything.

We have made forty five starts with our 1904 Flyer. Unless the relative speed at starting is 27 miles in a calm and two or three miles more than that in a wind, the machine will gradually slow down till unable to fly. After the relative speed passes thirty miles the velocity accelerates till a relative speed of 45 to fifty miles is reached. We found it difficult in practice to get a speed down the track greater than 20 miles an hour, so that unless we had a wind of about 10 miles we were not sure of being able to fly for a lull in the wind would let us drop below the real flying limit. As we were not ready to turn our backs to such a wind on account of the enormous speed in landing when going with the wind our flights have been confined to the length of our pasture field. We have made a number of flights between 1250 and 1450 ft long. We have now finished a starting apparatus which gives a speed at start of 27 miles an hour in a dead calm, and expect shortly to begin circling. With longer flights and less hauling the machine back, we hope to get more practice than heretofore.

With kind regards

Yours truly

Wilbur Wright.

1904-09-20, G. A. Spratt, "Letter to the Wright brothers", Coatesville, PA, September 20, 1904, 2 pages.

Coatesville, Pa. Sept. 20, 1904.

My dear Friends,

Yours of 10th received, glad you are having better practice, wish you the best possible success.

Frank C Gillingham & Son, Wholesale & retail Lumber, Norris & Richmond streets Phila. is where I got spruce. They had a limited supply of the best when I was there. He told me they got their spruce (that lot at least), by schooner, from West Virginia, and he had men always select those best plank, and they tried to have it in such grade always on hand, but it was exceeding scarce and sometimes they could not fill an order for it. I am sorry I was not on hand with this when first wanted.

I finished my first machine - the body of it - and looked at it and could imperfectly put my impressions in words, later I found them expressed perfectly by Emmerson in one of his essays where he speaks of life - "the details are melancholy."

I however loaded it onto a spring wagon and took it down into the meadow away from the buildings and guyed it to stakes, trusting that when the sun rose the wind would spring up, which it did.

Since then I have been negotiating with an Umbrella rib maker, having in prospect the use of them for ribs in building a flying machine – I am thinking of building one! – and meanwhile carefully making and testing models of the machine afore mentioned to see what it will do under certain conditions.

To be more accurate, the attachment of rib to wire is imperfect and the unequal strain caused the surfaces to loose their curve and concentric unison. As you predicted, – the wind was exasperating just when it could most exasperatingly be so, and the final mishap occurred as I attempted to reload it onto the wagon without assistance, when my head got tangled up between wind action, wagon spring action, plumb line from center of weight, and a good place to grab the framing quick, and before I could extricate it, the machine rolled off onto the ground, which considerably increased that defect due to ‘give’ and loss of shape.

There was only one puff of wind the whole day that lifted the machine unaided and held it clear from the ground and that occurred when I was several feet away with my back to it. I looked around, saw it moving off and upsetting, I ran, jumped up and caught it in the proper place, but the sudden jar also damaged it. – I will guess that an eight or ten mile wind will easily carry the machine.

I am very glad I built it, am paid for the trouble and know where to improve and why.

I will start the next one as soon as possible.

– I’ve got a big, healthy, lusty little youngster whose name is George –

Yours truly
G. A. Spratt.

1904-10-02, G. A. Spratt, “Letter to Wilbur and Orville Wright”, Coatesville, PA, October 2, 1904, 2 pages.

Mr Wilbur & Orville Wright Coatesville, Pa. Oct. 2, 1904.

Dear Friends, –

Some time ago I met Mr A H Reid proprietor of the cream separator works, bearing his name, and inventor of several articles of various uses. We have one of his separators, and he heard it was not giving satisfaction and came to inquire about it. The farmers wife told him I was building a flying machine, when he inquired for me, and this opened up the conversation on this line when he met me. I told him of our experiences at Kitty Hawk and of your work, but gave him no particulars. He is coming west in a short while and has asked me to give him an introduction by letter to you & Mr Chanute. This I have done, and I hope I hadn’t introduced any trouble or temporary difficulty to you.

He has a country home not far from here, and was raised from childhood near this locality, and as far as I can learn he is quiet, & unassuming, I have heard no accusations against him in any way and believe him to be honest and honorable. – report has it that he once tried to fly and was arrested by the city police, – he says experimentally he has had trouble with the travel of center of pressure – he doesn’t use that term tho, – he says the forward part of a flat surface is the valuable portion – and as I understand he wants to leave the latter part off but doesn’t just quite know how to do it and retain the forward part!

I tried to explain the travel of c of P. to him and loaned him some of my literature.

I told him we were all anxious to see the problem solved and were interested in anybody who was interested in the subject as a worker, that we were all willing to help anybody as best we could and that none of us had noticed any particular amount of over-fatigue from long flights.

I am sure you will be interested in his ideas for he is evidently an original thinker, and on many points is rather unwilling to believe himself in error.

However I had only met him twice to talk at any length, and I thought I would drop you this letter so you may know somewhat how to meet him.

He has a very simple and effective separator, I do not believe it can be beat.

Yours
G. A. Spratt.

1904-10-18, W. Wright, “Letter to G. A. Spratt”, Dayton, October 18, 1904, 2 pages.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	October 18, 1904.

Dear Dr. Spratt

Your letters of Sept 20 and Oct 2nd rec’d. Congratulations to yourself & Mrs Spratt on the birth of another George. Hope he will grow up with his heart as near the right place as his father’s.

We were much interested in your account of the trial of the large machine and regret that you did not get a more satisfactory test before the accident when loading it. It worries me to think of you trying to handle a large machine without adequate help. It is dangerous to both man and machine. Surely you can get the help or at least presence of some neighbors when you go out again. Very often the best chances slip past because it is impossible for one man to get ready in time to utilize it. If you wish to experiment with natural winds you must be able to act quickly.

Our own experiments are progressing satisfactorily, and we have had more practice during the past month than in all the rest of the season. We have gotten now so we can fly clear round the field and return to our starting place. So we make longer flights and do not have so much hauling to do. We have not tried any very long flights yet but as soon as we feel sure everything is just as we want it we will try a five mile trip.

If Mr. Reid gets out our way we will be glad to meet him and have a chat with him. We prefer however that you do not tell him that we are experimenting here, nor that we are making flights. We are not showing the machine nor letting the public know what is going on.

We thank you for the address of the Philadelphia lumber men. At present we have an abundant supply obtained direct from the mills in West Virginia, but may some time get into an emergency when a few pieces obtainable at once would be worth their weight in gold almost.

With best regards
Yours truly
Wilbur Wright.

1904-11-13, G. A. Spratt, “Letter to Wilbur and Orville Wright”, Coatesville, PA, November 13, 1904, 1 page.

Coatesville Pa Nov. 13, 1904.

My dear friends Wilbur & Orville,

I have delayed writing to you a little in the hope that I might get my machine finished and tried before writing, but with the other work it seems as tho I am making very slow progress. I am hardly averaging an hour and a half each day, but the work is moving along without any disagreeable surprises, that so often occur with my work except that in building another I see where I can improve so that the lines will come truer etc.

I hope you are making better progress and having better success with your work than I am having. You are perhaps noticing the paper accounts of the flights at the Exposition, – a gas bag machine is rather unhandy to catch a-foot when it runs away.

I am sorry I told Mr Reid you were experimenting near Dayton. He seemed to think he would like to go to a place such as Kill Devil hills, when I told him about that place as an experimental ground, and to let him know that he was at liberty to do so I told him you were not there and in this way, he was told, but I do not think any trouble to you will result, hope not anyway.

My Wife and I both thank you for your congratulations, and if I am permitted to believe what you say of the boy’s father, I believe there are three pretty good fellows studying the problem of flight.

Yours,
Geo A. Spratt.

1904-12-20, W. Wright, “Letter to G. A. Spratt”, Dayton, December 20, 1904, 1 page.

Wilbur Wright Orville Wright	Van Cleve Manufacturers of Bicycles	Established in 1892 Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	Dec 20, 1904.

Dear Dr Spratt,

We received yours of Nov 13th and were glad to know that you were prospering. We have finished our experiments for the year. Our longest flights were made on Nov 9th, Nov. 16th and December 1st being about four times around our practice ground twice, and two and a fourth rounds the other. The longest was three miles in five minutes and four seconds. We made one hundred and five starts during the season. We worked out a number of points that proved troublesome and think that our next years machine will be much better, and when we get to the point where we do not make changes every few days we will become sufficiently accustomed to management to make it safe to make some longer and higher flights. At the end of the season we were carrying close to 900 lbs and this reduced our speed as compared with flights earlier in the year. At first we had a speed above forty miles an hour. We went through the season without worse injury than a sprained finger which bothered Orville a week or two.

We are hoping that you succeeded in finishing your machine and securing satisfactory trials without accident.

With kind regards
Yours truly
Wilbur Wright.

1905-02-09, G. A. Spratt, "Letter to Wilbur and Orville Wright", Coatesville, PA, February 9, 1905, 1 page.

Coatesville, Pa. Feb 9, 1905

My dear friends Wilbur and Orville, -

Altho it is rather late in answering your letter, let me congratulate you on the success of your summer's experiments. I am glad of your success and feel confident you can do more next summer. I want to see you advance the work as rapidly as possible.

I have done almost nothing along this line for some time.

I have found that my conjecture that an arc of somewhere between 45° and 90° is not the arc that can give the most lift in a wind parallel to the chord, but what arc will give the most lift, irrespective of drifts, I am anxious to know, all the arcs I can make seem to be nearly the same value (with equal areas) in the wind which I have subjected them to, which is not an ideal wind however.

However since I have nothing new to report to you, the main object of writing is to let you know I am still in the land of living and hoping to see advance in this line of work.

All my time this fall has been used in putting up a new building which is as yet uncompleted, but as soon as opportunity presents I am going to finish and try my machine.

Yours Resp.
Geo. A. Spratt.

The technical characteristics of Flyer I, as sent to Carl Dienstbach and Lawrence Hargrave

1903-12-28, Wright brothers, "Letter to Carl Dienstbach", Dayton, December 28, 1903, 2 pages.

Wilbur Wright	Van Cleve	Established in 1892
Orville Wright	Manufacturers	
	of Bicycles	Wright Cycle Company
1127 West Third Street	Dayton, Ohio,	Dec. 28th, 1903.

Mr. Carl Dienstbach, New York.

Dear Sir:

Your letter of the 19th inst, was awaiting us on our return from Kitty Hawk. We have given out no description or photographs of our "flyer", and the account given in the dispatch from Dayton, that you read, probably came nearer to the truth than the other accounts. On the morning of the 17th inst. we made four flights, my brother and myself each making two. The wind at the time of the trials was blowing a little over twenty miles an hour according to our measurements, in which we made an allowance of a little over 10 per cent, as we believe our anemometer over records by about that amount. The Government anemometer at Kitty Hawk recorded from 24 to 27 miles per hour at the time of our trials. We started all four flights from the level, and not from the side of a hill as we had formerly done with our gliding machines. The machine was given no assistance in starting, and depended entirely upon the power of the engine and the thrust of the propellers to give its initial speed. After a run of 35 to 40 feet on the monorail, which held it only eight (8") inches from the ground, the "flyer" rose gradually from the track and by the time it had gone 50 to 75 feet it

would reach a height of about ten feet from the ground. From this on the machine was kept on as even a course as possible, but on account of the gustiness of the wind it sometimes rose suddenly much higher, and sometimes almost struck the ground. Our measured speed over the ground directly against the wind was ten miles per hour, which, added to the speed of the wind, gave us a speed through the air of 31 to 35 miles per hour.

We used a four cylinder engine (4" x4") of the four cycle type of our own design and construction. The engine speed while in flight was about 1035 turns to the minute on account of the gears used, and was not the maximum power of the engine. We had no propellers either below or above the machine to give it lifting power, but depended entirely upon two aero-curves, superposed, for that purpose. We used two air propellers, placed at the rear of the surfaces, to propel the machine forward. The weight of the machine and operator was 745 lbs. The area of the main lifting surfaces was 510 sq. feet. Our methods of control are entirely different from those used Lilienthal, Pilcher or Chanute, and were found to be equally effective in large and small machines. Our longest flight was 59 seconds from the time of lifting from the rail to that of landing. (Incorrectly stated 57 s. in many of the daily papers.) Only those who have had actual experience in the air can appreciate the significance of the fact that the first trials of our successful machine were made in the midst of a gusty wintry gale.

Yours truly,

1904-01-28, W. Wright, "Letter to Lawrence Hargrave", Dayton, January 28, 1904, 4 pages.

Mr. Laurence Hargrave

Dayton, Ohio, Jan. 28, 1904.

Dear Sir:

Your letter of some months ago came while my brother and I were in camp at Kitty Hawk, which is nearly a thousand miles from here. We were there from the latter part of September till almost Christmas time. We continued our experiments with our 1902 gliding machine, giving special attention to attempts at soaring on the face of the Kill Devil hill in a winds of 20 to 30 miles an hour. We frequently stood almost still for a half minute at a time, but as it was necessary at times to move forward a little in maneuvering we would after a time pass out of the rising current. As we did not feel it safe to allow the machine to float back again, we were of course compelled to land. The longest flight was one minute and twelve seconds.

Most of our time was taken up with the construction of a machine of 510 sq. ft. on which we mounted a gasoline motor. The total weight of the apparatus was about 600 lbs, and including the operator 745 lbs. The machine was finished so late in the year that we made only such trials as were necessary to determine whether the machine possessed the power of flight, and a capacity of control such as would make it reasonably safe in operation. As imaginative newspaper men have sent out some very incorrect statements regarding these trials, I take pleasure in sending you a statement which we have ourselves given out. When the warm weather returns we shall try to obtain further practice, and make longer flights.

I presume that this time of year is much more favorable for experimenting on your side of the earth than on this and that we may soon hope to hear of your further progress.

With kindest regards, in which my brother joins me, I am,

Yours truly
Wilbur Wright.

Wright brothers - C. Dienstbach correspondence, Aug. 24, 1904 - Nov. 17, 1905.

1904-08-24, Carl Dienstbach, "Letter to Bishop Milton Wright", Orange Lake, August 24, 1904, 1 page.

Illustrierte Aëronautische Mitteilungen.
Deutsche Zeitschrift für Luftschiffahrt.
Organ des Deutschen Luftschiffer-Verbandes und des Wiener Flugtechnischen Vereins.
——— Monatliche Fachzeitschrift ———
für alle Interessen der Flugtechnik mit ihren Hilfswissenschaften, für
aëronautische Industrie und Unternehmungen.

Chef-Redakteur: K. NEUREUTHER, Generalmajor z. D.

Orange Lake, den 24^{ten} August 1904

The Right Rev. Bishop Milton Wright

7 Hawthorne Street

My dear Sir,

Dayton Ohio.

As I suspect that your sons Wilbur and Orville are at present again away from Dayton, I am taking the liberty of addressing to you the enclosed letter to them with a translation of two articles I had the honor to write as their memorable success of last December for the Ill. Aëron. Mitt., and requesting, to kindly have it forwarded to them.

With best thanks in advance and hoping to have soon again the honor and the pleasure of recording their success I have the honor to remain

Yours very respectfully
Carl Dienstbach.

1904-08-24, Carl Dienstbach, "Letter to Wilbur and Orville Wright (attached to the letter to Bishop Milton Wright).", Orange Lake, August 24, 1904, 2 pages.

Orange Lake, den 24^{ten} August 1904

Messrs. Wilbur and Orville Wright

Dear Sirs:

Dayton, Ohio.

Enclosed please find the translation to my two articles on your memorable success last December in the Ill. Aëronaut. Mitteil. I had the honor of sending you some while ago. You may see therein, that they attach more importance to your achievement, than probably anything else which has so far appeared in print on the subject. At the same time they are correct and substantial.

I most sincerely hope that you are getting along well in this season's experiments, and that the silence the press has so far observed with regards to them, will only serve to put into still bolder relief an eventual public appearance of your machine at the St. Louis contest. I take the liberty of enclosing a paper dealing with the forthcoming International Aëronautical Congress. I am rather certain that you have heard about the latter from other sides, but, as I was requested to circulate the papers, and as the affair is an international one concerning us Germans just as much, I think myself justified in doing so. Any communications as to your recent enterprises you may care to give to our paper, where they are certain to find a sympathetic, fair and truthful as well as discreet rendering, kindly address to my New York address 35 W 118th Street. With the hope that it will not take you much longer to thoroughly work out and make reliable under all circumstances the details of your machine and wishing best success, I have the honor to remain

Yours very respectfully
Carl Dienstbach.

1904-12-21, O. Wright, "Letter to Carl Dienstbach", Dayton, December 21, 1904, 2 pages.

Dayton, Ohio, December 21, 1904.

Mr. Carl Dienstbach, New York.

Dear Sir:

Your letter of August 24th, inclosed in a letter to father, arrived in Dayton while father was away from the city for several months and having been misplaced, was only delivered to him lately.

We thank you for the translations of the articles you wrote for the Illustrierte Aeronautische Mitteilungen concerning the flights of our Flyer at Kitty Hawk last December. We read German with difficulty, and the translation has been a great convenience to us.

Through the courtesy of our local newspaper reporters, we have been enabled to carry on our experiments this year within a short distance of our city without the knowledge of this fact becoming generally known.

We have made some flights in every month since June, excepting July. Our early flights were limited by the fact that we did not desire to go outside of the field in which we were located and that we did not consider that we had had sufficient practice to attempt turning the circle. It was not until the 15th of September that we changed our course from a straight line to a curve, which enabled us to cover a distance of about a half mile. On the 20th of September we made our first complete circle and returned to the starting point after having covered a distance of about 4300 feet over the ground, and 4900 feet through the air as recorded by a Richard's anemometer attache to the Flyer. The greater distance recorded by the anemometer was due to the wind blowing at the time of the trial. The record of the anemometer in flights made in calm air has always agreed almost exactly with the distance measured over the ground. The two longest flights of the season were made on the 9th of November and the 1st of December. In each

of these flights we made almost four complete circles and covered a distance of a little over four and one half kilometers, at a speed of about 35 miles an hour. In the flight of November 9th a weight of 50 lbs. (iron bars) were carried in addition to the weight of the operator; in the flight of December 1st, 70 lbs.

Some of our flights have been made at a speed of over 40 miles an hour through the air and about 50 miles over the ground when traveling with the wind. Some landings were made when traveling over 40 miles an hour. The flight of Nov. 9th had a duration of 5 min. and 4 seconds; that of December 1st 4 min. and 52 seconds.

We made no attempts at spectacular flights, rarely going more than 30 or 35 feet above the ground.

Although 105 landings were made during this seasons' experiments the machine has suffered serious damage only a few times and these in flights in which the landing was accidental and not premeditated. Flight after flight has been made without any damage to the machine whatever.

Again thanking you for your courtesies, we remain,

Sincerely yours,
Wilbur & Orville Wright O.W.

(The greater part of the time in making a circle in a wind is consumed in traveling against the wind.)

1905-02-02, Carl Dienstbach, "Letter to Orville and Wilbur Wright", New York, February 2, 1905, 2 pages.

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aëronautische Industrie und Unternehmungen.
Chef-Redakteur: K. NEUREUTHER, Generalmajor z. D.

New York, den 2^{ten} Februar 1905

35 W 118th Street

Messrs. Orville and Wilbur Wright

Dayton Ohio

Dear Sirs,

Accept please my sincerest thanks for your kind news and my heartfelt congratulations for your truly wonderful success, which has given me many a happy hour and came, just at that time like a splendid, wonderful personal Xmass present to me. I am very sorry not to have answered you before and am almost at a loss what excuse to offer, the fact is that I was indeed much occupied and disturbed since I got your kind letter, partly even by "circumstances beyond my control." I have translated your account verbally and faithfully as it was impossible to improve upon it and sent it with a suitable introduction to our paper under the heading: "Das erste Lebensjahr der praktischen Flugmaschine" ("the first life-year of the practical flying machine"). It will appear in the issue of this month, and I shall of course send you the paper immediately with a translation of the introduction. — Through Professor A. F. Zahm in Washington I got an invitation from the secretary of the "American Association for the advancement of science" to read a paper before its engineering section on its convention in Philadelphia in December as "lines of progress in aëronautics." Therein I gave a historical and critical review of all the important steps toward the final practical accomplishment of mechanical flight, starting with Lilienthal and ending with your wonderful news. It is needless to say, that the latter stirred the large audience to enthusiasm. As it was not very feasible to condense my paper into a small note and as on the other hand Prof. Woodward had said a good deal about aërial navigation in his presidential address (though from a standpoint you would hardly appear of, I believe) and in a form rather convenient for publication, the contents of my paper did not get into the daily papers reports, at least not those I have seen.

But I had a generous applause and Prof. Woodward and Prof. Rotch said some rather nice things. Prof. Zahm just wrote me: "Be sure to have it (the paper) well published; then continue to give us other papers. We need another Chanute to continue the critical history of aëronautics and you have now the mantle, which I hope you will wear with equal renown." In conclusion I should like to ask a favor of you: Do you have objections against letting me have your photographs? It is now the most natural thing, that we should have them in the "I. A. M." And by the way, photo's are there wonderfully reproduced, those of my St. Louis pictures are in

reproduction far better than the originals. We should thank you very much for your photo's. Wishing you the best of luck and thanking you again I remain

Yours very faithfully
K. Dienstbach.

1905-05-01, Carl Dienstbach, "Letter to Wilbur and Orville Wright", New York, May 1, 1905, 2 pages.

Illustrierte Aëronautische Mitteilungen.
Deutsche Zeitschrift für Luftschiffahrt.

Organ des Deutschen Luftschiffer-Verbandes und des Wiener Flugtechnischen Vereins.

——— Monatliche Fachzeitschrift ———
für alle Interessen der Flugtechnik mit ihren Hilfswissenschaften, für
aëronautische Industrie und Unternehmungen.

Chef-Redakteur: K. NEUREUTHER, Generalmajor z. D.

New York, den 1^{ten} Mai 1905

Messrs. Wilbur & Orville Wright
1127 West Third Street

Dayton, Ohio

Dear Sirs:

Enclosed please find a translation of my article in the March issue of our "Illustrierte Aëronautische Mitteilungen" as far as it does not ably contain a literal translation of your own account of your admirable accomplishment. I have to beg your pardon most sincerely for being so late in keeping my promise in my last letter; I am very sorry indeed, but could hardly help it, as there were some unfortunate impediments.

I have been trying my best to present your kind news – certainly in a most prominent place – with all the importance that I attach to them myself, even backing them by the opinion of another well known experimenter. An account of my little lecture in Philadelphia end of last year, where they take such an important place, is to be found in "Science." With the same mail I am sending you a copy of the March issue.

Wishing that these fine and early spring days may find you at successful and grateful work I remain

Yours most respectfully
Carl Dienstbach.
39 W 118th Street, New York City.

P. S. It might perhaps interest you to learn that Prof. A. F. Zahm in Washington is now continuing his valuable investigations of which he gave such a very interesting account at the St. Louis Fair – It is needless to say how much we should appreciate being favored by any news, however about, about the progress of your fascinating work. C. D.

1905-05-01, Carl Dienstbach, "The first life-year of the practical Flying machine (attachment to the May 1, 1905, letter).", 7 pages. (English translation, for the Wright brothers, of Dienstbach's article: "Das erste Lebensjahr der praktischen Flugmaschine", Illustrierte Aëronautische Mitteilungen, March 1905, pp. 91-93.)

The first life-year of the practical Flying machine.

A witness of the indescribable enthusiasm, with which once in merry France were greeted the first trips of human beings through the air, was Benjamin Franklin. When then the great question was asked of him: "What will be the consequences of the invention of this balloon, that accomplishes such incredible flights" he gave the, even at that distant date generously American clever answer "it is a newly born child." Today we are happy enough, to have amongst ourselves another child, the first birthday of whom we ever could celebrate as the 17th of December 1904: the real birdlike, fast like an arrow, manageable, mighty motor-flying machine, which even a year ago likewise carried human beings in free flight through the air for a great distance, but not, like then in France, with the gentle summer breeze, but against a grim, icy, wintry gale. And twice happy we are, being able to say today, that that "child" has in the meantime, grown not only in age, but also in more than corresponding degree in wisdom and even gives the promise to stand before our eyes within hardly more than another year as a fairly matured product, as an "obedient bird Rock" with all of its yet so unaccustomed and unforeseen consequences.

These are certainly surprising news. But even for the most unbelieving nothing further is required, but to hear the inventors (the Wright brothers) talk themselves, whose modest, substantial account shows everywhere to

such a degree the stamp of ability and truth, that it certainly has to be presented in a verbal translation: -----

Mr. A. M. Herring exclaimed at these news in deep emotion: A magnificent success! And no wonder! Are these not for more splendid results, than Maxim, Langley or Hargrave ever dared to expect in the beginning? Still they are only the most natural consequence of all the fundamental experiments. What an advantage is offered for the operators practice by a flight of 5 minutes duration in place of the short, continually interrupted glidings, is easily comprehended.

Vivant sequentes!

D.

1905-05-05, O. Wright, "Letter to Carl Dienstbach", Dayton, May 5, 1905, 1 page.

WILBUR WRIGHT **WRIGHT CYCLE COMPANY** ESTABLISHED IN
ORVILLE WRIGHT 1127 WEST THIRD STREET 1892
DAYTON, OHIO

Mr. Carl Diensbach, 39 W. 118th Street, New York.

Dear Sir:

We have your letter containing the translation of your article in the March "Aeronautische Mitteilungen", as well as the copy of that paper which you were so kind as to send us, for both of which we thank you.

We would take great pleasure in learning more of your address at Philadelphia last December. Can you inform us as to what number of "Science" contained an account of it, so that we may procure a copy?

On account of business we will be late this year in taking up our out-door experiments, but if we succeed in accomplishing anything that would be of interest to you or the readers of your paper, we will be pleased to inform you.

Very truly yours, *Wilbur and Orville Wright*
O.W.

1905-05-10, Carl Dienstbach, "Letter to Wilbur and Orville Wright", New York, May 10, 1905, 2 pages.

New York, May 10th 05
39 W 118th Street

Messrs. Wilbur and Orville Wright,

Dear Sirs:

Best thanks for your kind letter of the 5th inst.

My article in "Science" has not yet come out but as soon as it appears I shall have the pleasure of sending you a copy at once.

With the best of wishes for your, as I much hope, soon forthcoming experiments

in haste
Yours Very respectfully
Carl Dienstbach

P. S. Thank you ever so much for the promised news.

1905-07-25, M. Wright, "Entry for July 25, 1905", Bishop Milton Wright's diary, Dayton, July 25, 1905.

Tuesday, July 25

At home all day. Carl Diensbach dined with us. I wrote several letters.

1905-07-28, Carl Dienstbach, "Letter to Orville and Wilbur Wright", Cincinnati, July 28, 1905, 4 pages.

(Cincinnati 1905) Prob. July 28 [note of the Wright brothers]

Messrs. Orville & Wilbur Wright Dayton Ohio
Dear Sirs, -

Allow me first to thank you most sincerely for the extremely pleasant time I had when seeing you last Tuesday. I only regret, that my nerfs are not in first class condition at present and that I consequently become a little tired in the end and so was not able to enjoy meeting Mr. M. Wright so much as I should have otherwise. And I am rather afraid that by the same reason I was somewhat imposing on you – taking too much of your time – as I was not fully able to fully avail myself of the rare opportunity of talking to you personally and still found it hard to end that fascinating interview.

I have to tell you something about me. My profession is half in the technical and half in the musical line as I am connected with the pianola Co in New York. At present for a change I am traveling with a military band

that is now playing in the Zoo here, where I play the accompaniments for the two vocal soloists as the piano, rehearse with them, arrange music etc.

I hear that the band will be next Sunday in Dayton and as in thinking over our conversation, I remembered well all its subjects, but found that I had after all forgotten a few figures and the like, I should thank you very much indeed for granting me the great pleasure of seeing you once more next Sunday for just a few minutes, when I may get that advice once more, to better remember it. It would indeed be a great pleasure, as last Tuesday I did not feel quite myself and consider it a great chance indeed to have been able to meet you. I should call probably the middle of the day.

Thanking you again
Yours Very Sincerely
C. Dienstbach

(In haste)

P. S. I have already informed our editor that you did not wish to have people know much about your work. C.D.

1905-07-29, Carl Dienstbach, "Postal Card to Orville and Wilbur Wright", Cincinnati, July 29, 1905.

Messrs. Orville & Wilbur Wright
1127 West Third Street
Dayton Ohio

Kindly deliver at residence if shop is closed
Cincinnati, Sat. July 29, 1905 [note of the Wright brothers]
D. S.s.,

Kindly excuse the card which I am writing in all haste trying to let you know in time that the plans have been changed and I shall to my great disappointment not be able to call on you tomorrow. About my questions I beg your kind permission to write.

Very Sincerely Yours
Carl Dienstbach

1905-11-17, O. Wright, "Letter to Carl Dienstbach", Dayton, November 17, 1905, 2 pages.

WILBUR WRIGHT ORVILLE WRIGHT	WRIGHT CYCLE COMPANY ESTABLISHED IN 1127 WEST THIRD STREET DAYTON, OHIO	1892
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November 17th, 1905.

Dear Mr. Diensbach:-

A good deal of doubt seems to exist in Europe as to whether there is any truth in the reports that have been made concerning our flights of 1903 and 1904; and it is not at all surprising, under the circumstances, since there has never been any account of any one having seen them, except the inventors themselves. There have been a number of witnesses to every flight we have made in the last three years. The flights near Kitty Hawk were seen by nearly all the men at the U. S. Kill Devil Life Saving Station, who were present, and by the Captain of the Kitty Hawk Station, who viewed the flights through a glass. The flights in 1904 were witnessed by the farmers on the surrounding farms, besides a number of citizens of Dayton, whom we had invited. Mr. A. I. Root, of Medina, Ohio, was also present a number of times, and wrote an account of what he saw for his Journal, "Gleanings in Bee Culture", for January 1st, 1905.

The longer flights this year were witnessed by a number of citizens of Dayton, among whom were Mr. Torrence Huffman, President Fourth National Bank; Mr. C. S. Billman, Secretary West Side Building & Loan Company; and Mr. Edgar W. Ellis, Assistant Auditor of City of Dayton. If you or the Editor of your journal wish to make a personal investigation of the matter, we have no doubt any of these gentlemen would take pleasure corroborating the fact that they were present when flights of fifteen to twenty-four miles were made. We would not want their names published, as they would no doubt be flooded with inquiries. None of these gentlemen have any financial interest in our machine, either directly or indirectly.

Respectfully yours,
Wilbur and Orville Wright.
Per. O. Wright.

We are sending you under separate cover copy of Gleanings of Jan. 1st 1905.

Articles by C. Dienstbach, 1904 - 1905

1904-03, Carl Dienstbach, "Die Erfindung der Flugmaschine." and "Der Motorflug der Gebrüder Wright.", Illustrierte Aëronautische Mitteilungen, March 1904, pp. 97-100.

Flugtechnik und Aëronautische Maschinen.

Am 24. Januar ging der Redaktion von unserem Berichterstatter in New-York Nachstehendes zu:

Die Erfindung der Flugmaschine.

Am Vormittag des 17. Dezember 1903, zwischen halb 11 und 12 Uhr, ist eine viertel englische Meile nordöstlich von dem Kill Devil-Sandhügel bei Kitty Hark in Dare County, Nordkarolina, in den Vereinigten Staaten von Nordamerika, ein weltgeschichtliches Ereignis eingetreten: die erste wirkliche Flugmaschine ist geflogen!

Eine dynamische Flugmaschine mit einem Passagier an Bord, ohne irgend welche Art von Gasballon, mit Motor und Brennmaterial für einen stundenlangen Flug, ist mit einer Eigengeschwindigkeit von 14 bis 16 m die Sekunde gegen einen Wintersturm voller Windstöße von 10 bis 11 m die Sekunde vom ebenen Boden aus und über ebenen Boden eine Strecke von 250 m weit vorwärts geflogen, auf eine Weise, die diesen Flug ebenso erstaunlich macht, wie es einer von der zehnfachen Länge gewesen sein würde. Denn seine Dauer wurde weder durch einen Unfall, noch durch Unfähigkeit, die Balance zu bewahren, noch viel weniger durch Mangel an Flugkraft begrenzt, sondern lediglich durch die Unerfahrenheit des Steuermanns, der bei dieser neuen, unvertrauten Maschine einer mit den Umständen verknüpften besonderen Schwierigkeit noch nicht gewachsen war. Die letztere ist sehr leicht erklärt: Es war das begreifliche Bestreben vorhanden, die Maschine dicht über dem horizontalen Boden hinfliegen zu lassen, um etwaige Unfälle unmöglich zu machen. Der heftige stoßweise Wind suchte jedoch den Apparat ebenso zu heben und zu senken, wie er es einst mit jenem Lilienthals getan hatte. Darum war der erste der vier Flüge, die gemacht wurden, sehr unregelmäßig und kurz. Beim zweiten gelang es schon besser, durch Steuerung das unbeabsichtigte Steigen und Sinken zu bekämpfen, und beim vierten ward die bis dahin für einen Flug mit Passagier ohne Ballon unerhörte Dauer von 59 Sekunden erreicht, ehe der Apparat nach dem Überfliegen eines Sandhaufens mit Gebüsch, bei dem Bestreben, wieder in größere Nähe zum Boden zu kommen, durch eine kaum meßbar geringe Übertreibung in der Steuerung in allzu große Bodennähe, d. h. zum unbeabsichtigten Landen gebracht wurde, dann kam die nötige Rücksteuerung nach oben um einen kleinen Bruchteil einer Sekunde zu spät.

Die beneidenswerten Erfinder, deren Name so mit dem Entstehen der wirklichen Flugmaschine für immer verknüpft sein wird, sind die Brüder Orville und Wilbur Wright, Söhne des Bischofs Milton Wright in Dayton-Ohio. Es war ursprünglich nicht beabsichtigt, die ersten Versuche der Motorflugmaschine unter solch außergewöhnlichen Umständen von Jahreszeit und Wetter vorzunehmen, doch wünschten die Erbauer vor Abbruch ihrer Arbeiten für den Winter die Leistungsfähigkeit des Motors sowie die Festigkeit des Aufbaus auf die Probe zu stellen, und das Resultat war die plötzliche Geburt der seit Jahrtausenden ersehnten wirklichen Flugmaschine als Weihnachtsgeschenk an die Menschheit im Jahre 1903, die Eröffnung eines neuen Zeitalters für die Luftschiffahrtsbestrebungen und die endgültige Entscheidung vieler erbitterter Meinungskämpfe.

Die Stellung, welche dieses große Ereignis in der Geschichte der Flugtechnik einnimmt, ist die folgende: Erstens ist festzustellen, daß der wirkliche erste freie dynamische Flug eines Menschen im Jahre 1898 von A. M. Herring in St. Joseph am Michigansee ausgeführt und nur durch die Mängel der Betriebskraft auf 9 Sekunden beschränkt wurde, zweitens ist das jetzige Ereignis die direkte Fortsetzung der von Maxim in Baldrins Park, Kent, England im Jahre 1894 abgebrochenen Versuche. Wenn damals Maxim das nötige freie Versuchsfeld besessen und an einem schönen, ruhigen Sommertag es gewagt hätte, seine Maschine freizugeben und das Geleise zu verlassen, und nach einem Flug von ansehnlicher Länge unbeschädigt und sicher gelandet wäre, so würde die Erfindung der Flugmaschine mit nicht wenig Nachdruck über die ganze Welt hin verkündet werden sein: hier haben wir aber eine Maschine, die an einem stürmischen Wintertag gleichfalls, zunächst von einem Geleise einen jedoch nur ganz kurzen Anlauf nimmt, dasselbe dann verläßt und frei in der Luft sich in die Höhe ringt, bis sie sich 2½ m über dem Boden befindet, dort der Laune des Wintersturms ausgesetzt ist, der sie auf und niederwirft, aber

weder umzukippen, noch aufzuhalten, noch aus ihrer Richtung zu bringen vermag, weil seine Angriffe durch die Steuerung abgewiesen werden.

Da es dem Verfasser gelang, über all dieses durchaus zuverlässige Nachrichten zu erhalten, so fühlt er sich mit Freude berechtigt, heute zu sagen: Die Flugmaschine ist erfunden! Wir können fliegen!

Gleichzeitig dürfte es sich aber ziemen, des Mannes zu gedenken, der doch das Größte vollbracht hat, um diesen endlichen Triumph zu ermöglichen, der für den Flug das erlösende Wort aussprach: «Im Anfang war die Tat!», und der dieser «Tat» sein Leben opferte: unseres unvergeßlichen Otto Lilienthal! Herring und die Brüder Wright haben das von ihm hinterlassene Vermächtnis wohl anzuwenden gewußt!

Dienstbach.

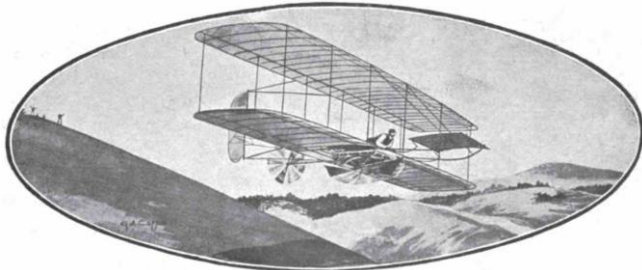
Der Motorflug der Gebrüder Wright.¹⁾

Ein vorläufiger Bericht über den entscheidenden Erfolg der Gebrüder Wright wurde bereits geliefert und das Nachstehende möge als Beweis dafür dienen, daß derselbe mit Recht ein «weltgeschichtliches Ereignis» genannt wurde.

Der Winter hatte auch im Süden der Vereinigten Staaten, in Nordkarolina, bereits im Ernst eingesetzt, als Mitte Dezember 1903 dort an der bekannten Versuchsstelle der Gebrüder Wright, by Kitty Hawk in Dare County, deren erste große Motorflugmaschine fertig geworden war.

¹⁾ Der Artikel ist am 9. Februar als Ergänzung des vorhergehenden eingelaufen. D. R.

Es war dies ein mächtiger Apparat, in der Form sehr ähnlich den früher gebauten Gleitmaschinen, doch mit einem Gewicht von 272,15 kg, mit zwei übereinandergeordneten Aërokurven von zusammen 47,38 qm Tragfläche, mit zwei hinter den Aërokurven gelegenen Propellerschrauben¹⁾ und mit einem Viertakt-Benzinmotor mit vier Zylindern von je 10 cm Durchmesser und 10 cm Kolbenhub. Die Erfinder hätten zwar lieber die Versuche auf eine günstigere Jahreszeit verschoben, doch waren sie entschlossen, noch vor ihrer Rückkehr nach Haus in Erfahrung zu bringen, ob die Maschine genügende Kraft zum Fliegen besitze, hinreichende Festigkeit, um den Stoß beim Landen aushalten zu können, und genügende Kontrollierbarkeit, um den Flug in heftigen Winden so sicher zu machen, wie in ruhiger Luft. Darum ward auf dem horizontalen Sandboden über 400 m von den Hügeln entfernt, von denen herab die früheren Gleitflüge stattgefunden hatten, ein kurzes einschießiges Geleise gelegt, auf dem die Maschine nur 20 cm über dem Boden ruhte, und in der Zeit zwischen halb 11 Vormittags und 12 Uhr Mittags wurden am 17. Dezember von diesem aus, direkt gegen den Wind, vier Flüge ausgeführt, zwei von Wilbur und ebensoviel von Orville Wright. Es war vorher bestimmt worden, daß im Interesse der persönlichen Sicherheit diese ersten Versuche so nahe wie möglich am Boden stattfinden sollten. Das offizielle Anemometer in der meteorologischen Regierungsstation zu Kitty Hawk registrierte um 10 Uhr eine Windgeschwindigkeit von 12,4 m die Sekunde und um 12 Uhr eine solche von 10,3 m in 30 Fuß Höhe vom Boden. An der Versuchsstelle selber wurde in 4 Fuß Höhe vor dem ersten Flug eine Geschwindigkeit von 10,4 m und vor dem letzten eine solche von 9,1 m gemessen.



Skizze der Wright'schen Flugmaschine aus "New-York Herald", 17. 1. 04.

Die Maschine lief nur mit ihrer eignen Kraft eine Strecke von etwa 14 m auf dem Geleise, hob sich davon ab und bewegte sich unter der Leitung ihres Passagiers etwa 25 m weit schräg nach oben, bis sie sich in einer Höhe von etwa 3 m befand. Dies bewies, daß, obgleich ein am Motor angebrachter Meßapparat nur 1030 Umdrehungen die Minute bei der angewandten Übersetzung anzeigte, und der Motor keineswegs seine Maximalkraft entwickelte, ein Überschuß an Tragkraft vorhanden war. Die Steuer waren viel größer, wirkungsvoller und sensibler als bei den früheren Gleitmaschinen. Es fehlte zunächst noch jede Erfahrung in ihrer Handhabung. Die Flughöhe von nur drei Metern erwies sich als zu gering

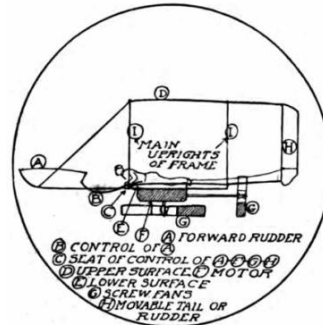
zum Manövrieren. Der erste Flug nahm einen sehr unregelmäßigen Kurs im Verhältnis zum Boden. Infolge der Windstöße erhob sich die Maschine manchmal hoch in die Luft und manchmal stieß sie fast auf den Grund auf. Die folgenden Flüge nahmen an Stetigkeit und Länge in dem Grad zu, in welchem die Führer sich an den Gebrauch der Steuer gewöhnten, und beim vierten, der vom Augenblick an, wo das Geleise verlassen, bis zu dem, wo der Grund wieder berührt wurde, 59 Sekunden dauerte und sich über 259,80 m erstreckte, verfolgte die Maschine einen recht gleichmäßigen Kurs bis zu dem Moment, wo sie gerade einen Sandhaufen passiert hatte, der sie zum Höhersteigen veranlaßte.

¹⁾ Nach anderen Quellen wäre eine der Schrauben als Hubschraube unter der Flugmaschine angebracht, so daß nur eine als Propeller dient, wie die hier beigegebenen Skizzen zeigen. D. R.

Beim Bestreben, sie wieder herab zubringen, wurde das Ruder zu weit gedreht. Die Maschine machte eine plötzlichere Schwenkung nach unten, als der Führer erwartet hatte; die umgekehrte Bewegung des Steuers kam ein wenig zu spät, um sie noch vom Berühren des Bodens abhalten zu können. Die Geschwindigkeit der Maschine im Verhältnis zum Boden betrug 4,47 m, durch die Luft von 13,41 zu 15,65 m per Sekunde. Bei allen Flügen fuhr sie dem Wind direkt in die Zähne, nahe über horizontalem Boden hin. Das Landen nach 59 Sekunden Flugdauer war nur das Resultat eines «slight error of judgement» seitens des Führers. Dieses ganze letzte Steuermanöver nahm wenig, wenn überhaupt mehr, als eine Sekunde in Anspruch.

Nur solche, welche mit der praktischen Aëronautik vertraut sind, können es würdigen, was es heißt, die ersten Versuche einer neuen Flugmaschine in einem Sturm von 11,18 m die Sekunde vorzunehmen.

Nachdem genügende Flugkraft, genügende Festigkeit und Kontrollierbarkeit endgültig festgestellt worden waren, packten die Erfinder sofort ihre Sachen zusammen und kehrten nach Haus (Dayton Ohio) zurück, mit dem Bewußtsein, daß das Zeitalter der Flugmaschinen nun endlich angebrochen sei. Wenn man sich die endlose Chronik von Beschädigungen und Unfällen bei Flugversuchen zurückruft, so atmet man förmlich auf, wenn man hört, daß die Wrightsche Maschine viermal mit voller Maschinenkraft von weit über 10 realen P. S. auf den Boden aufstriefte, ohne im geringsten darunter zu leiden. Dieses Verdienst ihrer Erfinder kann garnicht hoch genug veranschlagt werden. Noch niemand kam vor ihnen auf den einfachen Einfall, die Flugmaschine für den einzelnen Passagier gerade so groß und schwer zu bauen, daß ein derbes, festes Ding daraus würde.



Skizze der Wright'schen Flugmaschine aus "New-York Herald", 17. 1. 04.

Die Wrightsche nicht automatische Kontrolliermethode, von der die Erfinder glauben, daß sie ganz neu sei, und die sicherlich auch, weil dabei kein Gewicht zu verschieben ist, bei großen Maschinen sich als ebenso effektiv bewährt, wie bei kleineren, begreift außer den besonders angeordneten Steuern noch eine Vorrichtung in sich, die es gestattet, den entgegengesetzten Seiten (rechts und links) der Aërokurven je verschiedene Flugwinkel zu erteilen.

Wilbur Wright ist 36, Orville Wright 32 Jahre alt. Sie besitzen eine Fahrradfabrik und haben stets zusammen gearbeitet und alle ihre Experimente, wie auch den Bau der ersten praktischen Flugmaschine, auf eigene Kosten ausgeführt. Den Motor zur letzteren haben sie selbst entworfen und konstruiert. An dem denkwürdigen Erfolg gebührt einem jeden von beiden das gleiche Verdienst.

Da nur durch eine Indiskretion ein entstellender Bericht über das epochemachende Ereignis in die Öffentlichkeit gelangte, waren die Erfinder seitdem darüber noch ziemlich zurückhaltend. Nur eine lokale Zeitung brachte eine kurze authentische Zurückhaltung, im übrigen Teil der Presse tauchte die verblüffende Neuigkeit in entstellter Form auf und verschwand

wieder wie ein Meteor. Unsere Zeitschrift ist vorläufig die einzige wissenschaftliche, die sich im Besitz einiger eingehender Angaben befindet. Doch zur Veröffentlichung von Details oder von Abbildungen halten die Erfinden, die als alleinige «Aktionäre» niemandem verantwortlich sind, die Zeit noch nicht für gekommen.

Dienstbach.

1905-05-12, "Short paragraph mentioning Carl Dienstbach's presentation made on December 30, 1904, in Philadelphia, at the convention of the American Association for the Advancement of Science.", Science, May 12, 1905, vol. XXI, no. 541, pp. 726-727 (p. 727).

"The first paper on the program of Friday morning, December 30, was by Arthur H. Blanchard, assistant professor of civil engineering, Brown University, Providence, R. I., and was on 'The Development of the State Highway System of Rhode Island' ...

The next two papers on the morning's program were on 'Lines of Progress in Aeronautics,' and were intended to supplement the series of papers on this subject which were presented at the St. Louis meeting of the association. Calvin M. Woodward, dean of the School of Engineering and Architecture of Washington University, St. Louis, Mo., described the efforts which had been made and stated some of the reasons why they had not met with greater success at the Louisiana Purchase Exposition during the past year. Being a member of the committee of the World's Fair on the subject of aeronautics, he was able to speak with positive knowledge.

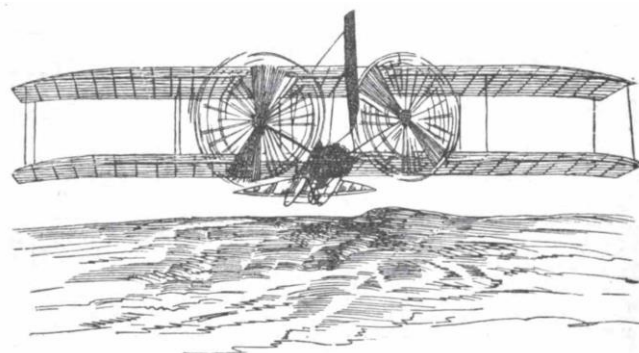
The second paper was by Mr. K. Dienstbach, of New York, who is the American correspondent of *Illustrierte Aeronautische Mitteilungen*. He reviewed the recent progress made in aeronautical science by Maxim, Langley, Zahn and the Wright Brothers."

1905-03, Carl Dienstbach, "Das erste Lebensjahr der praktischen Flugmaschine", *Illustrierte Aeronautische Mitteilungen*, March 1905, pp. 91-93.

Das erste Lebensjahr der praktischen Flugmaschine.

Ein Zeuge des unbeschreiblichen Enthusiasmus, mit dem einst im heiteren Frankreich die ersten Fahrten von Menschen durch die Luft begrüßt wurden, war Benjamin Franklin. Als man da die große Frage an ihn richtete: «Was werden die Folgen der Erfindung dieses Luftballons sein, der so unglaubliches zu Wege bringt», gab er die damals schon echt amerikanisch schlagfertige Antwort: «Es ist ein neugeborenes Kind». Heute sind wir so glücklich, ein anderes Kind unter uns zu haben, dessen ersten Geburtstag wir am 17. Dezember 1904 bereits feiern konnten: Die wirkliche, vogelgleiche, pfeilgeschwinde, lenksame, gewaltige Motorflugmaschine, welche schon vor einem Jahr gleichfalls Menschen eine weite Strecke im freien Flug durch die Luft trug, aber nicht, wie damals in Frankreich, mit dem sanften Sommerwinde, sondern gegen einen grimmigen eisigen Wintersturm. Und doppelt glücklich sind wir, wenn wir uns heute sagen dürfen, daß dieses «Kind» seitdem nicht nur an Alter, sondern auch in mehr als entsprechendem Grade an «Weisheit» zugenommen hat. Sie verspricht sogar in kaum mehr als einem weiteren Jahr als bereits ziemlich ausgereiftes Produkt, als ein «gehorsamer Vogel Rock», mit all ihren noch so ungewohnten und ungeahnten Konsequenzen vor uns zu stehen. Dies sind gewiß überraschende Nachrichten. Doch auch für den Ungläubigsten ist weiter nichts erforderlich, als die Erfinder (die Gebrüder Wright) selbst reden zu hören, deren bescheidener sachlicher Bericht in solchem Grad den Stempel der Tüchtigkeit und Wahrheit an sich trägt, daß er unbedingt in wörtlicher Übersetzung folgen soll:

«Durch die Diskretion unserer lokalen Zeitungsberichterstatte wurde es uns ermöglicht, unsere Versuche dieses Jahr in geringer Entfernung von unserer Heimatstadt anzustellen, ohne daß dies allgemein bekannt wurde. Wir haben in jedem Monat seit Juni verschiedene Flüge gemacht, ausgenommen im Juli. Unsere ersten Flüge wurden durch die Tatsache begrenzt, daß wir nicht außerhalb der Lokalität, in welcher wir uns etabliert hatten, gehen wollten und daß wir nicht Übung genug besaßen, um es wagen zu können, eine Kreiswendung zu machen. Erst am 15. September konnten wir unseren Kurs von einer geraden Linie zu einer Kurve ändern, was uns befähigte, eine Strecke von ungefähr einer halben Meile zurückzulegen. Am 20. September machten wir unsern ersten kompletten Kreisflug und kehrten zum Abflugsort zurück, nachdem wir eine Strecke von 4300 Fuß über dem Boden und 4900 Fuß durch die Luft zurückgelegt hatten, welch letzteres durch ein Richardsches Anemometer, das am «Flyer» angebracht war, aufgezeichnet wurde.



Mutmassliches Aussehen der Flugmaschine der Gebr. Wright.

Die größere Angabe des Anemometers rührt von dem Wind her, der bei diesem Versuch blies (der größere Teil der Zeit, die erforderlich, um eine Kreisbahn zu durchmessen, wird vom Flug gegen den Wind in Anspruch genommen). Die Angaben des Anemometers bei Flügen, die in ruhiger Luft stattfanden, haben stets beinahe vollkommen mit der über den Boden hin gemessenen Distanz übereingestimmt. Die beiden längsten Flüge der Saison wurden gemacht am 9. November und am 1. Dezember. Bei einem jeden dieser Flüge beschrieben wir beinahe vier komplette Kreise und legten eine Strecke von etwas über vier und einen halben Kilometer zurück, mit einer Geschwindigkeit von etwa 35 Meilen die Stunde. Beim Flug vom 9. November wurde eine Last von 50 Pfund (Eisenstangen) und bei jenem vom 1. Dezember eine solche von 70 Pfund getragen, zusammen mit dem Gewicht des Operators.

Manche unsrer Flüge wurden mit einer Geschwindigkeit von 40 Meilen die Stunde durch die Luft und 50 Meilen die Stunde über dem Boden (wenn mit dem Wind) gemacht. Einige Landungen wurden bewerkstelligt, während die Maschine sich mit über 40 Meilen die Stunde bewegte. Der Flug vom 9. November hatte eine Dauer von 5 Minuten und 4 Sekunden, jener vom 1. Dezember eine solche von vier Minuten 52 Sekunden.

Wir strebten nicht nach aufregend aussehenden Flügen (spectacular flights) und erhoben uns selten höher als 30 oder 35 Fuß über den Boden.

Obleich während der Versuche in dieser Saison 105 Landungen ausgeführt wurden, hat die Maschine nur einige wenige Male ernstliche Beschädigungen erlitten und zwar bei Flügen, bei welchen die Landung zufällig und unbeabsichtigt war. Flug nach Flug wurde ausgeführt ohne irgend eine Beschädigung an der Maschine.

Mr. A. M. Herring sagte bei diesen Nachrichten in tiefer Bewegung: Ein großartiger Erfolg! Und kein Wunder, sind dies doch weit glänzendere Resultate, als Maxim, Langley oder Hargrave sie fürs erste zu erwarten wagten. Dennoch sind sie nur die natürlichste Konsequenz der Resultate aller grundlegenden Experimente. Welch ein Vorteil ein Flug von 5 Minuten Länge für die Übung des Operators ist, statt der kurzen fortwährend unterbrochenen Gleitereien, läßt sich denken. Vivant sequentes!

Dienstbach.

Wright brothers - US War Department negotiations, January 18 - October 27, 1905.

1905-01-18, Wright brothers, "Letter to R. M. Nevin", January 18, 1905, 2 pages.

Hon. R. M. Nevin, Washington, D. C.

January 18, 1905.

Dear Sir:

The series of aeronautical experiments upon which we have been engaged for the past five years has ended in the production of a flying machine of a type fitted for practical use. It not only flies through the air at high speed, but it also lands without being wrecked. During the year 1904 one hundred and five flights were made at our experimenting station, on the Huffman prairie, east of this city; and though our experience in handling the machine has been too short to give any high degree of skill, we nevertheless succeeded, toward the end of the season, in making two flights of five minutes each, in which we sailed round and round the field until a distance of about three mile had been covered, at a speed of thirty-five miles an hour. The first of these record flights was made on November 9th, in celebration of the phenomenal political victory of the preceding day, and the second on December 1st, in honor of the onehundredth flight of the season.

The numerous flights in straight lines, in circles, and over "S" shaped courses, in calms and in winds, have made it quite certain that flying has been brought to a point where it can be made of great practical use in various ways, one of which is that of scouting and carrying messages in time of war. If the latter features are of interest to our own government, we shall be pleased to take up the matter either on a basis of providing machines of agreed specification, at a contract price, or, of furnishing all the scientific and practical information we have accumulated in these years of experimenting, together with a license to use our patents; thus putting the government in a position to operate on its own account.

If you can find it convenient to ascertain whether this is a subject of interest to our government, it would oblige us greatly, as early information on this point will aid us in making our plans for the future.

Respectfully yours,
Wilbur & Orville Wright

1905-01-23, R. M. Nevin, "Letter to the Wright brothers", Washington, DC, January 23, 1905, 1 page.

FIFTY-EIGHTH CONGRESS.

JOHN J. JENKINS, WIS., CHAIRMAN.	J. N. GILLETTE, CAL.
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GEORGE A. PEARRE, MD.	

Committee on the Judiciary, House of Representatives U. S.,

Washington, D.C., Jan. 23, 1905.

Gentlemen:-

Your letter of the 18th inst. was duly received and I have already taken the matter up with the Secretary of War. As soon as I hear from him, I will advise you further. I am sure any service I can render you will be very gladly and cheerfully given.

Very truly yours,
R. M. Nevin

Messrs. Wilbur & Orville Wright, #1127 W. 3rd St., Dayton, Ohio.

1905-01-26, R. M. Nevin, "Letter to the Wright brothers", Washington, DC, January 26, 1905, 1 page.

HOUSE OF REPRESENTATIVES, Jan. 26, 1905.
WASHINGTON

Gentlemen:-

Referring further to your matter, I enclose you herewith a communication just received from the War Department relating thereto, which speaks for itself. If I can serve you further at any time, advise me.

Very truly yours,
R. M. Nevin

Messrs. Wilbur & Orville Wright, Dayton, Ohio.

1905-01-24, G. L. Gillespie, "Letter to R. M. Nevin", Washington, DC, January 24, 1905, 2 pages.

War Department, Board of Ordnance & Fortification.

Washington, D.C., January 24, 1905.

Hon. R. M. Nevin, House of Representatives, Washington, D.C.

My dear Sir:-

Referring to your letter of the 21st instant to the Honorable Secretary of War inviting attention to the experiments in mechanical flight conducted by Messrs. Wilbur and Orville Wright, which has been referred to the Board of Ordnance and Fortification for action, I have the honor to inform you that, as many requests have been made for financial assistance in the development of designs for flying machines, the Board has found it necessary to decline to make allotments for the experimental development of devices for mechanical flight, and has determined that, before suggestions with that object in view will be considered, the device must have been brought to the stage of practical operation without expense to the United States.

It appears from the letter of Messrs. Wilbur and Orville Wright that their machine has not yet been brought to the stage of practical operation, but as soon as it shall have been perfected, this Board would be pleased to receive further representations from them, in regard to it.

Very respectfully,
G. L. Gillespie
Major General, General Staff, President of the Board.

1905-10-09, Wright brothers, "Letter to the Secretary of War", Dayton, October 9, 1905, 1 page.

WILBUR WRIGHT ORVILLE WRIGHT **WRIGHT CYCLE COMPANY** ESTABLISHED IN 1892
1127 WEST THIRD STREET
DAYTON, OHIO

October 9th, 1905.

The Honorable Secretary of War, Washington, D. C.



Dear Sir:

Some months ago we made an informal offer to furnish to the War Department practical flying machines suitable for scouting purposes. The matter was referred to the board of Ordnance and Fortification, which seems to have given it scant consideration. We do not wish to take this invention abroad, unless we find it necessary to do so, and therefore write again, renewing the offer.

We are prepared to furnish a machine on contract, to be accepted only after trial trips in which the conditions of the contract have been fulfilled; the machine to carry an operator and supplies of fuel, etc., sufficient for a flight of one hundred miles; the price of the machine to be regulated according to a sliding scale based on the performance of the machine in the trial trips; the minimum performance to be a flight of at least twenty-five miles at a speed of not less than thirty miles an hour.

We are also willing to take contracts to build machines carrying more than one man.

Respectfully yours, *Wilbur & Orville Wright*
O. W.

1905-10-16, J. G. Bates, "Letter to the Wright brothers", Washington, DC, October 16, 1905, 1 page.

War Department, Board of Ordnance & Fortification.

Washington, D.C., October 16, 1905.

Messrs. Wilbur and Orville Wright, 1127 West Third Street, Dayton, Ohio.

Gentlemen:-

Your letter of the 9th instant to the Honorable Secretary of War has been referred to this Board for action. I have the honor to inform you that, as many requests have been made for financial assistance in the development of designs for flying machines the Board has found it necessary to decline to make allotments for the experimental development of devices for mechanical flight, and has determined that, before suggestions with that object in view will be considered, the device must have been brought to the stage of practical operation without expense to the United States.

Before the question of making a contract with you for the furnishing of a flying machine is considered it will be necessary for you to furnish this Board with the approximate cost of the completed machine, the date upon which it would be delivered, and with such drawings and descriptions thereof as are necessary to enable its construction to be understood and a definite conclusion as to its practicability to be arrived at. Upon the receipt of this information, the matter will receive the careful consideration of the Board.

Very respectfully, *J. G. Bates*
Major General, General Staff, President of Board

1905-10-19, Wright brothers, "Letter to the President of Board, Ordnance and Fortification", Dayton, October 19, 1905, 1 page.

WILBUR WRIGHT ORVILLE WRIGHT **WRIGHT CYCLE COMPANY** ESTABLISHED IN 1892
1127 WEST THIRD STREET
DAYTON, OHIO

President of Board, Ordnance and Fortification,
War Department, Washington, D. C.

October 19th, 1905.

Dear Sir:

Your communication of October 16th has been received. We have no thought of asking financial assistance from the government. We propose to sell the results of experiments finished at our own expense.

In order that we may submit a proposition conforming as nearly as possible to the ideas of your Board, it is desirable that we be informed what conditions you would wish to lay down as to the performance of the machine in the official trials, prior to the acceptance of the machine. We can not well fix a price, nor a time for delivery, till we have your idea of the qualifications necessary to such a machine. We ought also to know whether you would wish to reserve a monopoly on the use of the invention, or whether you would permit us to accept orders for similar machines from other governments, and give public exhibitions, etc.

Proof of our ability to execute an undertaking of the nature proposed will be furnished whenever desired.

Respectfully yours, *Wilbur and Orville Wright*
O.W.

1905-10-27, T. C. Dickson, "Letter to the Wright brothers", Washington, DC, October 27, 1905, 1 page.

War Department, Board of Ordnance & Fortification.

Washington, D.C., October 27, 1905.

Messrs. Wilbur and Orville Wright, 1127 West 3d Street, Dayton, Ohio.

Gentlemen:-

The Board of Ordnance and Fortification at its meeting October 24, 1905, took the following action:

The Board then considered letter, dated October 19, 1905, from Wilbur and Orville Wright requesting the requirements prescribed by the Board that a flying machine would have to fulfill before it would be accepted.

It is recommended the Messrs. Wright be informed that the Board does not care to formulate any requirements for the performance of a flying machine or to take any further action on the subject until a machine is produced which by actual operation is shown to be able to produce horizontal flight and to carry an operator.

Very respectfully, *T. C. Dickson*
Captain Ordnance Department, Recorder of the Board.

Wright brothers - British War Office negotiations, Sep. 16, 1904 - Feb. 8, 1906.

1904-09-16, Lt. Col. John E. Capper, "Letter to the Wright brothers", R. M. S. Lucania, September 16, 1904, 4 pages.

CUNARD R.M.S. "LUCANIA."

Sept. 16th /04

Dear Sirs

M^r Alexander has kindly given me a letter of introduction to you, and I am anxious to have the pleasure of making your acquaintance whilst over in America.

If you should still be in Ohio and stopping there any time I may be able to pay Dayton a visit on my way to S^t Louis, but my movements rather depend on circumstances.

I shall however in all probability be in S^t Louis for 3 or 4 weeks from the 24th inst. at the Washington Hotel.

I will now be with my wife in New York at the Holland House until Wednesday next, so a letter there will find me.

In case you will not now be in Dayton I will hope to meet you in S^t Louis, or if you are not coming there, to pay you a visit from there.

Yours very truly
J. E. Capper

Bt Lt Col. John E. Capper, Royal Engineers, Aldershot, England

1904-09-27, Lt. Col. John E. Capper, "Letter to the Wright brothers", Saint Louis, Missouri, US, September 27, 1904, 2 pages.

JOHN C. KNAPP, MANAGER.
"The Washington"
ABSOLUTELY FIRE-PROOF

KING'S HIGHWAY AND
WASHINGTON BLVD.

WOODWARD & TIERNAN PRINT'G CO.

St. Louis, Sept. 27th /04

Dear Sir

I am much obliged to you for your kind letter and invitation to visit you.

I hope to do so later, and to let you know about the time slots - at present I am rather uncertain as to the date to which I will stay here -

The aeronautical show here is somewhat disappointing, but there is some thing to learn, and I hope that the congress may lead to an enlarged knowledge on the subject.

Yours very truly
J. E. Capper

1904-10-17, Lt. Col. John E. Capper, "Letter to the Wright brothers", Saint Louis, Missouri, US, October 17, 1904, 3 pages.

The Washington,
KING'S HIGHWAY AND WASHINGTON BLVD.
SAINT LOUIS.

Oct 17th 1904

Dear Sir

I wish to tell you that I propose leaving here on Sunday morning next the 23rd inst. arriving in Dayton in the evening & staying there till the evening of Monday the 24th.

I should be glad to know if you will be there and able to see one on that date, as my only object in stopping at Dayton is to make acquaintance with you & your brother.

I should also be much obliged if you could find me the name of a good hotel where M^{rs} Capper & myself might be comfortable.

I am yours very truly
J. E. Capper
Lieut. Colonel.

1905-01-10, Wright brothers, "Letter to Lt. Col. John E. Capper", January 10, 1905, 2 pages.

Lt. Col. J. E. Capper, C. B., R. E.
Aldershot, England.

January 10, 1905.

Dear Sir:

After your visit of last October we completed some investigations of a peculiar phenomenon which gave us trouble when swinging short circles. Having learned the cause and applied the proper remedy, we considerably extended the length of our flights before the season closed. On the first day of December, in honor of the hundredth flight of the year 1904, we made four circuits of the field in four minutes and 53 seconds, covering a distance of almost three miles at a speed of thirty-five miles an hour. Seventy pounds of dead weight, in the form of steel bars, were carried in this flight. A flight of five minutes and four seconds was made a short time before, but the speed and distance were not so well ascertained.

Though no spectacular performances were attempted, the season's results were so satisfactory that we now regard the practicability of flying as fully established for the special uses to which it will be applied at first. In such a work as that of creating a corps of aviators for military scouting purposes, it is quite probable that more delay will be experienced in selecting and properly training the men than in perfecting the details of the machine to a point sufficient to bring flyers within the limit of usefulness. This fact, together with the increasing difficulty of securing the necessary privacy for further experiment, has raised the question in our minds whether the present is not the proper time to bring the matter before military authorities for their consideration. There is no question but that a government in possession of such a machine as we can now furnish and the scientific and practical knowledge and instruction we are in a position to impart, could secure a lead of several years over governments which waited to buy perfected machines before making a start in this line. If we should conclude to make a proposition of this kind, it would probably be on the basis of furnishing for the 1905 season's experiments a machine capable of carrying two men at a minimum speed of thirty miles an hour.

If you think it probable that an offer of such character would receive consideration from your government at this time, we will be glad to give further consideration to matters of details, etc.

With pleasant recollections of the visit from you and Mrs. Capper last October, we remain,

Respectfully yours,

1905-02-09, British War Office, "Letter to the Wright brothers", London, S. W., February 9, 1905, 1 page.

Any further communication on this subject should be addressed to — The Secretary, War Office, London, S.W., and the following number quoted.

War Office,
London, S.W.

84/W/5144. (A.3.)

9th February, 1905.

Gentlemen,

With reference to letter of the 10th ultimo addressed to Lieutenant Colonel J. E. Capper, C. B., R. E., on the subject of a flying machine, I am directed to inform you that the above matter has been brought to the notice of this office and a further communication will be addressed to you in due course.

I am to forward for your information the attached Memorandum for Inventors which shews the conditions under which inventions are dealt with by the Department.

I am, Gentlemen, Your obedient Servant,

Richard M. Ruck
Director of Artillery.

The Wright Cycle Coy., 1127 West Third Street, Dayton, Ohio.

1904-08-06, British War Office, "Memorandum for Inventors (attached to the February 9, 1905, letter).", 6th August, 1904, 1 page.

84
Gen. No.
3820

Memorandum for Inventors.

WAR OFFICE, 6th August, 1904.

In consequence of the numerous claims for compensation for loss of time and for expenses incurred by private individuals in working out inventions of various kinds, as well as for rewards in consequence of the use of such inventions, the Army Council consider it necessary to make known the following Regulations: —

1. By Section 27 of the "Patents, Designs, and Trade Marks Act, 1883," it is enacted as follows: —

"A Patent shall have to all intents the like effect as against Her Majesty the Queen Her Heirs and Successors, as it has against a subject."

"But the Officers or Authorities administering any Department of the service of the Crown may, by themselves, their agents, contractors, or others, at any time after the application, use the invention for the service of the Crown on terms to be before or after the use thereof agreed on, with the approval of the Treasury, between those Officers or Authorities and the Patentee, or, in default of such agreement, on such terms as may be settled by the Treasury, after hearing all parties interested."

2. Persons who desire to submit any invention for consideration, should do so by letter addressed to the Secretary, War Office, London. The letter should state the nature of the invention; whether patented or not; if patented, it should quote number and date of Patent. It should also state whether the person who offers it for consideration desires to make any claim for remuneration in connection with it. In the absence of such a statement, it will be assumed that no such remuneration is expected.

3. Expenses or loss of time incurred before or after the submission of an invention will give no claim unless authority for such expenses has been previously given by signed letter from this Office, and the liability will be strictly confined to the limits of expenditure authorised in such letter.

4. Should the invention be adopted into the service, the person or persons who submitted the same may be required to furnish two copies of all designs, drawings, or particulars relating to the invention which may be desired by the War Department, as well as any patterns which may be considered necessary; and it is to be understood that all such drawings, designs, and patterns will be absolutely at the disposal of His Majesty's Government for all purposes whatever. Reasonable prices will be paid by the War Department for the designs, drawings, and patterns supplied.

5. No claim for reward for an invention will be held to be established, unless the invention has been adopted into the service, and all designs, drawings, patterns, and particulars required by the War Department have been supplied, under the conditions mentioned above.

6. All claims for remuneration will be carefully considered; but any award which may be made will only be payable to the claimant when approved by the Treasury, and money is available from funds voted by Parliament for such purposes.

7. The above rules do not apply to inventions patented by such Government employes as are required to obtain official permission before taking out a patent, with regard to whom special regulations are in force.

E. W. D. WARD.

H W V 500 8—04

1905-02-11, British War Office, "Letter to the Wright brothers", London, S. W., February 11, 1905, 1 page.

Any further communication on this subject should be addressed to — The Secretary, War Office, Horse Guards, Whitehall, London, S.W., and the following number quoted.

War Office, Horse
Guards, London, S.W.

84/W/5144. (F.W.5.)

11th February, 1905.

Gentlemen,

With reference to War Office letter No: 84/W/5144 (A.3.) dated 9th instant, regarding your flying machine,

1. I am directed to request that you will be good enough to submit a definite offer as to what you would be prepared to supply, and the terms including the services of an expert mechanic.

2. I am to add that in the event of your offer not being acceptable, the Army Council do not bind themselves to any further action.

I am, Gentlemen, Your obedient Servant,

H N Dumbleton.

Major, R. E. for Director of Fortifications & Works.

The Wright Cycle Co., 1127 West Third Street, Dayton, Ohio.

1905-02-15, Lt. Col. John E. Capper, "Letter to the Wright brothers", Aldershot, England, February 15, 1905, 1 page.

Messrs W. & O. Wright,
Dayton, Ohio, U.S.A.

Balloon Factory, Aldershot
15th February, 1905.

Gentlemen,

Your letter, which I was very pleased to receive, has been some time unanswered, as it raised a very important question which I did not think I was justified in answering without directly approaching His Majesty's Government to see what their wishes in the matter might be.

I have, however, just heard that a member of the Government has written directly to you on the subject on which you approached me, and doubtless I shall hear more in future as to what you are doing in the matter.

Meanwhile I can assure you that I am immensely pleased to hear that you have met with such success up to the present, and that you feel confident that now you can really launch out in a practicable machine and truly navigate the air. It is a thing of which you both may well be proud, and forms a fine ending to the years of practice and trouble that you have taken in the matter; - there are many who will envy you.

Hoping that we may be in a position to see more of each other in the future, and with the kindest remembrances to Miss Wright, in which my wife heartily joins,

I am, Gentlemen, Yours sincerely,

J E Capper

1905-03-01, Wright brothers, "Letter to the secretary of the British War Office", March 1, 1905, 2 pages.

The Secretary, War Office, London, S. W.

March 1, 1905.

Dear Sir:

Your communications #84/W/5144 (A.3.) and #84/W/5144 (F.W.5.) have been received. We have found it a matter of some difficulty to formulate a satisfactory proposition for the sale of an aerial scouting machine to the Government of Great Britain, owing to the fact that what we have to offer consists in part of a piece of machinery and in part of expert scientific knowledge. Of these the latter is of much the greater value; but as it is also the part on which both parties to this negotiation would have the greatest difficulty in fixing a value, at this time, it will probably be best for the present to confine the proposition to a machine including with it only such information as would necessarily be disclosed by the machine itself and the needed instruction in its use.

The expert knowledge of natural laws and original formulas whereby it is possible to compute the elements of flyer of any desired size or speed with as much accuracy and certainty as is the case with steam ships, and some

original discoveries relating to the action of screws, which will doubtless prove of value in marine engineering as well as in aeronautics, may be left to future negotiations. Should the British Government prefer to leave the designing and development of various types of aerial apparatus in the hands of private parties, of course these matters would be of no special interest to it; but in case it wished to bring such development under its own control, or to conduct experiments on its own account, this information would be of the greatest value, not only in designing successful machines, but also in detecting the impracticability and impossibility of many proposed plans on which sums aggregating immense amounts might otherwise be wasted.

Although we consider it advisable that any agreement which may be made at present be based upon a single machine and necessary instruction in its use, we would be willing, if desired, to insert in the contract an option on the purchase of all that we know concerning the subject of aviation, including a license to operate under our patents. Our British patent 6732 A.D. 1904 covers only some elementary features. The question of patenting other features is at present held in abeyance.

We are ready to enter into a contract with the British Government to construct and deliver to it an aerial scouting machine of the aeroplane type of the following specifications:

The said machine to be capable of carrying two men of average weight and supplies of fuel for a flight of not less than fifty (50) miles.

The speed of said machine when flying in still air to be not less than thirty (30) miles an hour.

The said machine to be of sufficiently substantial construction to make landings without being broken, when operated with a reasonable degree of skill.

Before the said machine is accepted by the British Government, and before any part of the purchase price is paid, the constructors shall in the presence of representatives of the British Government demonstrate by trial flights that the specifications have been met, the number of trials to be optional with the constructors.

The purchase price of the machine shall be determined by the maximum distance covered in a single one of the said trial flights, and shall be computed at the rate of Five Hundred Pounds Sterling for each mile covered; provided that none of the trial flights reaches a distance of ten miles, the British Government shall not be obligated to purchase or accept said machine.

In case the machine is accepted, personal instruction in the use of the machine will be provided for those who may be selected by the Government, the compensation of said instructor to be fixed at two hundred (200) pounds per month; the services of said instructor to be continued for such period as the Government may elect not exceeding six months, except by consent of both parties.

If the conditions herein outlined meet with the approval of the War Office, we are ready to enter into a formal contract.

Respectfully yours,

1905-05-13, British War Office, "Letter to the Wright brothers", London, S. W., May 13, 1905, 1 page.

Any further communication on this subject should be addressed to — The Secretary, War Office, London, S.W., and the following number quoted.

War Office,
London, S.W.

84/W/5144 (F.W.4.)

13th May, 1905.

Gentlemen,

With reference to your letter of the 1st March last, regarding your flying machine, I am commanded by the Army Council to acquaint you that Colonel Foster, the British Military Attaché at Washington, has been asked to visit your Works.

I am to request that you will give him any necessary information and an opportunity of seeing the machine at work.

On receipt of his report a further communication will be sent to you.

I am, Gentlemen, Your obedient Servant,

R. H. Brade

Messrs

The Wright Cycle Co., 1127 West Third Street, Dayton, Ohio.

1905-10-19, Wright brothers, "Letter to the secretary of the British War Office", Dayton, October 19, 1905, 1 page.

WILBUR WRIGHT **WRIGHT CYCLE COMPANY** ESTABLISHED IN

ORVILLE WRIGHT

1127 WEST THIRD STREET
DAYTON, OHIO

1892

The Secretary, War Office, London, S. W.

October 19th, 1905.

Dear Sir:

Under date of March 1st, 1905, we submitted a proposition to furnish to the War department a flying machine for scouting purposes. We now write to say that recent flights justify us in offering to so amend the proposition as to make the acceptance of the machine dependant upon a trial flight of at least fifty miles, instead of ten miles as specified in the original offer.

Respectfully yours,

1905-11-11, British War Office, "Letter to the Wright brothers", London, S. W., November 11, 1905, 1 page.

Any further communication on this subject should be addressed to — The Secretary, War Office, London, S.W., and the following number quoted.

War Office,
London, S.W.

84/W/5144. (F.W.4.)

11th November, 1905.

Gentlemen,

I am commanded by the Army Council to acknowledge the receipt of your letter of the 19th ultimo regarding your flying machine and to acquaint you that the matter is receiving consideration.

I am, Gentlemen, Your obedient Servant,

E W D Ward

Messrs The Wright Cycle Co., 1127 West Third Street, Dayton, Ohio.

1905-11-18, Col. H. Foster, "Letter to the Wright brothers", Washington, D. C., November 18, 1905, 1 page.

Dear Sirs,

British Embassy. Washington D.C.

The British War Office have sent me your letter to them of 10th. Jany. last, and of March 1st. with the view of my entering into communication with you, as the "representative" alluded to in your last.

I am prepared to visit you at Dayton to witness a flight as you propose, so as to inform my war office of the fact that your machine makes such a satisfactory flight as to make it desirable for the Government to consider the matter of a contract as suggested by you.

The actual terms of my instructions are: "Should these gentlemen be able at any time to carry out successful flying trials in the presence of the Military Attaché the question of an agreement, on terms to be settled, might again be taken up."

May I therefore ask you if you are ready to shew me a flight, which I would come to witness as soon as you can arrange one? Any time in the next 4 weeks would suit me, but the sooner the more satisfactory for me.

yours faithfully, *H Foster* Colonel

British Military Attache.

Washington D.C. Nov. 18th. 1905

1905-11-20, Wright brothers, "Letter to Col. H. Foster", Dayton, November 20, 1905, 2 pages.

Letter of W.W. to Col. Capper was sent Nov 19th [handwritten note made by Wilbur Wright]

WILBUR WRIGHT
ORVILLE WRIGHT

WRIGHT CYCLE COMPANY
1127 WEST THIRD STREET
DAYTON, OHIO

ESTABLISHED IN
1892

Colonel H. Foster,

November 20th, 1905.

British Embassy, Washington, D. C.

Dear Sir:-

Your letter of November 18th has been received. We would be pleased to have you visit Dayton at once as you suggest. It is desirable that you should thoroughly satisfy yourself of the truth regarding our flights by an investigation on the spot and personal conference with people who have witnessed them. The flights of October 3rd, 4th and 5th, of fifteen, twenty-one and 24 miles respectively, were witnessed not only by the farmers living in the neighborhood, but also by a number of prominent citizens of Dayton whom we had invited to be present whose names we will be glad to furnish to you.

Of course we can not consent to show the machine to the representatives of any government which is considering the purchase of our knowledge and inventions until we are assured that the terms of sale will be satisfactory. It

would be highly injudicious to place ourselves at the mercy of any one by disclosing any part of our secrets with the expectation of arranging satisfactory terms afterwards. Moreover, we would find the saleability of the invention greatly reduced, if the construction and operation of the machine should be shown to the military attaches of other governments than the one which should be first in deciding to purchase. As a preliminary to the consummation of a definite contract, we will furnish incontestable evidence that we have done all that we claim to have done. By the terms of the contract not one cent need be paid out by the government until after the machine has fulfilled certain stipulated requirements in a trial trip in the presence of the government's representatives.

Although the machine has already been dismantled, we can, in case an agreement is reached, set up the machine at some retired place and make a flight surpassing those to which we have already referred. We would have put the record much higher before quitting, but for the impossibility of securing privacy for further flights at that time and place.

Yours respectfully,
WRIGHT CYCLE COMPANY.

1905-11-22, Col. H. Foster, "Letter to the Wright brothers", Washington, D. C., November 22, 1905, 4 pages.

BRITISH EMBASSY, WASHINGTON. Nov 22nd 1905
Dear Sirs,

Yours of 20th inst. — There is evidently a certain amount of misunderstanding between us, so I will try to clear the ground by stating very shortly what I want to do, when you will see clearly, I hope, that much of your letter is not quite to the point.

My instructions are very short, & I know nothing of the intentions or wishes of my War Office (beyond what I read in them) as to flying machines.

I am to ask you to shew me your machine doing a satisfactory flight, after which the W. O. will enter into negotiations with you, if satisfied.

Thus para 1. of yours falls through. The W. O. have already had flights described, but want me to see one for them, as their representative.

Para 2 is also, may I say, unnecessary — I do not want to see the details or mechanism, nor am I to report in any way on that, but only to see the machine performing a flight.

This I take it will be quite satisfactory to you, as it will in no way prejudice you. Many people have, you tell me, seen flights on Oct. 3, 4 & 5th — I only want to see one too, as you propose in your last para. I could come to Dayton at any time to see it if you would be good enough to arrange for a flight. Hoping this letter is clear, & will be satisfactory to you,

believe me, gentlemen, yours faithfully
H Foster Colonel
Military Attaché

1905-11-23, Col. H. Foster, "Letter to the Wright brothers", Washington, D. C., November 23, 1905, 1 page.

British Embassy Washington D.C.
Nov 23rd. 1905.

Dear Sirs, Re' mine of yesterday, —

To make my letter quite clear I will give you the exact words of my instructions:

"The Committee suggest that the Military Attaché at Washington be requested to enter into communication with Messrs Wright. Should these gentlemen be able at any time to carry out satisfactory flying trials in the presence of the Military Attaché, the question of an agreement, on terms to be settled, might be again taken up". This is sent to me for action.

All I would therefore ask you is to say whether you will shew me a flying trial, and if you will, to fix a near date. If you do not wish to, I will so inform the War Office, whose representative I am only for the purpose of seeing the trial. I am not their intermediary for negotiations with you, and on that point I would ask you to communicate direct with the Secretary for War, War Office London.

Believe me, yours faithfully, H. Foster. Colonel.
Military Attaché.

1905-11-25, Wright brothers, "Letter to Col. H. Foster", Dayton, November 25, 1905, 1 page.

WILBUR WRIGHT ORVILLE WRIGHT WRIGHT CYCLE COMPANY ESTABLISHED IN 1892

1127 WEST THIRD STREET
DAYTON, OHIO

Colonel H. Foster,
British Embassy, Washington, D. C.

November 25th, 1905.

Dear Sir:-

Your letters of November 22nd and 23rd have been received. We sincerely regret that your instructions seem to preclude such immediate investigation at Dayton as we suggested in our letter to you, since the delay in referring the point to the War Office will still further reduce the probability of reaching an understanding on the main issue before it is too late.

At the request of Lt. Colonel Capper we gave the British government the first chance to secure the use of our invention in foreign countries, and did not take up the matter elsewhere until a number of months had passed. But the progress of the later negotiations has been such as to make it possible that a crisis will be reached before the British War Office has all obtainable information before it and is ready to reach a decision as to whether it will take up the flying machine at this time.

Very respectfully yours,
Wright Cycle Co.

1905-11-28, Wright brothers, "Letter to the secretary of the British War Office", Dayton, November 28, 1905, 1 page.

WILBUR WRIGHT ORVILLE WRIGHT WRIGHT CYCLE COMPANY ESTABLISHED IN 1892
1127 WEST THIRD STREET
DAYTON, OHIO

The Secretary, War Office, London, S. W. November 28th, 1905.

Dear Sir:-

Your communication of November 11th (84/W/5144) is received. Colonel Foster has informed us that his instructions limit him to the sole duty of witnessing a flight of our machine. Our answer has been that we are not willing to show the machine to the representatives of any government in advance of an agreement as to terms of sale.

We recognize that the War Office has no desire to waste time in preparing contracts which can not be fulfilled, but a sight of our machine by further witnesses is not necessary to establish the fact that man can build machines which fly long distances with an operator on board, and land safely. A few hour's investigation at Simm's Station on the electric road between Dayton and Springfield will disclose conclusive proof that it has been done. Flights of more than twenty miles have been witnessed not only by a dozen families living in the neighborhood, but also by a number of prominent citizens of Dayton. We refer by permission to Mr. E. W. Ellis, Mr. Torrence Huffman and Mr. C. S. Billman. Additional names will be furnished if desired.

In view of the abundant evidence already available, we can not regard an actual sight of the machine by your representative a necessary prerequisite to the formulation of terms of agreement, since the necessary safeguards can be included in the contract; but, on the other hand, we do regard an agreement a necessary prerequisite to the disclosure of any part of the invention, since it provides the only guarantee that a sale on satisfactory terms will follow a demonstration that the machine is all that has been claimed for it.

We are able and willing to furnish at once proper presumptive evidence of ability to fulfill a contract. When a contract has been signed, we will build a machine at our own expense and make flights as specified in the contract, in the presence of the War Office representatives, before any money whatever is paid to us. We do not ask for such advance payments as are customary in the building of battle ships, etc., nor for any assumption of risk whatever on your part.

The invention has been carried entirely through the experimental stage, and is ready for sale to some one at once.

Respectfully yours,

1905-11-29, Col. H. Foster, "Letter to the Wright brothers", Washington, D. C., November 29, 1905, 2 pages.

British Embassy
Washington DC
Gentlemen,

Nov 29th 1905

In reply to yours of 25th inst. I cannot help thinking there is some misapprehension of what I wish to do.

I only wish to see your machine fly, as you yourselves say many people did on Oct 4th & 5th. I fail to see how this could prejudice you – I need not be near the machine or see its details.

The War Office, I think you will admit not unreasonably, will not negotiate till they have seen that rapid flight is actually performed. This they can only do through me.

I think you will acknowledge that it would be impossible for any purchaser to negotiate for purchase of an invention whose performances they only know of by hearsay evidence. However I have sent the correspondence to the War Office.

I am going into Kansas at once, and in case you should still see your way to arrange a flight for me to witness within the first half of December I give my address:

c/o Major Squier U. S. Signal Corps Fort Leavenworth Kansas

Yours faithfully

H Foster
Colonel, Military Attaché.

1905-12-05, Wright brothers, "Letter to Col. H. Foster", Dayton, December 5, 1905, 1 page.

WILBUR WRIGHT ORVILLE WRIGHT	WRIGHT CYCLE COMPANY ESTABLISHED IN 1127 WEST THIRD STREET DAYTON, OHIO 1892
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Colonel H. Foster, Fort Leavenworth, Kansas. December 5th, 1905.
Dear Sir:-

We have your letter of November 29th. Even if there had been no other objection to showing our machine in flight, it has now become hopeless to think of avoiding observation and publicity, for the newspapers have at last begun to realize the true situation, and have been offering bribes to our friends for information of our intended movements. Under such circumstances only necessity could induce us to risk a flight to satisfy what may be only curiosity. You must admit yourself that up to the present your government has not shown in its commutations such indications of a serious purpose to take the lead in this new art as would justify us in assuming a very serious risk. If circumstances should hereafter lessen our objections to show the machine, we will be pleased to inform you.

Very respectfully,

1905-12-07, Col. H. Foster, "Letter to the Wright brothers", Fort Leavenworth, Kansas, December 7, 1905, 1 page.

BRITISH EMBASSY, WASHINGTON.	Dec 7 th 1905 Fort Leavenworth
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Dear Sirs,

I beg to acknowledge receipt of yours of 5th inst, which I will send to the W. O. to shew the reason why you are not prepared to shew me a flight.

The fact seems to be that the War Office cannot commit itself to negotiations with a view of purchasing, unless sure that your invention gives the flight it claims, while you, on the other hand, do not wish to shew its flight until the W. O. have made some arrangement with you.

There is thus a deadlock.

Thanking you for your letter, faithfully yours

H Foster
Colonel Mil' Attaché

1906-02-08, British War Office, "Letter to the Wright brothers", London, S. W., February 8, 1906, 1 page.

84/W/5144. (A.4.) War Office, London, S.W.
8th February, 1906.

Gentlemen,

With reference to your letter of the 5th December last, addressed to Colonel H. Foster, British Military Attaché, Washington, and previous correspondence on the subject of your flying machine; I am directed to acquaint you that the question has been given very careful consideration, and the terms and conditions specified under which you could carry out flying trials in the presence of a representative of this Department cannot be accepted.

I am, Gentlemen, Your obedient Servant,

Charles B. Raddon
Director of Artillery.

The Wright Cycle Co., 1127 West Third Street, Dayton, Ohio.

The 1904 flights as presented by the newspapers

March - April 1904

1904-03-03, "Beef Tea", Deseret Evening News, Salt Lake City, Utah, US, March 3, 1904, col. 3, p. 3.

BEEF TEA.

Orville and Wilbur Wright, the inventors of the most successful flying machine that has appeared thus far, live in Dayton, O., where they conduct a bicycle factory.

An aged Irishman, a faithful employe of theirs for a number of years, was kept at home last month by illness. Orville Wright, a basket on his arm, visited the sick man one afternoon.

"Here, John," he said, "are some dainties I have brought you. Here is some fruit; here is jelly; here is a tonic, fine for the aged; here is some superb beef tea."

"Beef tay, is it, sor?" said the old man. "Shure, an' it shud be good, thot beef tay. 'Tis a drink Oi niver thried before. Oi thank ye, sor, for all ye've brought, but specially Oi thank ye for the foine beef tay."

In a week or two the Irishman was back at work. The day of his return, seeing him at his post, Mr. Wright asked him with a smile how he liked his beef tea.

"Shure, not a bit," said the old man, bluntly.

"Why," said Mr. Wright, "beef tea is delicious if you heat it and add a little salt and pepper."

"Well, sor, it may be good thot way," said John. "But I put milk and sugar to it."

1904-03-21, An American in Paris (the author), "New Form of Sport. Gilded Youth of France Going in for Aeroplanes.", The Evening Star, Washington, D. C., US, March 21, 1904, col. 3-7, p. 7.

NEW FORM OF SPORT

Gilded Youth of France Going in for Aeroplanes.

RISKY AND EXCITING

THEY CALL IT TOBOGGANING IN THE AIR.

Motors Not Used Now, but Will Be Tried Later — Spirit of Emulation.

Special Correspondence of The Evening Star.

PARIS, March 5, 1904.

Will aeroplanes, operated by petroleum motors, be seen darting through the air in France this summer?

Along the English channel coast, on the French side, there are great stretches of soft white sand, diversified by dunes. In the midst of them lies the watering-place town of Berck. Next week an up-to-date contingent of the gilded youth of Paris will go down to Berck to live there a while and occupy themselves with two new things:

1. To experiment, for the good of the race and the glory of France, with aeroplanes furnished with motors — that is to say, inaccurately, flying machines heavier than the air; and

2. To amuse themselves with a new hardy sport, not without danger, soon to be known to the world as "aerial tobogganing." In simple justice to the spirit of the Automobile Club and the Aero Club — of which these gilded youth are members — it ought to be known at the outset that privately owned pleasure balloons and road-racing automobiles have made danger a sort of attraction. Men like Ernest Archdeacon, Jacques Palsan and the Comte de La Vaux "risk their skin," as the French say, willingly for the excitement. Seconded by experts of the type of Mallet, the balloon

constructor and fearless aeronaut; Girardot, the automobile constructor and breakneck racer; the eclectic Henri de Rothschild, doctor, bone-setter and multi-millionaire, and Georges Dargent, the model maker and general aeronautic specialist of the French army's balloon park at Chalais-Meudon, these young Parisians are in a state to do some very lively sporting.

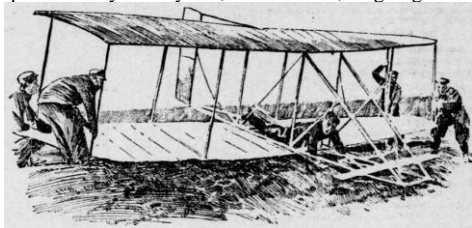
Doubtless the sport will come first. Indeed, aerial tobogganing may be put down, by the time you read these lines, as a new dangerous sport, already in full vogue; because the toboggan aeroplanes have already been tried; they are known to be practical for sporting purposes; the actual machines already exist, and "the push," as you will hear them say today in Paris, has already bought its tickets for Berck. With the American spirit has come a deal of American slang, either bodily transported or translated into French.

Tried Before.

I say that aerial tobogganing has been already tried. It was first tried in the United States of America, over Chesapeake bay, by the Wright brothers, of whom you have doubtless heard. In any case, their experiments are perfectly well known in Paris, where they are considered to have done something epoch-making.

So much for the Wright brothers. In the language of an Aero Club report, "their experiments of vol plane are considered as decisive." France renders them full credit. What doubtless never occurred to the Wright brothers is to make a sport of motorless aeroplaning first and a scientific study of motor-driven aeroplaning afterward. This is the present day French way, thanks to the Automobile and Aero clubs. With this sporting help the art and science, as well as the industry of automobiling, developed in France so rapidly and completely.

I saw M. Ernest Archdeacon yesterday at the Aero Club's Balloon Park at St. Cloud, just outside of Paris, high on the left bank of the River Seine. He is a young sport of thirty-three years, with an alert, laughing American face.



ARCHDEACON AEROPLANE.

"The aeroplane has come to stay," he said. "Chanute and Herring, improving on the unhappy Lilienthal, obtained results which encouraged Wilbur Wright and his brother to undertake what have turned out such brilliant experiments. Nothing could be imagined simpler than the Wright aeroplane. It is like this" —

(Here M. Archdeacon drew a rough plan that looked like a man on his stomach at the door of a chicken coop.)

"What valuable results have the Wright experiments given?" I asked.

Tobogganing in Air.

"They have demonstrated that, roughly, for sporting purposes, the tobogganing will be as 100-8 in proportion to the height from which one starts with a box-kite aeroplane. That is to say, you carry your aeroplane to the height of a dune overlooking a wide flat expanse of sand below. The sport gets in his aeroplane and holds tight, lying flat. Four men take each a corner and run with the aeroplane against the wind — to the edge of the dune. Then they throw it out —"

"And it goes 'plane-ing,' as you say in French, sustained by the air, sliding down the air, so to speak —"

"Exactly — tobogganing down the air. The formula 100-8 means that if you start from a height of 8 yards, you will toboggan diagonally down to a distance 100 yards from your point of departure; while if you start from a height of 80 yards your trip will be 1,000 yards."

"How much is 1,000 yards? Let me see. That makes 3,000 feet, and there are 5,280 feet in a mile. That would be three-fifths of a mile nearly. Do you count on making such a horizontal flight without a motor?"

"That is the proportion, scientifically demonstrated. How soon one of us shall have the nerve to start from such a height I cannot say. It will depend on the spirit of emulation, won't it?"

Spirit of Emulation.

The spirit of emulation! What has it not done for the sporting youth of Paris in the past five years? It has made long-distance ballooning a gentleman's sport. It has made rich men's sons veritably risk their precious

lives a hundred times a day in automobile road racing. There is not a man in this little crowd going down to Berck who has not given proofs of reckless courage. After this, let us stop saying that France is decadent.

The Aero Club's Park at St. Cloud is simply a big grassy space surrounded by a wall and furnished with a couple of balloon sheds, oxygen-generating machines, illuminating gas mains laid from St. Cloud, etc.

It was from here that Santos-Dumont started on his prize-winning airship trip to and from the Eiffel Tower, into Paris and back again, some seven miles, with and against the wind, in half an hour. From here have started off, almost daily in the good weather of late spring, summer and early autumn, one, two, three or four spherical balloons, all private-owned, many with ladies in them, on purely sporting balloon trips that carried them to every part of France. Here, from one of the buildings M. Archdeacon had the men bring out his aeroplane — the new toboggan of the air.

It is made of ash wood, extremely staunch silk and piano wires, the whole thing weighing only thirty kilos, that is to say, sixty-six pounds.

"Technically it is of the Chanute type of aeroplane," said M. Archdeacon. "I confided its designing and construction to M. Dargent, the modeler of the French army's balloon station at Calais-Moudon. For years he was the confidant of Col. Renard's airship, dirigible balloon planning, so that he is familiar with the thousand and one problems of the air."

Handsome Prizes.

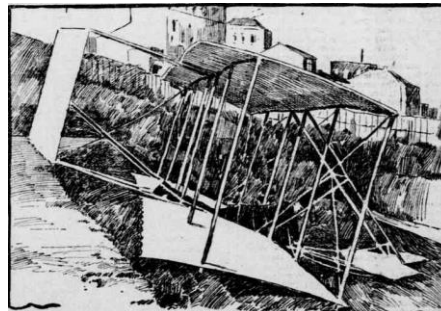
"Next week we go down to Berck to begin our tobogganing. We shall be quite a party. You have heard the names? Ferber, Drzewiecki, Balsan, Mallet, Robart, Girardot. There will be prizes to win. Henri de Rothschild has offered a magnificent cup, I have put up a cash prize of 3,000 francs (\$600) and I hear that others are to be offered."

"What factors will the judges take account of in discerning the prizes?" I asked.

"There are three necessary factors," replied the hardy sport; "first, the speed of the wind at the time of trial, to be ascertained by a proper instrument; second, the height from which the tobogganing flight is undertaken, and third, the duration of the flight in minutes. A scientific member of the Aero Club is working out a formula for the averages."

"How many aeroplanes do you think will really compete?"

"Lots!" he exclaimed. "You see, there is little money risk. An aeroplane does not cost much. Then, too, it can be built rapidly. I can give the order today and have one like this built in a week."



ONE STYLE OF AEROPLANE.

I examined the aeroplane. M. Archdeacon got into it to be photographed. At first glance you imagine that it is intended to travel lengthwise, so that he seems to be lying across it, himself to ride sideways. But he is not. It is not. Curious as it may seem, the aeroplane advances broadwise. As he lies on his belly, the aeronaut's head faces the wind. You see two rudders, one fore, the other aft. The purpose of the after rudder, which stands vertically, is for the horizontal direction of the aeroplane. The forward rudder, which lies horizontally, is for vertical steering in general, and in particular for the landing maneuver.

Start and Finish.

"You see, we start from the top of the dune," explained M. Archdeacon. "Let go!" I cry. And they throw me off. Then the aeroplane goes tobogganing down the air against the wind, which holds it up. Have you ever seen a flat piece of paper floating in the air? Like it, the aeroplane slides down the air in a series of 'shoot-the-chutes' movements, long downward sweeps and quick upward turns, then another long downward sweep and a slightly shorter upward turn, and so on. At last, when I see I am so near the ground that I must land, I make this vertical maneuver of the forward rudder. (He gave it a pull.) It causes a quick momentary lifting of the whole system, breaks the shock of the landing, and there you are!"

"So much for the sport of aerial tobogganing," I said. "When you get thoroughly familiar with the aeroplanes and the conditions of their flight, I hear, you are going to put in the most powerful and lightest of possible petroleum motors. At least you will have no fear of a gas explosion from them."

"There is the beauty of it; you would say," he replied. "But no; there is something more beautiful than that yet. Heretofore the terrible objection to flying machines heavier than the air — that is to say, without balloons to hold them up — has been the necessity of their brusque crashing down to earth the moment their machinery stops by any accident."

When Danger is Greatest.

"I see. The difficulty has been to make the first early experiments, when the danger of the motor stopping is naturally greatest."

"Exactly," replied the young French sport. "Now look, our tobogganing sport will familiarize us with all the conditions. We begin by learning to slide down the air and land — without motors! Well, if later on, when we put in motors, the motor chooses to stop, we shall be no worse off than we have been a hundred times already on our tobogganing without motors!"

It sounds good, does it not? Is it possible that we are soon to see a real beginning of "man flies?" In the Berlin Museum they will show you an Egyptian bracelet on which is engraved the figure of a man furnished with artificial wings fore and aft, apparently composed of bamboo or reed strips, netting and some light tough material resembling silk. The bracelet belonged to the Queen Meroe of an antique dynasty. It is a real flying-machine plan, the first of which we have any document.

Many Victims.

In the eleventh century the English monk Oliver of Malmesbury, a Benedictine, invented a flying machine in which he had such confidence that he jumped off a high tower with it and broke both his legs, four ribs and one arm. He died — the first martyr of aerial navigation.

A hundred years later a Saracen at Constantinople made an attempt before the Emperor Comnenius. He also broke his legs, ribs and collar bones. He was the second martyr.

In the sixteenth century the immortal painter, Leonardo da Vinci, made studies of the flight of birds, of which the masterly designs remain; and there is a legend that he actually constructed an apparatus that was successful. In any case, he wrote a treatise to accompany his designs. Santos-Dumont has a privately printed fac simile copy of it.

In the time of Louis XIV of France a dancer of the royal ballet, one Allard, started in an aeroplane from the high terrace of St. Germain, not ten miles from the present park of the Aero Club at St. Cloud. He broke a lot of ribs.

Later the Marquis de Bacqueville tried another. He fell on a washerwoman's boat in the river Seine and broke a leg. And the records contain the names of others, the Locksmith Besnier, Bernain of Frankfort, and so on.

In modern times (1852) Leturr killed himself at London in a dirigible parachute with two wings. The Belgian de Groof (1874) lost his life at Antwerp under almost identical conditions. Three years later Capt. Le Bris died in the same way.

Then it came the turn of Otto Lilienthal, who, with science equal to his courage, made the technical and practical studies which have made aeroplaning at least a possibility. In 1896 he fell and broke his back and died. A few months later his disciple, Percy Pilchez, killed himself in the same way.

AN AMERICAN IN PARIS.

1904-04-26, "Bishop Wright Is Victorious", The Dayton Daily News, Ohio, April 26, 1904, col. 3, p. 1.

BISHOP WRIGHT IS VICTORIOUS

He Receives \$175 and the Costs in Settlement of the Damage Suit Which He Instituted.

Special to The Daily News.

RICHMOND, Ind., April 26. — Bishop Wright of aDyton compromised the damage suit which he instituted against prominent United Brethren church people in New Castle, Ind., receiving \$175, the defendants paying the cost.

Bishop Wright is Bishop Milton Wright, who lives on Hawthorn street. He is the father of the Wright brothers who invented the airship. The trouble originated when the people in Messick, Ind., Henry county, objected to Bishop Wright presiding at a church conference. A suit in injunction was brought against him the day before the conference and he was enjoined from presiding. Immediately after the conference the injunction was dissolved. Bishop Wright sued the men active in the injunction matter for \$10,000 damages. By the compromise he got the best of the deal.

May 1904

1904-05-03, "Wilbur Wright of Dayton, Ohio, is in the city spending a few days", Daily News-Democrat, Huntington, Indiana, May 3, 1904, col. 2, p. 5.

Wilbur Wright of Dayton, Ohio, is in the city spending a few days. He is one of the Wright brothers who have made themselves famous by their invention of a flying machine. The machine is yet in the experimental state but so far has proved a great success. It is the only machine that does not require an extra gas in flying.

1904-05-25, "Test Flying Machine", The Daily Review, Decatur, Illinois, Wednesday evening, May 25, 1904, col. 4, p. 1.

TEST FLYING MACHINE.

Dayton, O. May 25. — The Wright brothers, Wilbur and Orville of this city, who made a successful test of a flying machine at Kelly Hawk, N. C. last December, made another test at Summer Station, near here, yesterday afternoon. The machine is known as Flyer No. 2, and is similar in construction to the original machine.

1904-05-26, "Elizabeth City Economist: A gentleman visiting this city", The Wilmington Messenger, Wilmington, North Carolina, May 26, 1904, col. 1, p. 6.

Elizabeth City Economist: A gentleman visiting this city whose home is in Kitty Hawk, is responsible for the assertion that the Wright brothers, of airship fame, will return to Kitty Hawk in the near future and resume work on their aerial monster. According to this gentleman the airship has never been removed from Kitty Hawk and nearly all the interviews published in the papers of Norfolk have been erroneous in this respect. This gentleman has assisted the Wrights in all their work and has a general supervision of their property during their absence. He says that they have not completed the ship and that they will return some time within the next month and resume their work. A story is current that they will complete the ship and make the trip from here to St. Louis sometime this fall.

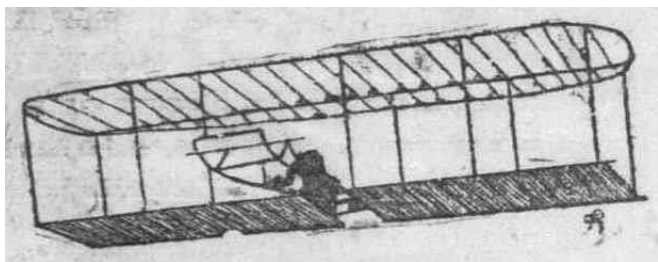
1904-05-26, "Flying Machine Given a Successful Test by Messrs. Wright This Afternoon.", Dayton Press, Ohio, US, May 26, 1904, col. 1-2, p. 6.

Flying Machine

Given a Successful Test By Messrs. Wright This Afternoon.

Rose Twelve Feet in the Air and Sped Along a Distance of Twenty-Five Feet—Propellers Broke.

The Wright flying machine was given a successful test this afternoon at 2 at Simms Station on the D., S. & U. traction line in the presence of a few invited friends of the inventors. The first test was made last Monday afternoon, but did not prove successful, some of the apparatus being out of order, and the beam from which the machine is started was improperly arranged. The experiment was then abandoned, but yesterday the party went out again, but after the machine had been taken from the shed it began to rain, and again the test was abandoned.



THE WRIGHT FLYER.

This morning Messrs. Orville and Wilbur Wright with a few others again went to the place, but the inclement weather prevented a test. At 2 this afternoon, however, another trial was made. The machine, manned by Orville Wright, rose in the air about 12 feet and sped along for about 25 feet. Then it fell to the ground, because the power had not been kept up long enough. In the fall the pine propellers in the rear of the machine were broken. It is stated that had they been made of spruce they would have stood the test. The experiments will be abandoned now for some time. But the trip made today proves that the machine is a success.



Those who saw the test were Bishop Milton Wright, J. G. Feight, George Feight, Henry Webbert, Mr. and Mrs. Frank Hale, Mrs. William Werthner, a Press reporter and several others.

THE WRIGHT FLYER.

The Wright flyer is a true flying machine. It has no gas bag or balloon attachment of any kind, but is supported by a pair of aero-curves, or wings, having an area of 510 square feet. It measures a little more than 40 feet from tip to tip, and the extreme fore and aft dimension is about 20 feet. The weight, including the body of the aviator, is slightly over 700 pounds.

The machine is driven by a pair of aerial screw propellers placed just behind the main wings. The power is supplied by a gasoline motor designed and built by the Messrs Wright in their own shop. It is of the 4-cycle type and has four cylinders. The pistons are four inches in diameter and have a four-inch stroke. At the speed of 1,200 revolutions a minute the engine develops 15 brake horse power, with a consumption of a little less than 10 pounds of gasoline per hour. The weight, including carburettor and fly wheel, is 152 pounds. The wings though apparently very light, have been tested to more than six times the regular load, and it is claimed for the entire structure that it is a practical machine, capable of withstanding the shock of repeated landings and not a mere top which must be entirely rebuilt after each flight.

1904-05-26, "Dayton Airship in Short Flight. Wright Brothers Report Successful Experiment with Their "Flyer" Slightly Modified.", The Cincinnati Commercial Tribune, Ohio, US, May 26, 1904.

DAYTON AIRSHIP IN SHORT FLIGHT

Wright Brothers Report Successful Experiment With Their "Flyer" Slightly Modified.

Special Dispatch to Commercial Tribune.

DAYTON, O., May 26. — Messrs. Orville and Wilbur Wright, the inventors of the Wright Flyer, which it was given out at the time made a successful trip at Kitty Hawk, N. C., last December, report another successful experiment with the machine near this city this afternoon.

The machine has been slightly modified since the experiments in North Carolina, but the changes are merely technical.

The machine being shot from the track, rose about twelve feet in the air and sped along a distance of about twenty-five or thirty feet.

Then it fell to the ground because sufficient gasoline to furnish the power had not been supplied.

In the fall the pine propellers in the rear of the machine were broken, and this will prevent any further experiments for some time.

It is stated that had spruce been used in making the propellers they would have been able to stand the blow they received in striking the ground.

The machine was manned by Orville Wright, the ground work being looked after by Wilbur Wright.

Much secrecy has been observed in making the experiments in this city in order that large crowds would not gather and interfere with the work.

1904-05-26, "Flies Thirty Feet. Wright Brothers' Airship Falls to the Ground Because of Imperfect Adjustment.", The Cleveland Leader, Ohio, US, May 26, 1904.

FLIES THIRTY FEET

WRIGHT BROTHERS' AIRSHIP FALLS TO THE GROUND BECAUSE OF IMPERFECT ADJUSTMENT.

Special Dispatch to the Leader.

DAYTON, O., May 26. — The Wright flying machine, invented by Messrs. Orville and Wilbur Wright, of this city, and which made a successful flight at Kitty Hawk, North Carolina, in December last, was given another test at Simm station on the Erie railroad, six miles from this city.

The machine rose in the air about twelve feet and then sped a distance of thirty feet, when it fell. An imperfect adjustment of the gasoline engine that furnishes the power is the assigned reason for the abrupt ending of the trip. The Wright brothers expressed satisfaction with the experiment and said that all that is now needed is the better control of the engine.

Great secrecy was observed in conducting the test and only a few persons witnessed it. The machine is rectangular in shape, about forty feet in length and ten in breadth. The floor and corresponding upper frame are both composed of canvas. The frames are connected by brace work. Two pair of wings projected from the sides, and a propeller, comprise the machine.

1904-05-27, "Elizabeth City Economist: A gentleman visiting this city", The Daily Free Press, Kinston, North Carolina, May 27, 1904, col. 6, p. 1.

Elizabeth City Economist: A gentleman visiting this city whose home is in Kitty Hawk, is responsible for the assertion that the Wright brothers, of airship fame, will return to Kitty Hawk in the near future and resume work on their aerial monster. According to this gentleman the airship has never been removed from Kitty Hawk and nearly all the interviews published in the papers of Norfolk have been erroneous in this respect. This gentleman has assisted the Wrights in all their work and has a general supervision of their property during their absence. He says that they have not completed the ship and that they will return some time within the next month and resume their work. A story is current that they will complete the ship and make the trip from here to St. Louis some time this fall.

1904-05-27, "Not Attended with Success Was Trial of the Airship Belonging to Wright Brothers. Engine Failed at the Critical Moment.", The Dayton Daily News, Ohio, US, May 27, 1904, col. 3, p. 18.

NOT ATTENDED WITH SUCCESS

WAS TRIAL OF THE AIRSHIP BELONGING TO WRIGHT BROTHERS.

ENGINE FAILED AT THE CRITICAL MOMENT.

It Raised From 6 to 12 Feet and Sailed 25 Feet Before Hitting the Ground — Experiment Made Near Simms Station.

The flying machine invented by Orville and Wilbur Wright, the sons of Bishop Milton Wright of West Dayton, was given a test Thursday afternoon on Huffman's prairie, south of Simm's station, on the Dayton, Springfield and Urbana traction line. The test was not considered a successful one. The machine rose into the air a height ranging from six to twelve feet, and went ahead on a straight line about 25 feet. It is stated by the inventors that a

defect in the engine caused its sudden descent. Their idea was to have made a circle of the field, and like a bird, alight with the wind. But the failure of the machine to go further than 25 feet prevented this. Another test will not be made for a week or 10 days. In the meantime they will devote some time to remedying the defects in the engine.

The first attempt, made earlier in the week, was more of a failure than the trial Thursday. The machine glided along the track from which it is supposed to lift into the air, and plowed along the prairie sod. This was because there was not sufficient momentum power to lift the machine into the air.

The Wright brothers have worked persistently and carefully on their invention, and expect to perfect it into the first successful flying machine invented.

The Wright Brothers have kept their movements obscured as far as possible and none but a few of their most intimate friends have known that they were still engaged in further perfecting the system at which they have been laboring with characteristic diligence during the last five years.

Quite a large party of intimate friends of Messrs. Orville and Wilbur Wright, who have been promoting the invention, went out to the place, in which they effected the reconstruction of the airship on Wednesday, but just as all was in readiness for the flight there began a down pour of rain and the attempt had to be abandoned. Yesterday there were but a few friends of the Wright brothers present and all who were present feel satisfied that the test would have been unqualifiedly successful had not the power become exhausted.

1904-05-27, "Wright Boys Make Repairs. Thursday's Experiment Unqualified Success. Lack of Power the Cause of Sudden Descent.", Dayton Press, Ohio, US, May 27, 1904.

Wright Boys Make Repairs

Thursday's Experiment Unqualified Success.

Lack of Power the Cause of Sudden Descent.

Wilbur and Orville Wright, the designers of the airship, the successful test of which mention was made exclusively in Thursday's Press, were in the country today, where the test was made, a few miles east of the city, making some repairs occasioned by the precipitous descent of yesterday.

The rear propellers will be made of spruce as was intended, but in the haste for a trial to satisfy a few friends, white pine ones were used instead. A slight defect will be corrected in the engine, since one of the inventors believes there is a small air pocket that needs to be eliminated. The tightly drawn canvas covering was torn in several places and in all probability the entire bottom framework will be recovered.

The machine made a perfect flight for the distance it covered, but not carrying power enough to meet the suddenly recurring currents of air, was driven back, with the result given. However, it was a signal success, pronounced so by those who had entertained the greatest doubt, as well as by the studious and deserving young designers.

The machine is a beautiful piece of work, and its execution required many weary days of mental and manual labor. It is of a slight curvature and not flat, as many suppose. The frame work on which the fore end wind deflector is supported is light and in harmony with the rest of the machine, which, controlled by one person, weighs altogether about 800 pounds. The specially constructed engine is of four cylinders, and all the castings are of aluminum, its capacity is approximately 16 horse power.

On Monday the first experiment began in the presence of a few invited friends and several newspaper men. But the claim was made that the wind was unfavorable, and while the concealment from the public was hoped for, a larger crowd found its way to the same grounds, near Simm's Station, Wednesday afternoon, and again was there dismay in the minds of many. This time the rain interfered and until evening the clouds were threatening a constant downpour.

Thursday morning at 10:30 there were assembled on the grounds about 30 invited friends of the Wright boys and immediate family, with several newspaper men, and again was the disappointment keen — at least to some. No one had prepared to spend the day there, and in consequence it was necessary that some should return to the city for lunch and bring a supply for those remaining — all of which was agreed to. Of the 18 who came to town on the 12 o'clock car, but six returned. Meanwhile those on the ground were eager for a trial, and after the return car was long past due (for those

returning from Dayton were to leave at 1, arriving at 1:30) the brothers decided to make the trial, which was done to the satisfaction of all present, and at the same time consented to an announcement of the fact.

All further work will be suspended for several weeks, and to withstand the encroachment of intruders, whose presence would be a deterrent to the progress of the work, it is probable that the shed which had been erected on the field to protect the machine, will be removed to some other place, and the machine will be taken apart and placed in position there.

1904-05-27, "Wright Flyer. First Test since Reconstruction. Rises into the Air to the Height of Fifteen Feet.", The Dayton Journal, Ohio, US, May 27, 1904.

WRIGHT FLYER

First Test Since Reconstruction.

RISES INTO THE AIR TO THE HEIGHT OF FIFTEEN FEET.

Air Navigation Nearer Reaching Perfection and Wright Bros. are Sanguine That Their Highest Ideals Will be Realized.

The first test of the Wright flying machine that has been made since its reconstruction upon Ohio soil was made yesterday afternoon in a large open field located about six miles east of this city, near Simms's station.

The experiment was made at 2:00 o'clock yesterday afternoon, when the machine rose into the air about fifteen feet and maintained its flight for a distance of about 25 feet. It then fell to the ground, the reason assigned for the failure to cover more territory being that the power had become exhausted. In the fall the pine propellers in the rear of the machine were broken and the experiments will now be abandoned for some time.

The new Wright flyer has no gas bag or balloon attachment and is a true flyer. It is supported by a pair of aero-curves or wings and has an area of 510 square feet. It measures a little more than 40 feet from tip to tip, weighs about 800 pounds, and is more substantially constructed than any other machine that has ever been constructed.

It is driven by a pair of aerial screw propellers and the power is supplied by a gasoline motor designed and built by the Wright Bros. It is of the four cycle type and has four cylinders. At the speed of one thousand two hundred revolutions per minute the engine develops 15-brake horse power with a consumption of a little less than ten pounds of gasoline per hour. The weight of the motor is 15 pounds, making a comparatively small proportion of the entire weight.

The wings, though apparently very light, have been tested to more than six times the regular load and it is claimed for the entire structure that it is a practical machine and the Wright Brothers are sanguine as to their ability to develop it to the point where it will fulfill their perfect ideal and prove the practicability of the principles upon which the flyer has been constructed.

The new flyer is but little different from the original and with a little more time the inventors believe they will have the problem of air navigation entirely solved.

1904-05-27, "Flying Machine Given a Test", The Dayton Herald, Dayton, Ohio, May 27, 1904, col. 4, p. 10.

FLYING MACHINE GIVEN A TEST

The secret of the navigation of the air has been unveiled. It is a secret no longer. To Dayton belongs the credit of the first successful flight of an airship recorded in the history of this state. To the Wright brothers belongs the honor of solving the riddle which for generations has tempted and baffled students of all countries.

AT SIMMS STATION.

Yesterday afternoon at 2 o'clock at a little nook on the D., S. & U. traction line, known as Simms Station, a rough bordered shed was thrown open, and from its recesses was carried a creation of wires, sails and wood, introduced to a score of people gathered in the vicinity as an airship. Fifteen

minutes later the strange object was placed on a single rail track, jutting out 50 feet into the reach of meadow.

ONTO THE DECK.

At a few minutes past three Will Wright crawled onto the slanting deck of the vessel, and men who had been supporting either end released their hold. There was a furious churning from a pair of white paddles in the rear of the boat, called by the Wrights "propellers," a sudden cat-like spring down the rail and before the fascinated spectators could realize that the start had been made, the vessel was at the end of the rail and into the air.

INTO THE AIR.

The leap from the track was like the upward sweep of a bird. The transition from terra firma to the air was so smooth, so evidently natural, so skillfully planned, that it seemed as though such contrivances as an airship must have been in use for years.

IT HAD LIFE.

The slender, wire-entwined thing of wood and sails had life. Into the mechanism which gave to it motion had been breathed the eternal spark. It actually advanced through the air. It pursued its way over the earth. It obeyed the hand of the man lying on its deck. A motion of a lever regulated its movements. Machinery had conquered the problem of the air. Man had put behind him another of the baffling problems of nature.

EVENT OF HISTORY.

The little rough-boarded platform at the side of the traction track was to be immortalized. Simms Station, the homely name, the little jumping off, wayside stop, and all, were to be known in the history of events. An airship had taken flight there. Men were to know the name and remember.

FIRST FLIGHT.

The first flight was not of great duration. This was due to the power of the propelling engines giving out. The Wright brothers said before the exhibition that they would be satisfied if they could show to the neighbors and friends of their boyhood, the people among whom they had always lived and to whom they first confided the great problem before them, that they had not worked in vain; that they had an airship that could traverse the air. If they could do this they said they would be satisfied. And they were satisfied. So were the people who watched the trial; people to whom it had been given to witness the first exhibition of a ship of the air. The Wright brothers are planning to enter, if possible, the great flying machine race at the St. Louis Exposition this summer.

1904-05-27, "Rose Fifteen Feet in the Air and Maintained Its Flight for About Twenty-Five Feet", The Cincinnati Enquirer, Cincinnati, Ohio, May 27, 1904, col. 5, p. 1.

ROSE

Fifteen Feet in the Air

And Maintained Its Flight For About Twenty-Five Feet,

Then the Wright Machine Fell From Lack of Power.

Dayton Inventors, After Another Test of Their Contrivance, Are Sanguine of Final Success.

SPECIAL DISPATCH TO THE ENQUIRER.

Dayton, Ohio, May 26. — The first test of the Wright flying machine that has been made since it has been reconstructed in Ohio soil was made yesterday afternoon at 2 o'clock in a large open field, about six miles east of here, near Simms Station.

The atmospheric conditions were favorable and the machine rose into the air about 15 feet and maintained its flight for a distance of about 25 feet. It then fell to the ground. The reason assigned for the failure to cover more territory was that the power had become exhausted. In the fall the pine propellers of the rear of the machine were broken, and the experiments will now be abandoned for some time.

The new Wright flyer has no gas bag or balloon attachment and is a true flyer. It is supported by a pair of aero curves or wings and has an area of 510 square feet. It measures a little more than 40 feet from tip to tip, weighs about 800 pounds and is more substantially constructed than other machines

of its kind. It is driven by a pair of aerial screw propellers and the power is supplied by a gasoline motor, designed and built by the Wright brothers.

It is of the four cycle type and has four cylinders at the speed of 1,200 revolutions per minute. The engine develops 15 brake horse power with a consumption of a little less than ten pounds of gasoline per hour. The weight of the motor is 152 pounds, making a comparatively small proportion of the entire weight.

The wings, though apparently very light, have been tested to more than six times the regular load, and it is claimed for the entire structure that it is a practical machine. The Wright brothers are sanguine as to their ability to develop it to the point where it will fulfill their ideal and prove the practicability of the principles upon which the flyer has been constructed.

The new flyer differs but slightly from the original, and with a little more time the inventors believe they will have the problem of air navigation entirely solved. The Wrights have kept their movements obscured as completely as possible and none but a few of their most intimate friends have known that they were still engaged in perfecting the system at which they have been laboring with characteristic diligence for many years.

1904-05-27, "Wright Flying Machine Falls To the Ground", The Marion Daily Star, Marion, Ohio, May 27, 1904, col. 4, p. 1.

WRIGHT FLYING MACHINE FALLS TO THE GROUND

First Experiment on Ohio Soil Is Not a Success.

Dayton, O., May 27. — The first test of the Wright flying machine that has been made since it has been reconstructed on Ohio soil was made Wednesday afternoon, in a large open field, about six miles east of here. The atmospheric conditions were favorable and the machine rose into the air about fifteen feet and maintained its flight for a distance of about twenty-five feet. It then fell to the ground. The reason assigned for the failure to cover more territory was that the power had become exhausted. In the fall the pine propellers at the rear of the machine were broken and the experiments will now be abandoned for some time.

1904-05-27, "Test of Flying Machine Is Declared a Success", The Chicago Daily Tribune, Chicago, Illinois, May 27, 1904, col. 5, p. 1.

TEST OF FLYING MACHINE IS DECLARED A SUCCESS.

Wright Brothers, Who Made Flight in North Carolina, Repeat Performance Near Dayton — Fall Breaks Propellers

Dayton, O., May 26. [Special]. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city today, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-27, "Wright Brothers Fly. Their New Machine Said to Have Successful Test.", The Evening Star, Washington, D. C., US, May 27, 1904, col. 4, p. 1.

WRIGHT BROTHERS FLY.

Their New Machine Said to Have Successful Test.

CHICAGO, May 27. — A dispatch to the Tribune from Dayton, Ohio, says: The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which, the brothers say, was successful.

Secrecy was maintained about the test, and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a

derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken, and the test could not be repeated.

1904-05-27, "Flying Machine Given Another Test", Waterbury Evening Democrat, Waterbury, Connecticut, US, May 27, 1904, col. 2, p. 1.

FLYING MACHINE GIVEN ANOTHER TEST

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-27, "Flew Thirty Feet. Wright Brothers' Machine Then Dropped and Propeller Was Broken.", The Topeka State Journal, Topeka, Kansas, US, Friday Evening, May 27, 1904, col. 4, p. 6.

FLEW THIRTY FEET.

Wright Brothers' Machine Then Dropped and Propeller Was Broken.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose 12 feet in the air and flew 30 feet when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-27, "New Flying Machine Tried. Rose 12 Feet, Flew 30, Then Machinery Fell — Test Successful, Say Ohio Inventors.", The New York Mail and Express, N. Y., US, May 27, 1904.

NEW FLYING MACHINE TRIED.

Rose 12 Feet, Flew 30, Then Machinery Fell — Test Successful, Say Ohio Inventors.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has had another test near this city, which the brothers say was successful.

Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the aid and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power.

In the fall the propellers were broken and the test could not then be repeated.

1904-05-27, "Call Airship a Success. Wright Brothers Make Two Flights in Machine.", The South Bend Tribune, South Bend, Indiana, May 27, 1904, col. 2, p. 1.

CALL AIRSHIP A SUCCESS

Wright Brothers Make Two Flights in Machine.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city yesterday, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

The machine, after being propelled a hundred feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the

propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-27, "Flying Machine That Works. Some Ohio Men Make a Successful Flight With New Machine.", Quad-City Times, Davenport, Iowa, May 27, 1904, col. 3, p. 2.

FLYING MACHINE THAT WORKS

Some Ohio Men Make a Successful Flight With New Machine.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city yesterday, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled 100 feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-27, "Test of Flying Machine. Wright Brothers Give a Performance Near Dayton.", The Indianapolis News, Indianapolis, Indiana, May 27, 1904, col. 4, p. 13.

TEST OF FLYING MACHINE.

Wright Brothers Give a Performance Near Dayton.

DAYTON, O., May 27. —The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a flight at Kitty Hawk, N. C., in December last, was tested again near this city yesterday. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-27, "Went 30 Feet in the Air. Wright Flying Machine Given a Test Near Dayton, Ohio.", Fall River Daily Evening News, Fall River, Massachusetts, May 27, 1904, col. 2, p. 6.

WENT 30 FEET IN THE AIR.

Wright Flying Machine Given a Test Near Dayton, Ohio.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

The machine after being propelled a hundred feet, rose 12 feet in the air and flew 30 feet, when it dropped.

This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-27, "Say Flying Machine Is a Success", The Butte Daily Post, Butte, Montana, May 27, 1904, col. 3, p. 10.

SAY FLYING MACHINE IS A SUCCESS

BY ASSOCIATED PRESS.

Chicago, May 27. — A dispatch to The Tribune from Dayton, Ohio, says: The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, which made a successful flight at Kitty-Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful.

Secrecy was maintained about the test and few witnessed it.

The machine, after being propelled 100 feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, the navigators say, to a

derangement of the gasoline engine that furnished the power. In the fall the propellers were broken and the test could not be repeated.

The Wrights decline to give any information as to their future purposes.

1904-05-27, "Test Flying Machine. Secret Trial Made Near Chicago Where Machine Is Said to Have Performed Satisfactorily.", St. Joseph News-Press, St. Joseph, Missouri, May 27, 1904, col. 2, p. 14.

TEST FLYING MACHINE.

Secret Trial Made Near Chicago Where Machine Is Said to Have Performed Satisfactorily.

Associated Press Dispatch.

CHICAGO, May 27. — A dispatch to The Tribune from Dayton, Ohio, says:

The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnished the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked to their future purposes.

1904-05-27, "Wright Machine Flies Again. Inventors Maintain Secrecy as to Intentions and Designs.", St. Louis Post-Dispatch, St. Louis, Missouri, May 27, 1904, col. 5, p. 19.

WRIGHT MACHINE FLIES AGAIN.

Inventors Maintain Secrecy as to Intentions and Designs.

DAYTON, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful.

Secrecy was maintained about the test, and few witnessed it. The machine, after being propelled a hundred feet, rose 12 feet in the air and flew 30 feet when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-27, "Wright Flying Machine Dropped from Height", The Buffalo Enquirer, Buffalo, New York, May 27, 1904, col. 6, p. 3.

WRIGHT FLYING MACHINE DROPPED FROM HEIGHT

Dayton, O., May 27. — The Wright Flying Machine, invented by Orville and Wilbur Wright, brothers of this city, which made a successful flight at Kittyhawk, N. C., last December, had another trial near this city yesterday, which the brothers say was successful. Great secrecy was maintained about the test and but few witnessed it.

The machine, after being propelled along a track for the distance of a hundred feet rose twelve feet in the air and flew a distance of thirty feet, when it dropped. This was due, the inventors say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-27, "Given Another Test. Wright Flying Machine Flew 30 Feet and Dropped.", The Wichita Beacon, Wichita, Kansas, May 27, 1904, col. 6, p. 1.

GIVEN ANOTHER TEST

Wright Flying Machine Flew 30 Feet and Dropped.

Dayton, Ohio, May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a

successful flight at Kittyhawk, N. C., in December last, has been given another test near this city which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose in the air and flew 30 feet when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-27, "Flying Machine Dropped. Flew Thirty Feet and Inventors Claim the Test Was Successful.", The Buffalo Times, Buffalo, New York, May 27, 1904, col. 5, p. 10.

FLYING MACHINE DROPPED

Flew Thirty Feet and Inventors Claim the Test Was Successful.

By Associated Press.

DAYTON, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been giving another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Flew Thirty Feet Then the Machine Dropped to the Earth. Engine out of Order. Propellers Were Broken and Test Was Postponed.", The Wichita Daily Eagle, Wichita, Kansas, US, May 28, 1904, col. 3, p. 10.

FLEW THIRTY FEET

Then the Machine Dropped to the Earth.

ENGINE OUT OF ORDER

Propellers Were Broken and Test Was Postponed.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kittyhawk, N. C., in December last, has been given another test near this city which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnished power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Wright Brothers Again Test Flying Machine. Gasoline Engine Becomes Deranged, the "Kite" Falls and Propellers Are Broken.", The Indianapolis Journal, Indianapolis, Indiana, US, May 28, 1904, col. 4, p. 5.

WRIGHT BROTHERS AGAIN TEST FLYING MACHINE

Gasoline Engine Becomes Deranged, the "Kite" Falls and Propellers Are Broken.

DAYTON, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which, the brothers say, was successful. Secrecy was maintained and few witnessed the test. The machine, after being propelled 100 feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test

could not be repeated. The Wright brothers decline to give any information when asked as to their future purposes.

The Wright brothers are well-known in Indiana. Their father formerly was a resident of Rush county.

1904-05-28, "Flying Machine Was Given Another Trial", Savannah Morning News, Savannah, Georgia, May 28, 1904, col. 3, p. 1.

FLYING MACHINE WAS GIVEN ANOTHER TRIAL.

Chicago, May 27. — A dispatch to the Tribune from Dayton, O., says:

The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful.

Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power.

In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Flew Thirty Feet. Another Flying Machine Trial at Kitty Hawk.", The Morning Post, Raleigh, North Carolina, May 28, 1904, col. 3, p. 1.

FLEW THIRTY FEET

Another Flying Machine Trial at Kitty Hawk

Dayton, Ohio, May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which, the brothers say, was successful.

Secrecy was maintained about the test, and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken, and the test could not be repeated.

1904-05-28, "Made Test of Machine. Wright Brothers "Flyer" Is Now Located at Dayton. The Test in Detail. Machine Rose to Considerable Height and Navigated on a Straight Line.", The Richmond Item, Richmond, Indiana, May 28, 1904, col. 5, p. 5.

MADE TEST OF MACHINE

WRIGHT BROTHERS "FLYER" IS NOW LOCATED AT DAYTON.

THE TEST IN DETAIL

Machine Rose to Considerable Height and Navigated on a Straight Line.

Wilbur and Orville Wright, formerly of Richmond, whose experiments in the South with a flying machine of their own design and building attracted much attention some time ago, have reached Dayton, their present home, after a long stay in North Carolina. They have brought their "flyer" with them for the purpose of continuing the tests.



WILBUR AND ORVILLE WRIGHT.

Former Richmond Young Men, Now of Dayton, Who are the Inventors of a Flying Machine.

Yesterday a test was made near Simm's station, six miles from Dayton. The machine rose into the air about fifteen feet and maintained its flight for a distance of about 25 feet. It then fell to the ground, the reason assigned for the failure to cover more territory being that the power had become exhausted. In the fall the pine propellers in the rear of the machine were broken and the experiments will now be abandoned for some time.

The new Wright flyer has no gas bag or balloon attachment and is a true flyer. It is supported by a pair of aero-curves or wings, and has an area of 510 square feet. It measures a little more than 40 feet from tip to tip, weighs about 800 pounds, and is more substantially constructed than any other machine that has ever been constructed.

It is driven by a pair of aerial screw propellers and the power is supplied by a gasoline motor designed and built by the Wright brothers. It is of the four cycle type and has four cylinders. At the speed of 1,200 revolutions per minute the engine develops 15-brake horse power with a little more than ten pounds of gasoline per hour. The weight of the motor is 15 pounds, making a comparatively small proportion of the entire weight.

The Wright brothers have kept movements obscured as far as possible and none but a few of their most intimate friends have known that they were still engaged in further perfecting the system at which they have been laboring with characteristic diligence during the last five years.

1904-05-28, "Machine Flies 30 Feet. Invention of the Wright Brothers Meets with a Mishap.", The Baltimore Sun, Baltimore, Maryland, May 28, 1904, col. 2, p. 8.

MACHINE FLIES 30 FEET

Invention Of The Wright Brothers Meets With A Mishap.

Dayton, Ohio, May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

The machine, after being propelled 100 feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnished the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Machine Flew Thirty Feet. Then Something Went Wrong and Landing Was Sudden.", The Charlotte News, Charlotte, North Carolina, May 28, 1904, col. 2, p. 7.

MACHINE FLEW THIRTY FEET.

Then Something Went Wrong and Landing Was Sudden.

(By Associated Press.)

Dayton, Ohio, May 27. — The Wright flying machine, invented by Orville and William Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another trial near this city today, which the brothers say was successful.

Great secrecy was maintained about the test and but few witnessed it. The machine, after being propelled along a track for a distance of a hundred feet, rose twelve feet in the air and flew a distance of thirty feet, when it dropped. This was due, the inventors say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The brothers decline to give any information when asked as to their future purposes.

The Wright flyer is a triangular, box-like machine, having the appearance at a distance of an open street car. The upper and lower framework consists of canvas, ribbed with pieces of wood to give the frame firmness. These frames are connected by braces of wood. The machine has no gas bag or balloon attachment of any kind, but is supported by a pair of aero cover or wings having an area of 510 square feet. It measures a little more than forty feet from tip to tip, and the extreme fore and aft dimension is about twenty feet. The weight, including the body of the aviator, is slightly over 700 pounds.

The machine is driven by a pair of aerial screw propellers placed just behind the main wings. The power is supplied by a gasoline motor, designed and built by the Messrs. Wright in their own shop. It is of the four cycle type and has four cylinders. The pistons are four inches in diameter and have a four-inch stroke. At the speed of 1,200 revolutions a minute the engine

develops fifteen-brake horse-power, with a consumption of a little less than ten pounds of gasoline per hour. The weight, including carburetter and flying wheel, is 152 pounds.

The wings, though apparently very light, have been tested to more than 6 times the regular load, and it is claimed for the entire structure that it is a practical machine capable of withstanding the shock of repeated landings.

1904-05-28, "Wright Airship Flies. Wright Brothers Machine Is Damaged by Fall After Successful Flight.", The Norfolk Landmark, Norfolk, Virginia, May 28, 1904, col. 7, p. 1.

WRIGHT AIRSHIP FLIES.

Wright Brothers Machine Is Damaged by Fall After Successful Flight.

By Telegraph to The Landmark.

Chicago, May 27. — A dispatch to the Tribune from Dayton, O., says: The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful.

Secrecy was maintained about the test, and few witnessed it. The machine, after being propelled 100 feet, rose twelve feet in the air and flew thirty feet, when it dropped.

This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Wright Flying Machine. Another Test Made Which the Brothers Say Was Successful.", The Wilmington Morning Star, Wilmington, North Carolina, May 28, 1904, col. 4, p. 4.

WRIGHT FLYING MACHINE.

Another Test Made Which the Brothers Say Was Successful.

By Telegraph to the Morning Star.

CHICAGO, May 27. — A dispatch to the "Tribune" from Dayton, O., says: The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Wright Airship Again Tested", The Morning Star, Glens Falls, New York, May 28, 1904, col. 3, p. 1.

Wright Airship Again Tested.

Chicago, May 27. — A dispatch to the Tribune from Dayton, O., says that the Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Wright Flying Machine. New Test Made Shows Flight, But Machinery Breaks.", The Times-Democrat, New Orleans, Louisiana, May 28, 1904, col. 3, p. 2.

WRIGHT FLYING MACHINE.

New Test Made Shows Flight, But Machinery Breaks.

Chicago, May 27. — A dispatch to the Tribune from Dayton, O., says:

The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test. The machine, after being propelled a hundred feet, rose twelve feet in the air, and flew thirty feet in the air when it dropped. This was due, the navigators said, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Wright Flying Machine Successfully Tested", Elmira Gazette, Elmira, New York, May 28, 1904, col. 1, p. 1.

WRIGHT FLYING MACHINE SUCCESSFULLY TESTED.

Dayton, O., May 28. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test, and few witnessed it. The machine after being propelled one hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Wright Airship Again Tested", The Morning Call, Allentown, Pennsylvania, May 28, 1904, col. 2, p. 2.

Wright Airship Again Tested.

Chicago, May 27. — A dispatch to the Tribune from Dayton, O., says that the Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Wright Airship Again Tested", The Wilkes-Barre Record, Wilkes-Barre, Pennsylvania, May 28, 1904, col. 1, p. 3.

Wright Airship Again Tested.

Chicago, May 27. — A dispatch to the Tribune from Dayton, O., says that the Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Flying Machine a Success. Wright Brothers Who Made a Flight in North Carolina, Repeat Performance Near Dayton.", Muscatine News-Tribune, Muscatine, Iowa, May 28, 1904, col. 1, p. 7.

FLYING MACHINE A SUCCESS

Wright Brothers Who Made a Flight in North Carolina, Repeat Performance Near Dayton.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the

propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Wright Flying Machine Flew but Defect Caused It to Fall", The Arkansas Democrat, Little Rock, Arkansas, May 28, 1904, col. 4-5, p. 1.

WRIGHT FLYING MACHINE FLEW — BUT DEFECT CAUSED IT TO FALL

Chicago, May 27. — A dispatch to the Tribune from Dayton, Ohio, says: The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Flying Machine Stands the Test. Brothers Who Made One Successful Flight Repeat the Performance.", St. Joseph Gazette, St. Joseph, Missouri, May 28, 1904, col. 2, p. 2.

FLYING MACHINE STANDS THE TEST

BROTHERS WHO MADE ONE SUCCESSFUL FLIGHT REPEAT THE PERFORMANCE.

DAYTON, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city yesterday which the brothers say was successful.

Secrecy was maintained about the test and few witnessed it.

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This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "It Really Flew Did This Machine, but Its Flight Soon Ended.", The Daily Palladium, Richmond, Indiana, US, May 28, 1904, col. 2, p. 6.

IT REALLY FLEW

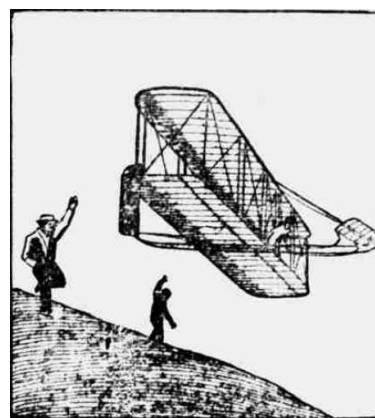
Did This Machine, but Its Flight Soon Ended.

Dayton, Ohio, May 28. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a flight at Kitty Hawk, N. C., in December last, was tested again near this city.



**WILBUR AND ORVILLE WRIGHT, THE INVENTORS OF THE
AEROPLANE.**

Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.



THE WRIGHT AEROPLANE.

1904-05-28, "Went 30 Feet in the Air. Wright Flying Machine Given a Test Near Dayton, Ohio.", Fall River Daily Evening News, Fall River, Massachusetts, May 28, 1904, col. 4, p. 6.

WENT 30 FEET IN THE AIR.

Wright Flying Machine Given a Test Near Dayton, Ohio.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

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1904-05-28, "Flying Machine. Flew 30 Feet and Then Dropped Owing to Derangement of Engine.", Rutland Daily Herald, Rutland, Vermont, May 28, 1904, col. 7, p. 1.

FLYING MACHINE.

Flew 30 Feet and Then Dropped Owing to Derangement of Engine.

DAYTON, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

The machine, after being propelled 100 feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Flying Machine a Success. Wright Brothers Who Made a Flight in North Carolina, Repeat Performance Near Dayton.", Alton Evening Telegraph, Alton, Illinois, May 28, 1904, col. 3, p. 1.

FLYING MACHINE A SUCCESS

Wright Brothers Who Made a Flight in North Carolina, Repeat Performance Near Dayton.

Dayton, O., May 28. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

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propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Test Was "Successful." Flying Machine, Propelled 100 Feet, Rises 12 and Flies 30; Then Drops.", Democrat and Chronicle, Rochester, New York, May 28, 1904, col. 3, p. 2.

TEST WAS "SUCCESSFUL."

Flying Machine, Propelled 100 Feet, Rises 12 and Flies 30; Then Drops.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine, which furnished the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "A Successful Test of a Flying Machine", The Wilmington Messenger, Wilmington, North Carolina, May 28, 1904, col. 1, p. 5.

A Successful Test of a Flying Machine.

Chicago, May 27. — A dispatch to The Tribune from Dayton, O., says:

The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-28, "Flying Machine Did Not Fly. Fell to the Ground and the Propellers Were Broken.", The Shreveport Times, Shreveport, Louisiana, May 28, 1904, col. 7, p. 1.

FLYING MACHINE DID NOT FLY.

Fell to the Ground and the Propellers Were Broken.

Chicago, May 27. — A dispatch to the Tribune from Dayton, Ohio, says:

The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-05-28, "Flying Machine Has a Fall. Sails for Thirty Feet, Then Drops to the Ground.", The Spokesman-Review, Spokane, Washington, May 28, 1904, col. 4, p. 2.

FLYING MACHINE HAS A FALL

Sails for Thirty Feet, Then Drops to the Ground.

CHICAGO, May 27. — A dispatch to the Tribune from Dayton, Ohio, says the Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kittyhawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a few hundred feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, navigators say, to a derangement of the gasoline engine that furnished the power. In the fall the propellers were broken and the test could not be repeated. The

Wright decline to give any information when asked as to their future purposes.

1904-05-28, "Another Flying Machine", Daily Oregon Statesman, Salem, Oregon, May 28, 1904, col. 5, p. 1.

ANOTHER FLYING MACHINE.

CHICAGO, May 27. — A dispatch to the Tribune from Dayton, O., says: The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kittyhawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

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1904-05-28, "Flying Machine Proves a Success", The Topeka Daily Capital, Topeka, Kansas, May 28, 1904, col. 2, p. 2.

FLYING MACHINE PROVES A SUCCESS

Dayton, Ohio, May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

The Wrights declined to give any information when asked as to their future purposes.

1904-05-29, "The Wright Flying Machine. Short Trip on the Aerial Ship First Tried at Kitty Hawk.", The News and Observer, Raleigh, N. C., May 29, 1904, col. 3-4, p. 10.

THE WRIGHT FLYING MACHINE.

Short Trip on the Aerial Ship First Tried at Kitty Hawk.

(By the Associated Press.)

Chicago, May 27. — A dispatch to the Tribune, from Dayton, Ohio, says: The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, has been given another test near this city, which the brothers say was successful. Secrecy was maintained about the test, and few witnessed it. The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated.

1904-05-29, "Over at Dayton the engine of a new flying machine got out of order", The Indianapolis Journal, Indianapolis, Indiana, May 29, 1904, col. 1, p. 4, part 2.

Over at Dayton the engine of a new flying machine got out of order during a flight and the machine dropped to the ground a wreck. Yet the inventors pronounce the trial successful! Nothing like being cheerful.

1904-05-29, "The Wright Brothers' airship fell to the ground", The Norfolk Virginian, Norfolk, Virginia, May 29, 1904, col. 1, p. 4.

The Wright Brothers' airship fell to the ground and broke after "a successful flight" of 100 feet. That's like the famous hospital report, "Operation successful, but patient died."

1904-05-29, "Brothers to Make Another Test. Messrs. Wright Are Working Hard on Their Invention — May Go to Fair.", [The Dayton Journal?], [May?] 29, 1904.

BROTHERS TO MAKE ANOTHER TEST

Messrs. Wright Are Working Hard On Their Invention — May Go To Fair.

The Wright Brothers will make another trial trip with their airship at Simms' station within the next two weeks. The brothers expect to have their ship show some improvement over the last trip which took place at Simms' station a short time ago.

IMPROVEMENTS MADE.

Considerable improvement and changes are being made in the various parts of the machine. The rudders are being made over. They will be heavier than before and of a different shape. The Wright Brothers say that their ship can carry three or four hundred pounds more weight and to increase the weight of the ship in making the improvements will not hamper the chances of a successful trip.

CARRY MORE WEIGHT.

The ship when improved in the various ways will carry more weight than ever before. The operators have found no difficulty in getting the ship off the ground and the trouble is generally experienced in the flight.

TO WORLD'S FAIR.

There is a probability that the ship will be exhibited at the World's Fair at St. Louis. The Wright Brothers have not determined on this plan, but say that if the trial trips will prove satisfactory they will enter their ship for an exhibition at the Fair. It is also possible that the young men will make a trip to the larger cities to exhibit their flyer. Several requests have been received asking the two inventors to come to larger towns for exhibition purposes, but none of these invitations have been accepted as yet.

1904-05-30, "A gentlemen visiting this city whose home is in Kitty Hawk", The Gazette-Messenger, Washington, North Carolina, May 30, 1904, col. 2, p. 2.

A gentleman visiting this city whose home is in Kitty Hawk, is responsible for the assertion that the Wright brothers, of airship fame, will return to Kitty Hawk in the near future and resume work on their aerial monster. According to this gentleman the airship has never been removed from Kitty Hawk, and nearly all the interviews published in the papers of Norfolk have been erroneous in this respect. This gentleman has assisted the Messrs. Wright in all the work on the machine, and has a general supervision of their property during their absence. He says that they have not completed the ship and that they will return some time within the next month and resume their work. A story is current that they will complete the ship and make the trip from here to St. Louis sometime this fall. — Elizabeth City Economist.

1904-05-31, "The Wright flying machine, invented by Orville and Wilbur Wright", The Reidsville Review, Reidsville, North Carolina, May 31, 1904, col. 4, p. 1.

The Wright flying machine, invented by Orville and Wilbur Wright, brothers of Dayton, Ohio, who made a successful flight at Kitty Hawk, N. C. in December last, has been given another test near Dayton, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled 100 feet, rose 12 feet in the air and flew 30 feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken, and the test could not be repeated.

June 1904

1904-06-01, "Machine Flew Thirty Feet. Inventors Say That Problem of Aerial Navigation Is Solved.", The Greensboro Patriot, Greensboro, North Carolina, June 1, 1904, col. 3, p. 4.

MACHINE FLEW THIRTY FEET.

Inventors Say That Problem of Aerial Navigation is Solved.

Dayton, Ohio, May 29. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful

flight at Kitty Hawk, N. C., in December last, was given another trial near this city today, which the brothers say was successful.

Great secrecy was maintained about the test and but few witnessed it. The machine, after being propelled along a track for a distance of a hundred feet, rose twelve feet in the air and flew a distance of thirty feet, when it dropped. This was due, the inventors say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The brothers decline to give any information when asked as to their future purposes.

The Wright flyer is a triangular, box-like machine, having the appearance at a distance of an open street car. The upper and lower framework consists of canvas, ribbed with pieces of wood to give the firmness. These frames are connected by braces of wood. The machine has no gas bag or balloon attachment of any kind, but is supported by a pair of aero covers or wings having an area of 510 square feet. It measures a little more than forty feet from tip to tip, and the extreme fore and aft dimension is about twenty feet. The weight, including the body of the aviator, is slightly over 700 pounds.

The machine is driven by a pair of aerial screw propellers placed just behind the main wings. The power is supplied by a gasoline motor, designed and built by the Messrs. Wright in their own shop.

It is of the four-cycle type and has four cylinders. The pistons are four inches in diameter and have a four-inch stroke. At the speed of 1,200 revolutions a minute the engine develops fifteen-brake horse-power, with a consumption of a little less than ten pounds of gasoline per hour. The weight, including carburetter and flying wheel, is 152 pounds.

The wings, though apparently very light, have been tested to more than six times the regular load, and it is claimed for the entire structure that it is a practical machine capable of withstanding the shock of repeated landings.

1904-06-01, "The problem of aerial navigation has received another triumphant solution", The Chicago Live Stock World, Chicago, Illinois, June 1, 1904, col. 1, p. 2.

The problem of aerial navigation has received another triumphant solution — the flying machine of the Wright brothers has successfully flown a distance of no less than thirty feet. Damage fully covered by insurance.

1904-06-02, "Flew Thirty Feet", Ringwood Times, Ringwood, Oklahoma, June 2, 1904, col. 2, p. 8.

FLEW THIRTY FEET.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers of this city, who made a successful flight at Kittyhawk, N. C., in December last, has been given another test near this city which the brothers say was successful. Secrecy was maintained about the test and few witnessed it. The machine, after being propelled a hundred feet, rose in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnished power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-06-03, "Flying Machine a Success", Muscatine Semi-Weekly News Tribune, Muscatine, Iowa, June 3, 1904, col. 2, p. 10.

FLYING MACHINE A SUCCESS.

Wright Brothers Who Made a Flight in North Carolina, Repeat Performance Near Dayton.

Dayton, O., May 27. — The Wright flying machine, invented by Orville and Wilbur Wright, brothers, of this city, who made a successful flight at Kitty Hawk, N. C., in December last, was given another test near this city, which the brothers say was successful. Secrecy was maintained about the test and few witnessed it.

The machine, after being propelled a hundred feet, rose twelve feet in the air and flew thirty feet, when it dropped. This was due, the navigators say, to a derangement of the gasoline engine that furnishes the power. In the fall the propellers were broken and the test could not be repeated. The Wrights decline to give any information when asked as to their future purposes.

1904-06-05, "Airship Contest at St. Louis for \$100,000 in Prizes Tomorrow", The Salt Lake Tribune, Salt Lake City, Utah, US, Sunday Morning, June 5, 1904, col. 1-2, p. 12, part 3.

Airship Contest at St. Louis For \$100,000 in Prizes Tomorrow

Special to The Tribune.

ST. LOUIS, June 2. — Navigators of the air, with all manner of flying machines and balloons, are gathering at the World's fair for the aeronautic contests, which begin on June 6. A prize of \$100,000 goes to the winner of this first aerial derby, and every ambitious inventor in the world has entered the competition.

Twelve acres of space in the western part of the exposition grounds has been enclosed by a fence thirty feet high, which serves as a wind-break. Here the airship shed is situated and from it the races will be started. The first inventor to arrive at St. Louis was M. McGary of Memphis, Mo., who came this week and brought his machine.

Captive balloons solved the problem of laying out the course several hundred feet up in the air, and for the grand prize race there will be three of these placed so as to describe the letter L, the length of the legs being not less than ten nor more than fifteen miles. The course will begin and end in the fenced enclosure adjoining the aeronautic stables.

Start From an Enclosure.

With the protection of the high fence the airships will arise from the concourse, soar over the exposition city in the direction of the staked balloons, and on returning alight again within the enclosure.

In the center of the concourse is the aerodrome, or stable for the machines. It contains two huge stalls, each 180 feet long, 40 feet wide and 50 feet high. Here the airships will be kept when not in practice or competition.

A prize of \$100,000 is to be awarded to the aeronaut whose average speed during the three fastest trips shall be greatest. Each craft may pass over the course in a continuous flight as many times as is desired, and its time as recorded by the judges will be the average time in which it covers the full course, but this shall count but as one trip. Each competitor may make as many trials as he desires. No trial will be considered unless the full course is covered, and the aeronaut must make at least three complete trips around the course at an average speed of twenty miles an hour.

An Austrian Grand Duke.

It is probable that the Archduke Leopold Salvator of Austria, Commanding General of the Austrian artillery, and an aeronaut of world-wide repute because of his ascensions with "The Meteor," will attend these airship contests at the World's fair. He may be asked to accept the presidency of honor of the jury for aeronautics. Other notables expected are M. Santos Dumont, Sir Hiram Maxim, Prof. Langley, Leo Stevens and Octave Chanute, all of whom have achieved fame in aerial navigation.

If bets were posted this far in advance of the airship races, Santos Dumont would be a red-hot favorite on the strength of past performances. He is the premier aeronaut of the world, and has more victories to his credit than any of those who will compete with him at St. Louis. Santos has said that he would win the World's fair prize, and with that intention he designed and has built his "No. 7," a slim-waisted monster with a torpedo-shaped gas bag 160 feet long and 26 feet in diameter, carrying an engine of seventy horsepower.

An American Entry.

Lively interest is being taken in an American entry which may give the daring Brazilian a tussle for first honors. It is that of the Wright brothers of Dayton, O., who have spent five years in study and experiment, and have constructed a machine that flew three miles in the face of a strong wind. Their maneuvers as witnessed by many persons have been pronounced the most successful feat yet performed by an airship, and curiosity is manifested in what the Wright machine will do at the World's fair.

The aeroplane, or machine heavier than air, depending altogether upon dynamic energy for lifting power and flight, has many followers. Prof. Langley, although unfortunate in having lost several machines of this class, still has faith in the theory and may emerge from his last wreck with a better perfected craft with which to compete with the world's airship builders.

Sir Hiram Maxim, the eminent English inventor, is expected to have a machine in these races that will possess some new and marvelous improvements over his former efforts. Octave Chanute, an American aeronaut, has theories very much along the line of those of Sir Hiram, and these two gentlemen will doubtless represent what is known as the "kite-flying" class.

Weeded out the Freaks.

Effort has been made by the exposition management to weed out the freak and untried ideas. No applicant will be admitted to the competition who does not present satisfactory evidence of having made at some time a flight over at least a mile course with a machine similar to that which he proposes to use in these races. This will not exclude any worthy craft, and it will confine the contest to machines that promise at least creditable performances.

From June to September these airship trials will be in progress, and the flights of the various machines in their efforts for the \$100,000 prize will be one of the features of the great World's fair. Visitors from all parts of the world have been attracted by the promise of the sport, and many of them will remain during the entire racing season.

Being first to arrive, the McGary machine has aroused considerable interest. It consists of an egg-shaped gas bag forty-eight feet long by twenty-one feet wide, and a car twenty-one feet long, five feet wide and four feet deep. It is propelled by four huge wings shaped like those of a fly, and is steered by a fish-tail rudder. The inventor claims that the wings of the fly have a pulling power with both the upward and downward stroke, and that his machine has twice the power of those with propellers fashioned after the wings of a bird.

From Pittsburg to St. Louis.

Maj. M. B. Van Voorhes of Pittsburg, Pa., has built an immense airship in which he proposes to sail from Pittsburg to St. Louis for the aeronautic contest. His craft is cigar-shaped, and is 120 feet long. To the gas-inflated cone he has attached an aluminum car twenty feet in length, containing a naphtha engine for the propelling power. The ship, like the McGary machine, is steered by a fish-tail rudder and wings are used for propelling.

A Marion, Ind., machinist, William Alagree, and a farmer, Jack Ferguson, have just completed an airship which they have been building for more than a year. They have made a successful trip in testing it, but refuse to divulge the motive power or give any description of their vessel.

Samuel T. Best, a Louisville real estate man, has patented an airship in which he hopes to sail to St. Louis and enter the big contest. He estimates the speed of his ship at sixty miles an hour.

Columbus, O., has an airship to try for the big World's fair prize. It is the invention of George Francis Myers, and was built under his direction, with the aid of a company of Columbus business men. No description of this ship has been given to the public.

Alva Reynolds, a Los Angeles inventor, has patented a flying machine which he will enter for the airship contest. He has adopted the movements of a bird in flying, and thinks he has solved the problem. He is backed by some of the rich men of California, who believe that his invention is a coming winner.

1904-06-08, "Another Airship Invented by a Daytonian — News of the Gem City.", The Cincinnati Enquirer, Cincinnati, Ohio, June 8, 1904, col. 6, p. 3.

ANOTHER AIRSHIP

Invented By a Daytonian — News of the Gem City.

SPECIAL DISPATCH TO THE ENQUIRER.

Dayton, Ohio, June 7. — Joseph R. Fraser, of this city, is the possessor of an airship which he hopes to enter in the World's Fair contests providing the test to be made in a few weeks proves a success. Mr. Fraser has spent much of his time in perfecting his ship. He has carefully guarded it against onlookers in the hope of giving the public a complete surprise. The engine for the flying machine is now being made. An electric sparker and several other electric appliances have been made by a local firm. The machine is first elevated by a fan-like apparatus which creates a vacuum and forces the ship into the air. Fraser will be a rival of the Wright brothers at the Fair, providing the experiments of both prove successful.

1904-06-08, "Another Aspirant for Airship Fame. Joseph R. Fraser Is Working on a Model, Which He Expects To Be a Success.", The Dayton Herald, Dayton, Ohio, June 8, 1904, col. 2-3, p. 9.

ANOTHER ASPIRANT FOR AIRSHIP FAME

Joseph R. Fraser is Working on a Model, Which He Expects to be a Success.

From present indications, Dayton will have two aspirants for honors in the airship contest at the St. Louis World's Fair. Another inventor, entirely separate from the Wright Brothers, is now working upon a contrivance that is intended for sailing through the air. This man is Joseph R. Fraser, of the firm of Watkins & Co., title abstractors, with offices in the Conover building.

Mr. Fraser has been working quietly upon his machine for some time, and it was not until quite recently that his most intimate friends became aware that he was preparing to enter the race at St. Louis. A full description of Fraser's machine has not yet been given out, but it is known that the contrivance is almost completed and will be given a test in the near future.

The Fraser airship is designed upon a plan altogether different from that of the Wright Brothers. It will be propelled by a gasoline engine with high power-developing capacity. This engine is now being built by Weinman & Co.

1904-06-19, "The Coming Aeronautic Race", New-York Daily Tribune, N. Y., June 19, 1904, col. 3, p. 8.

THE COMING AERONAUTIC RACE.

Santos-Dumont, who has just revisited this country to participate in the coming contest between aeronauts at St. Louis, talks in a way that will inspire admiration for the man, if not confidence in his success. He carefully refrains from brag, realizing, no doubt, that indulgence in boastfulness will be more appropriate after the race than before. He thus exhibits commendable modesty and good sense. These qualities alone will predispose many people in his favor.

The machine which the young Brazilian has brought with him, his No. 7, was built for racing three years ago, but its qualities have never been conspicuously displayed. With the 60 horsepower motor that has been substituted for the one originally employed to drive its propellers, only three trials have been made. These were sufficient to enlighten, if not to satisfy, him as to its capacity, without telling the public much about the speed which the airship can develop. After all, little more will be required in the St. Louis contest than was needed to capture the Deutsch prize. On that occasion he was obliged to traverse a course that was not far from eight miles long in thirty minutes. It will now be necessary to cover ten miles in the same time, or to move as fast as a twenty-knot steamer for only half an hour. To be sure, no one can say what speed his rivals will be able to show, but there is no trustworthy record of a better performance than this for an aerial voyage each half of which was made in the opposite direction from the other.

The world has heard little about the other competitors for the \$100,000 prize. Perhaps the Lebaudy brothers, who have done some brilliant work in Paris, will take part in the coming race, but they have been singularly quiet about their intentions. Dr. Greth, of California, whose airship attracted attention last year, may also engage in it. At one time it was deemed probable that Sir Hiram Maxim would build a machine especially for St. Louis, but at present there are no indications that he has done so. His failure is the more to be regretted because in his experiments ten or twelve years ago he relied exclusively on the aeroplane for support in the atmosphere. Langley, of course, is out of the question. Hence, unless the Wright brothers, of Dayton, Ohio, come to the front, the gas bag type of flying machine will be the only one represented in the international contest. In that case the outcome would simply be a personal victory, whereas, if radically different kinds of apparatus were tested, something of value might be learned about aerial navigation.

1904-06-24, Edward Wellman Serrell, "A Flying Machine in the Army", Science, New York, N. Y., June 24, 1904, vol. XIX, no. 495, pp. 952-955 (p. 955).

[This is a long article about experiments, performed around the time of the American Civil War, regarding the construction of a heavier than air flying machine with lifting propellers. In the final part of the text, the author wrote a few words about the Wright brothers' last trials in North Carolina.]

A FLYING MACHINE IN THE ARMY.

... Nothing is known by the writer of the details of the machinery recently tried by the brothers Wright in North Carolina, except that obtained from imperfect newspaper accounts, but from what has been published it would seem that their machine is very much like, if not identical, with the army machine here described; but whether this is so or not, they are to be most

heartily congratulated upon the measure of success that has crowned their efforts, and this kind thought extends to my friend of years gone by — Chanute — who is reported to have helped them.

EDWARD WELLMAN SERRELL.

WEST NEW BRIGHTON,
STATEN ISLAND, N. Y.

1904-06-24, "Flying Machine's Successful Flight. Wright Brothers Make an Ascent Yesterday Afternoon with Excellent Results.", The Dayton Herald, Dayton, Ohio, June 24, 1904, col. 4, p. 13.

FLYING MACHINE'S SUCCESSFUL FLIGHT

WRIGHT BROTHERS MAKE AN ASCENT YESTERDAY
AFTERNOON WITH EXCELLENT RESULTS.

COURSE REVERSED

And Machine Brought to Earth Again As Gracefully as a Bird — Brothers
Elated.

The Wright Bros.' flying machine was given a successful test at Simms Station, east of the city, yesterday afternoon. There were no spectators at the exhibition except the Wrights. The machine arose from the track to a height of 15 feet, and then sped through the air to a distance of nearly 300 feet.

WAS REVERSED.

At this juncture, Mr. Wright, who was guiding the flyer, reversed his machine with much grace and easiness, and alighted on the ground, none the worse for his trip through the air.

ARE CONFIDENT.

The Wright boys are now more confident than ever that they have reached a point where their flying machine may be called a success. More tests will be made in a few days. At yesterday's exhibition, every part of the machine worked to the utmost satisfaction of its inventors. The Wright machine, although estimated differently by many persons, is not designed to fly at a great height in the air. The secret which the boys are striving for is to stay close to the ground, and yet maintain their position in the air for a long distance. That their machine is destined to become a practical success in this particular, was demonstrated in the test yesterday.

1904-06-25, "Rode the Air With Their Flying Machine. Success of the Ohio Boys.", The Cincinnati Enquirer, Cincinnati, Ohio, June 25, 1904, col. 3, p. 9.

RODE THE AIR

With Their Flying Machine — Success of the Ohio Boys.

SPECIAL DISPATCH TO THE ENQUIRER.

Dayton, Ohio, June 24. — Another test of the Wright flying machine has been made at Cimm's Station, each of this city. The machine rose to a height of 15 feet and traveled a distance of 300 feet, it is said. The Wright brothers decided to make their tests without announcing them, and will continue their work in this direction, confident that they have a practical flying machine. It is their aim to keep close to the ground, as the flyer is not deigned to rise to a great height. At to-day's test every part of the machinery worked perfectly and to the satisfaction of the inventors. After a distance of 300 feet had been traversed Wright reversed his machine and alighted with grace and ease.

1904-06-27, "Ride in the Air. Ohio Boys Claim Their Flying Machine Is a Success.", The Inter Ocean, Chicago, Illinois, June 27, 1904, col. 5, p. 6.

RIDE IN THE AIR.

Ohio Boys Claim Their Flying Machine Is a Success.

Special Dispatch to The Inter Ocean.

DAYTON, Ohio, June 26. — Another test of the Wright flying machine has been made at Cimm's Station, east of the city. The machine rose to a height of fifteen feet and traveled a distance of 300 feet, it is said. The Wright brothers decided to make their tests without announcing them, and

will continue their work in this direction, confident that they have a practical flying machine. It is their aim to keep close to the ground, as the flyer is not designed to rise to a great height. At the test every part of the machinery worked perfectly and to the satisfaction of the inventors. After a distance of 300 feet had been traversed Wright reversed his machine and alighted with grace and ease.

1904-06-27, "Flying Machine. Another Successful Test Made Last Saturday.", The Daily Palladium, Richmond, Indiana, US, June 27, 1904, col. 4, p. 5.

FLYING MACHINE

Another Successful Test Made Last Saturday.

Some time ago we mentioned the fact that the Wright Bros., of Dayton, had invented a flying machine and had given the same a trial. According to word from Dayton, another test of the Wright flying machine has been made at Cimm's Station, east of the city. The machine rose to a height of fifteen feet and traveled a distance of 300 feet, it is said. The Wright brothers decided to make their tests without announcing them, and will continue their work in this direction, confident that they have a practical flying machine. It is their aim to keep close to the ground, as the flyer is not designed to rise to a great height. At Saturday's test every part of the machinery worked perfectly and to the satisfaction of the inventors. After a distance of 300 feet had been traversed Wright reversed his machine and alighted with grace and ease.

1904-06-27, "Flying Machine Does Good Work at a Private Trial", The Miami Evening Record, Miami, Florida, June 27, 1904, col. 5, p. 1.

FLYING MACHINE

Does Good Work at a Private Trial.

Dayton, June 27. — Another test of the Wright flying machine has been made at Cimm's Station, east of the city.

The machine arose to a height of fifteen feet and traveled a distance of 300 feet, it is said.

The Wright brothers decided to make their tests without announcing them, and will continue their work in this direction, confident that they have a practical flying machine.

It is their aim to keep close to the ground, as the flyer is not designed to rise to a great height.

At today's test every part of the machinery worked perfectly and to the satisfaction of the inventors.

After a distance of 300 feet had been traverse Wright reversed his machine and alighted with grace and ease.

1904-06-29, "Dayton Airships in St. Louis Contest. Wright Brothers and J. R. Fraser Will Compete for the \$100,000 Prize.", The Dayton Daily News, Ohio, June 29, 1904, col. 4, p. 4.

DAYTON AIRSHIPS IN ST. LOUIS CONTEST

WRIGHT BROTHERS AND J. R. FRASER WILL COMPETE FOR THE \$100,000 PRIZE.

INVENTORS ARE BUSY PERFECTING MACHINES.

Fraser Has Not Yet Put His to the Test, But is Confident of Success.

AERIAL CRAFTS DIFFERENT.

Methods of Construction and Style of Airship Are Entirely Distinct.
List of Inventors of Air-Sailing Machines to Enter Great Contest.

Dayton in all probability will have two airships or flying machines in the contest at the St. Louis fair. One will be owned by Orville and Wilbur Wright, the sons of Bishop Milton Wright, and the other by Joseph R. Fraser, a skilled mechanic and engineer and also a member of the firm of Watkins & Co., tile abstractors.

The three inventors are now giving all their attention to perfecting the respective machines. Each has sought the quiet of the country to work out the ideas in aerial navigation. The Wright brothers have a small building on Huffman's prairie, near Simm's station, and Fraser has his workshop located on his farm north of Dayton in the vicinity of Shiloh Springs.

The description of the two machines have heretofore appeared in The News. The Wright brothers claim they have given their flying machine a successful test, while Mr. Fraser has not yet tried to fly his machine. The mechanism of the two machines is vastly different. The invention of the Wright brothers is a flying machine, while the product of Fraser's ingenuity can more properly be classed an airship. Fraser and the Wrights intend to enter the aerial contest in St. Louis in competition for the \$100,000 prize, if they perfect their machines to the standard they have as their object.

Many other airship inventors will be in the competition and Daytonians will watch the contest closely, with the sincere hope that honors are won by the Dayton inventors.

July 1904

1904-07, Octave Chanute, "Aerial Navigation. Paper Read Before the American Association for the Advance of Science.", The Aëronautical Journal, London, July 1904, pp. 61-62 (p. 62).

Aerial Navigation.

BY OCTAVE CHANUTE, C.E.

PAPER READ BEFORE THE AMERICAN ASSOCIATION FOR THE ADVANCE OF SCIENCE.

There is, perhaps, no opinion of the progress in the engineering of balloons and aëroplanes that we so much value as that of Mr. Octave Chanute, for the very reason that he has made so profound and exhaustive a study of the subject. So many writers on aëronautical problems have displayed a one-sidedness, that it is a relief to the aspirant after truth to have unrolled before him a bird's eye view undistorted by bias or prejudice. Mr. Octave Chanute's paper on Aërial Navigation, delivered before the American Association for the Advance of Science on December 30 last, and re-printed in the *Popular Science Monthly*, is only a few pages in length, but those who wish to gauge the amount of progress in aërial navigation made during the last few years will do better to select to read these few pages than the whole of many of the more popular volumes on the subject whose prominent feature is the pictorial illustrations.

Mr. Chanute calmly but decisively speaks of the progress made by both those who use the body lighter than air and those who use the body heavier than air. The facts he has collected concerning the vital details of navigable balloons from the experiments of Giffard in 1852 to those of the brothers Lebaudy, and of the British workers whose names are familiar to us, will be found valuable to those studying the subject. In most cases the reader will find the length, diameter, horse-power of motor, and speed attained stated. In the historical sketch of navigable balloons, he does not fail to include the details of those machines which were conspicuously less successful, or attended with disastrous results, or destined to remain untried, such as the balloons of Duprey de Lome, of the ill-fated Dr. Wolfert and General Mesurier's balloon of the French War Department. This latter is often forgotten in the records of airship development. It was said to be 230 feet long, 30 feet in diameter, 120,000 cubic feet in capacity, and to have been provided with a gasoline motor of 45-horse power. It is pointed out that with the reduction that has since been made in gasoline motors, this airship could have carried an engine of 70-horse power, and attained a speed of 30 miles an hour, which is greater than that of Transatlantic steamers. Mr. Chanute criticises the Zeppelin airship as being of inferior shape, the form being a cylinder with paraboloid ends. The lifting power was frittered away on a framework of aluminium, so that the gasoline motor could be of only 32 horse-power. Regarding the shape of navigable balloons, it is interesting to note that Mr. Chanute thinks that the best shaped navigable balloon yet constructed was that of Messieurs Krebs and Renaud, which made five return journeys in 1885.

Mr. Chanute gives a brief account of M. Santos Dumont's airships. He seems to think that the manufacture of so many balloons one after the other might have been rendered unnecessary had he studied carefully what had been found out by his predecessors. As it was, he

had to learn by experience, and had to make no less than five airships before he launched the No. 6, with which he won the Deutsch prize.

For the sake of historical accuracy we are bound to point out one error, presumably a slip in the print. It is stated that M. Severo built in 1902 a navigable balloon which was so injudiciously constructed that the car broke away in the air, and the inventor was killed, as well as his engineer, and that later in the same year De Bradsky built a navigable balloon equipped with a gasoline motor located so near the vent for the gas that the latter took fire, exploded the balloon, and the inventor and his engineer were killed. But the facts are that it was Severo who built the balloon which caught fire, and De Bradsky the one that parted from the car.

Mr. Chanute considers that the balloon of the brothers Lebaudy has achieved much success. It has beaten the speed of Santos Dumont, having on many occasions, it is said, attained 24 miles an hour.

In the course of Mr. Chanute's remarks about flying machines he mentions that the data for the full-sized flying machine of Professor Langley, which was tested, October 7 and December 5, have not been published. From newspaper photographs it appears to be an amplification of the models which flew successfully in 1896, and this would necessarily make it very frail. He thinks the failure must have been caused by the launching gear, and does not prove that this machine is worthless. Like the failures of others, it indicates that a better design must be sought for, and that the first requisites are that the machine shall be stable in the air, shall be quite under the control of its operator, who should learn to manage the machine before attempting to fly with it. This latter remark may seem to be paradoxical, but it was the kind of practical efficiency acquired by the brothers Wright, whose flying machine was successfully tested on December 17. For three years they experimented with gliding machines, and it was only after they had obtained thorough command of their movements in the air that they ventured to add a motor. Mr. Chanute considers that too much praise cannot be awarded to those gentlemen. "Being accomplished mechanics, they designed and built the apparatus, applying thereto a new and effective mode of control of their own. They learnt its use at considerable personal risk of accident. They planned and built the motor, having found none in the market deemed suitable. They evolved a novel and superior form of propeller; and all this was done with their own hands, without financial help from anybody."

Mr. Chanute thus speaks of possible uses and limitations of a successful flying machine:

"Now that an initial success has been achieved with a flying machine, we can discern some of the uses of such apparatus and also some of its limitations. It doubtless will require some time and a good deal of experimenting, not devoid of danger, to develop the machine to practical utility. Its first application will be military. We can conceive how useful it might be in surveying a field of battle, or in patrolling mountains and jungles, over which ordinary means of conveyance are difficult. In reaching otherwise inaccessible places such as cliffs, in conveying messages, perhaps in carrying life-lines to wrecked vessels, the flying-machine may prove preferable to existing methods, and it may even carry mails in special cases, but the useful loads carried will be very small. The machines will eventually be fast, they will be used in sport, but they are not to be thought of as commercial carriers. To say nothing of the danger, the sizes must remain small, and the passengers few, because the weight will, for the same design, increase as the cube of the dimensions, while the supporting surfaces will only increase as the square. It is true that when higher speeds become safe; it will require fewer square feet of surface to carry a man, and that the dimensions will actually decrease, but this will not be enough to carry much greater extraneous loads, such as a store of explosives or big guns to shoot them. The power required will always be great, say something like one-horse power to every hundred pounds of weight, and hence fuel cannot be carried for long single journeys. The North Pole and the interior of Sahara may preserve their secrets a while longer.

"Upon the whole, navigable balloons and flying-machines will constitute a great mechanical triumph for man, but they will not materially upset existing conditions as has sometimes been predicted. Their design and performance will doubtless be improved from time to time, and they will probably develop new uses of their own which have not yet been thought of."

1904-07-01, "Wright Boys Have Entered. Will Make Aerial Trips in Contests at the World's Fair.", The Evening Item, Richmond, Indiana, July 1, 1904, col. 4, p. 4.

WRIGHT BOYS HAVE ENTERED

Will Make Aerial Trips in Contests at the World's Fair.

Orville and Wilbur Wright, formerly of Richmond, and John R. Fraser, the Dayton inventors of airships, will enter the aerial contest to be held in St. Louis. Their machines are of vastly different construction. The Wright brothers are confident of winning the big prize. Fraser has never tested his machine, but is positive that it will fly successfully.

1904-07-01, "Santos DuMont, the young Brazilian, who has won fame as an aeronaut", The Vermont Phoenix, Brattleboro, Vermont, July 1, 1904, col. 5, p. 3.

Santos DuMont, the young Brazilian, who has won fame as an aeronaut with his dirigible balloons in Paris, has arrived in this country and expresses confidence in his ability to win the \$100,000 prize offered for a race for airships at the St. Louis exposition. Sir Hiram Maxim, the wonderful English inventor, who is a native of Maine, is said to have built a machine especially for the contest at St. Louis. Lebaudy brothers, who have done brilliant work in Paris, have not signified their intention to come to St. Louis. Dr. Greth of California, whose airship has repeatedly made successful ascensions in San Francisco and vicinity, may be a competitor. The Wright brothers of Dayton, Ohio, who have apparently perfected the gas bag type of flying machine, may also be represented.

1904-07-07, "A Success. Test Made of the Wright Flying Machine Near Dayton This Week.", The Democratic Advocate, Greenville, Ohio, July 7, 1904, col. 6, p. 1.

A SUCCESS.

Test Made of the Wright Flying Machine Near Dayton This Week.

Another test of the Wright Bros.' flying machine was made at Simm's Station, east of Dayton, this week. The machine rose to a height of fifteen feet and traversed a distance of three hundred feet, it is said. The Wright brothers decided to make their tests without announcing them, and will continue their work in this direction, confident that they have a practical flying machine.

It is their aim to keep close to the ground, as the flyer is not designed to rise to a great height. At the test every part of the machinery worked perfectly and to the satisfaction of the inventors. After a distance of three hundred feet had been traversed Wright reversed his machine and alighted with grace and ease.

1904-07-10, "Hungarian Genius Builds a Flying Machine Like an Arrow", Pittsburgh Daily Post, Pittsburgh, Pennsylvania, July 10, 1904, col. 1-6 (col. 6), p. 28.

[This is just an excerpt, of an extensive article, in which Emil Némethy, a Hungarian inventor, is quoted as making some remarks about the 1903 plane of the Wrights.]

The last trials of the Wright brothers, here in America, which were considered at the time as the practical solution to the problem of building an aerial ship, do not mean much, in Némethy's estimation.

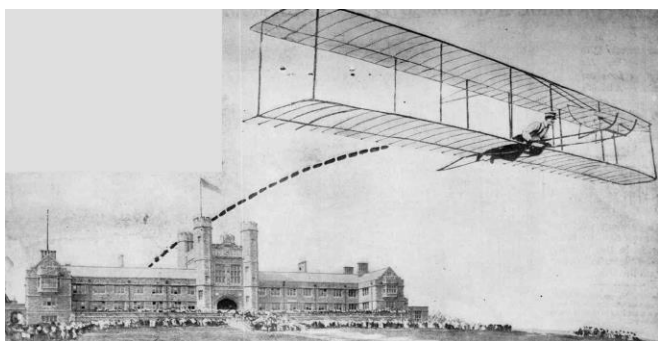
To slide down over sandy planes through the air against the wind is by no means a free flight, because if any other wind sprang up, the machine would fall to the ground. It is not always possible to find such soft, beautiful sand planes and bracing sea breezes. The Wrights' trials were considered by Némethy as a help, but not a solving of the problem of aerial navigation, whereas he emphatically asserts that his flying machine is the nearest approach to the solution.

1904-07-24, " "Gliders" at the World's Fair. An Extraordinary Official Contest. Most Remarkable of All Flying Devices Entered in Great Aeronautic Competition. ", St. Louis Post-Dispatch, St. Louis, Missouri, July 24, 1904, Sunday Magazine, col. 1-6, p. 4.

"GLIDERS" AT THE WORLD'S FAIR

AN EXTRAORDINARY OFFICIAL CONTEST

Most Remarkable of All Flying Devices Entered in Great Aeronautic Competition



Part of the Successful Flight of a Gliding Machine From the Aerodrome to the Transportation Building

Strange Flights That May Be Made Without the Uplift of Gas or Motive Power of Gasoline

They Depend Solely on the Wind and the Law of Gravitation for Their Successful Progress

What Prof. Myers Says of the Novel Contrivances — Mysterious Entries

SO GREAT has been the popular interest in the airship competition at the World's Fair that it has had the effect of blinding the public more or less to the claims of the gliding machine contests as offering the most curious exhibitions likely to be seen during the progress of the aeronautic display. So far as novelty and peril are concerned, the flights of the gliding machines promise to exceed those of the dirigible balloons.

Also may these flights be on a scale so ambitious as to mark a distinct forward step in the science of aeronautics. Prof. Carl E. Myers, superintendent of the aeronautic department, outlines a probable and what he considers a practicable course in a manner that gives an interesting idea of gliding machine flight. He states that they may start from the roof of the aerodrome, first dipping downward, then rising to pass over the 30-foot inclosure that surrounds the balloon-field, then will mount and soar above the Hall of Congresses, down again into the court of the Administration building, over the roof of which they will next sail, thence in a serpentine course up and down through the air to the Transportation building, 2300 feet distant from the starting place. The flights may also be made in opposite direction, the course of the wind determining the flight for each day.



Possible Flight of a "Glider" From the Aerodrome to Transportation Building, as Drawn by Prof. Carl Myers

Famous gliding machines will compete in this contest, under the terms of which, however, the list of competitors is not to be made public. The most celebrated experimenters in this field are Prof. Langley of the Smithsonian Institution, the Wright brothers, Wilbur and Orville, who recently made successful flights at Kitty Hawk, N. C., and Octave Chanute of Chicago. The most famous of all was the late Prof. Lilienthal, the daring German who lost his life in testing his latest gliding machine and who made greater progress in this science than any other. It is probable that all the most advanced types of gliding machines will be seen in action at the World's Fair.

The coming contests will be unique so far as popular knowledge of these bird-flight devices is concerned. The average person has seen many a balloon ascension, but never the flight of a gliding machine or aeroplane. This feature of the World's Fair aerial competition consequently possesses all the charm of the new and unknown in a most fascinating field of adventure and scientific research.

MOST peculiar of all the aerial contests to be seen at the World's Fair will be, perhaps, the gliding events. Carl E. Meyers, superintendent of the aeronautic department, has received numerous entries, a goodly number of the total of 91 entries being for the gliding contest. The prizes in this department aggregate \$3000.

None of the contestants has yet made request for special preparations for his flight, but Prof. Myers has made preparations for any such emergency that may arise or any special request that may be made.

The gliding machine comes as an original suggestion from the bird, and, patterning after the majestic swoop of the eagle, men have sought to construct a wing-like device that from elevations might sail through the atmosphere at angles so acute with the horizon that great distances might be covered before the aeronaut struck the earth again, or to sail with a momentum against the wind in such a manner that the man and machine might be lifted up by the current and in turn might take still greater flight in sailing down once more.

The gliding machine has no propelling power other than an initial start and gravity. When equipped with motor or mechanical device of any sort, it becomes a propelled aeroplane.

While the initial starting stations have not been installed at the aeronautic concourse field, reassurance is given by Supt. Myers that the monster aerodrome at the World's Fair was designed and built with a view to the installation on top thereof, with a few days' notice, of elevated slides or starting chutes for the use of gliding machine contestants.

"This slide," explains Supt. Myers, "will be 90 feet long and will run from the middle of the long double barn downward at a considerable angle to either end of the structure, where a jump-off 50 feet from the ground will be encountered.

"The chute or slide will be so constructed that the gliding machine will run down the full 90 feet of its length with great swiftness. Its own weight and the force of gravity will carry it down and when the jump-off is reached, the man beneath the machine's wings will shoot off into space like a fowl of the air.

"A velocity of 12 miles per hour will have been attained from the running start. Twelve miles per hour must be attained to give the sailing machine stability in the air. With any less speed it would drop to the ground like a parachute slowly but surely. You have seen a flat tin disc gyrate backward and forward when dropped into the clear water beneath you. You have observed the evolutions of a large strip of cardboard when sailed into the air. Those are somewhat the movements which, with the birds, suggested the gliding machine. The gliding machine, however, is controlled and given automatic stability by shiftable wings and rudders. The rudder is to the machine what the tail is to the bird, and by a dip or a flip of the rudder the operator may bring his machine to a sudden poise when his desired distance is reached, then he may drop downward like the eagle pouncing upon its prey.

"With its momentum attained, its velocity acquired, the machine glides most successfully against the breeze or in a calm, for the resistance of the wind or atmosphere lifts it. When its height is reached it can swoop downward in a graceful curve till another maximum velocity is acquired, when, the wings shifted, the craft rises on the wind again. Thus the flight of a gliding machine is best represented by a wavy line drawn off through the air from a hill or other elevation and gradually approaching the earth.

"In this way a gliding machine entered in the World's Fair aeronautic contests may dart down the incline along the roof of the aerodrome, lurch into space, dip down to within ten or twenty feet of the earth, soar upward and sweep over the top of the 30-foot inclosure that surrounds the field, mount upward still higher above the Woman's building, and sweep downward again into the court of the Administration building, mount again on the winds and skim gracefully over the roof and towers of the Administration building and descending the hill may continue its serpentine course upward and downward through the air till the Transportation building is reached, 2300 feet away. That should make one of the prettiest flights to be seen at the Fair. The success of the gliding machine's flight is much more of an unknown quantity than is that of a dirigible balloon. In this uncertainty, yet in the possibility for graceful maneuvers, lies the interest of the gliding machine's performance.

"The flight may take place in an opposite direction from the imaginary course described, for the flight must take place in the opposite direction to the wind. The aeronaut may sail away across the woods to the westward, or out across the "bad lands" of St. Louis County to the north.

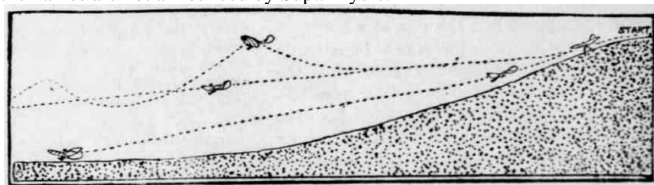
"On the other hand, the flying start from the roof of the aerodrome may not be resorted to. Some sort of a catapult start may be made from the ground, the operator may rise with his machine right up over the 30-foot fence and continue as though the start had been made from a 60-foot altitude.

"The competitor may provide special devices for starting and landing at his own expense, hence the exact method of conducting these contests is

hard to forecast. The usual method, naturally, is to start from a hill top, up which the wind is sweeping with a steady flow. With the aid of several assistants he makes a running start, pitches off downhill, and in an instant is lifted by the wind which enables him to continue his flight out onto the plain. At the World's Fair, however, the aerodrome or the catapult start will likely be resorted to."

Prof. Langley used a toboggan chute for his machine, which was also equipped with power of self-propulsion, and was in reality a propelled aeroplane. The Wright brothers, Wilbur and Orville, started from sand hills while making their flight at Kitty Hawk, N. C., last fall. Lilienthal, the eminent German gilder who made more progress than any other man before losing his life in testing his latest machine, always started his flight up a low-lying sandhill, meeting the gentle breeze that swept over the hill, adhering to the surface as closely as would a stream of water flowing over. Octave Chanute of Chicago also employed the uphill system of starting, that in case of fall the danger might be lessened.

The Langley machines are now suspended from the ceiling of the Government building at the World's Fair as exhibits; and may be seen in the Smithsonian section. The scientific Lilienthal machine, probably the most perfect yet produced, still awaits another operator daring enough to test it. The Wright brothers' machine is said to be among those entered at the Fair, though the entries must be treated as confidential, according to the rules, and the names are not announced by Supt. Myers.



Flights Made by Lilienthal

The gliding machine is as varied in form and construction as is the dirigible airship, and some new designs are expected when the competition opens at the World's Fair. All of them follow the plan of a broad sustaining surface, just as all airships have the balloon, but the shapes of the surfaces differ widely and their construction is at variance. The Langley machine, for instance, is built very much after the style of the butterfly, with curved wings, while the Chanute or Wright machine is constructed after the box-kite idea, with superimposed planes.

"And the heavier the machine, which means the greater its spread of sustaining surface," says Supt. Myers, "the longer the gliding machine will stay in the air the swifter will be its fall and the greater will be the distance it travels."

This is true because, being heavier it is given a greater momentum in gliding toward the earth, this momentum lifts it farther again on the up-chute and gives it in turn greater sustaining opportunity. The gliding machine depends absolutely on its own weight when once in action, for the reason that its flight is controlled jointly by the law of gravity and atmospheric resistance.

A prize of \$2000 is offered for the gliding machine, mounted by an operator, which shall advance in a calm or against the wind at a vertical angle most acute with the horizon. It shall make at least 20 glides of not less than 400 feet each.

A prize of \$100 is offered for the gliding machine, mounted by an operator, exhibiting the best automatic stability in the wind during at least 40 glides, not less than 400 feet each, under rules to be prescribed by the judges. Each competitor may provide special appurtenances for starting and landing, at his own expense.

These contests may take place at any time the competitors express their readiness, due notice of course, being given the day previous, for the benefit of the public. When once started, the gliding performances of a single contestant will needs continue several days, and plenty of entertainment is promised the public in this aero-department.

1904-07-29, "Fraser's Ship To Enter Race", The Dayton Daily News, Ohio, July 29, 1904, col. 4, p. 10.

FRASER'S SHIP TO ENTER RACE

LOCAL INVENTOR WILL TEST AIR FRIGATE NEXT WEEK AND
DECIDE ITS FUTURE.

HE IS CONFIDENT IT WILL SAIL THROUGH AIR.

Problem of Aerial Navigation May be Solved by Joseph Fraser, Who Has
Worked Quietly and Painstakingly at His Invention.

Daytonians need not lose faith in the hope of being represented in the World's Fair airship contest, as the Joseph R. Fraser craft is to be entered, provided the test, to be made next week, is successful. The inventor now has all his material in hand. He has not yet decided whether or not to make the test publicly, in the presence of newspaper men only, or in strict secrecy, but his confidence in his design and the execution thereof is unshaken.

If the ship is successful in cleaving the atmosphere it will face the starter alongside that of Santos Dumont and others in the St. Louis race.

The Wright brothers will also enter the race if their plans develop as they fondly hope.

September - October 1904

1904-09-20, "Flyer Is Being Altered and Improved by the Wright Brothers in Preparation for Contest in St. Louis", The Dayton Daily News, Ohio, US, September 20, 1904, col. 5, p. 12.

FLYER

Is Being Altered and Improved by the Wright Brothers in
Preparation for Contest in St. Louis.

DEFECTS DISCOVERED WILL BE REMEDIED, IF POSSIBLE.

Inventors Are Quite Positive That Success Will Crown Their Efforts, and in
a Short Time Will Make Another Aerial Attempt.

Orville and Wilbur Wright are busy making repairs and improvements upon the air-ships which they are constructing near Simms' station on the D. S. & U. traction line, for competition in the \$100,000 prize contest at the St. Louis Exposition.

Former attempts at flight have revealed to the constructors certain defects, not fatal, but which must be overcome before the machine will navigate the air.

To a News reporter one of the brothers made the statement that certain improvements and changes were being made in the machine at Simm's which himself and brother thought would be soon completed.

When finished as now conceived, the brothers have great hopes of the practicability of their machine and of obtaining the World's Fair award. Not caring to have a large crowd present at their next attempt at flight, the inventors of the machine are reticent about stating when their next trial will take place.

1904-10-09, "Flying Machine That Flies", The San Francisco Sunday Call, San Francisco, California, US, col. 5-7, p. 13.

FLYING MACHINE THAT FLIES

To sail three miles through the air at a speed of eight miles an hour against a breeze blowing twenty-one miles an hour is the most notable achievement in flying-machine experiments. Three years ago, two brothers named Wright, of Dayton, Ohio, went down among the sandhills of the North Carolina coast. They were expert mechanics, and brought their own tools and machinery. They had studied the experiments of flying-machine inventors here and abroad.

The machine, in which the operator lies at full length, is in some ways like a box kite with a rudder instead of a tail. The framework is covered with cloth at top and bottom. It is buoyant enough of itself to float its own weight and that of one man. During their three years of experiments, the brothers had added considerably to their knowledge of air currents and of the resistance of canvas. Keeping these things in view, they designed and built their propelling apparatus. One propeller, revolving horizontally, is placed underneath the center of the machine's body. The other is like the screw of a steamship, whirling vertically at the rear.

The machine is launched from a hill by merely "pushing off." It can be pointed in any direction and can be landed at will. It is strong enough to stand the strain of repeated trips, and its wings have been tested with six times the load they carried last month. The horizontal position of the man in

the machine saves about one-half horsepower by diminishing the wind resistance. The Wrights have used larger cloth surfaces than their predecessors. Their successful machine has three hundred square feet of cloth. The wings measure more than forty feet from tip to tip, and it weighs, entirely equipped, about seven hundred pounds. The achievement marks an impressive step in advance toward the every-day navigation of the air.

The test in question was made at Kitty Hawk, in North Carolina, in the neighborhood of which place the machine was launched from the top of a high sand dune. The aeroplane first took a downward course, but as the propeller under the engine increased its revolutions, began to rise slowly and steadily into the air. When the machine was sixty feet above the ground the rear propeller began to do its work, sending the "flyer" forward against the wind. Wilbur Wright was able to steer his craft as he pleased, with the aid of the horizontal steering gear — as shown in our illustration — and after going three miles brought the machine gently to the ground without difficulty or mishap.

Professor Langley and Maxim experimented along the lines of a real flying machine, as distinct from the dirigible balloons of Santos-Dumont and Lebaudy. But the eminent scientist and the brilliant inventor, with fortunes at their disposal, have not been rewarded with the success of these amateurish mechanics. A machine, not a kite, that propels itself against a strong wind, is under steerable control, and lands without converting itself into a scrap heap, is something new under the sun. — Collier's.

1904-10-11, "Successful Flying Machine", Ottumwa Tri-Weekly Courier, Ottumwa, Iowa, US, October 11, 1904, col. 4, p. 7.

[This is the last paragraph of the article "The Airship Race", a long text about a flying machine competition organised at the 1904 St. Louis World's Fair.]

Successful Flying Machine.

According to the records of the exposition, two brothers named Wright, who manufacture bicycles at Dayton, Ohio, have made the longest and most successful actual flight in the history of the world with a machine heavier than the air. They have an aeroplane made of canvas upon a wooden frame, resembling that which Octave Chanute has been making his experiments among the sand dunes of Lake Michigan. Mr. Chanute has made flights of 300 and 400 feet. The Wright brothers have frequently made 800 feet with a gasoline motor, rising from a level. They have demonstrated the practicability of sailing with a motor and more is expected from them, but they explain that they are not able to comply with the conditions and therefore have not entered their machine for the contests here.

1904-10-24, "British Army Official Here. Col. WM. Capper Inspects the Flying Machine of the Wright Brothers.", The Dayton Herald, Ohio, US, October 24, 1904.

BRITISH ARMY OFFICIAL HERE

COL. WM. CAPPER INSPECTS THE FLYING MACHINE OF THE WRIGHT BROTHERS.

WOULD TRY INVENTION

English Government is Anxious to Secure Practical Airship for Its Army.

The Wright airship, invented by the two brothers, Orville and Wilbur Wright, may be annexed to the British army.

Colonel William Capper, representing the army of King Edward, of England, arrived in the city this morning, and registered at the Algonquin Hotel. He breakfasted with Wilbur Wright, and later went to the Wright Brothers' place of business on East Fifth street. He is in consultation with the inventor of the flying machine, and will convey all the information regarding them to His Majesty.

The Wright Brothers have been constantly at work on the machine, making improvements till now it is nearing perfection.

It was the intention of the Wright Brothers to make the machine adaptable to service in warfare, and in this they think they have succeeded.

It is understood that the British government intends to annex the flying machine for the army, and Colonel Capper is here to investigate the Wright machine.

England is in need of flying machines at the present time in order to make the equipment for warfare perfect.

Colonel Capper will probably make a special effort to secure the machine, now that war with Russia is eminent for England.

If Colonel Capper's report is favorable, the British government will undoubtedly set about to have a large number of the machines manufactured.

1904-10, "Flyer. Wright Brothers Visited by British Representative. Negotiations Opened with a View to Annexing Machine to Army.", Dayton Press, Ohio, US, October 1904.

FLYER.

Wright Brothers Visited by British Representative.

Negotiations Opened With a View to Annexing Machine to Army.

There now seems a probability that the Wright flyer, which was invented and constructed by the two Wright brothers of this city, Wilbur and Orville, may be brought into service in connection with the British army.

It is understood that the British government has opened negotiations with them with a view to annexing the flyer to the army equipments, and for that reason Colonel Capper, a representative of the British nation, is here making investigations.

The Wright brothers have been diligently at work making improvements upon their machine, and it is understood have now got it in almost perfect working condition.

1904-10-25, "Colonel William Capper, representing the British army, is here", The Cincinnati Enquirer, Cincinnati, Ohio, October 25, 1904, col. 2, p. 3.

Colonel William Capper, representing the British army, is here consulting with the Wright Brothers relative to the possibility of using the Wright flying machine for army work, providing it is finally perfected.

1904-10-25, "At the Hotel Algonquin are registered Lt. Col. and Mrs. Capper of London", The Dayton Daily News, Ohio, US, October 25, 1904, col. 3, p. 10.

At the Hotel Algonquin are registered Lt. Col. and Mrs. Capper of London, England. Col. Capper is a well known officer in the English army and is here for the express purpose of conferring with the Wright brothers relative to their ideas of flying machines. Col. and Mrs. Capper will spend several days here. They are en route home from the World's Fair.

1904-10-29, "Wright Airship", The Los Angeles Times, Los Angeles, California, October 29, 1904, col. 2, p. 3.

WRIGHT AIRSHIP.

[BY DIRECT WIRE TO THE TIMES.]

RICHMOND (Ind.) Oct. 28. — [Exclusive Dispatch.] There now seems a probability that the Wright airship, which was invented and constructed by the two Wright brothers, formerly of this county, may be brought into service in connection with the British army. It is understood that the British government has opened negotiations and is making investigations.

1904-10-31, "Seeks American Airship. British Government Reported To Be Negotiating for Machine.", Chattanooga Daily Times, Chattanooga, Tennessee, col. 4, p. 1.

SEEKS AMERICAN AIRSHIP.

British Government Reported To Be Negotiating for Machine.

RICHMOND, Va., Oct. 30. — The British army is reported to be making an effort to obtain the flying machine invented by the Wright brothers, formerly of this county, now located at Dayton, O. The British government has opened negotiations with a view to adding the airship to the army equipment.

1904-11-05, "WRECKED. Wright Brothers' Airship Sailed Several Miles, but Met Disaster in the End.", The Cincinnati Post, Ohio, US, November 5, 1904.

WRECKED

Wright Brothers' Airship Sailed Several Miles, But Met Disaster in the End.

SPRINGFIELD, O., Nov. 5. — (Spl.) — For several years Wright Bros., of Dayton, have been working on an airship, which they thought they had perfected. Yesterday it was tried for the first time, and after sailing through the air for several miles it fell on the tracks of the Dayton, Springfield & Urbana Traction line, near Osborn, and was badly wrecked.

1904-12-02, "Wright Flyer Glides through Air for Distance of Three Miles", The Dayton Journal, Ohio, US, December 2, 1904.

WRIGHT FLYER GLIDES THROUGH AIR FOR DISTANCE OF THREE MILES

Real Flying Machine Perfected and the Problem of Air Navigation Has Been Solved by Two of Dayton's Industrious Young Men — Success Achieved in Experimental Stage Surpasses Most Sanguine Expectations.

Messrs. Orville and Wilbur Wright, who have been experimenting on gliding through the air on an aeroplane of their own invention several miles east of this city, have finally succeeded in reaching a higher state of perfection than has been attained by any other of those inventors who have been attempting to solve the problem of air navigation.

Their work has been carried on quietly and whatever progress has been made has been kept well within their own knowledge. Now, however, the device has reached such a state of perfection that they are willing that the public shall have the benefit of the results of their eight years of experimental work. Their most sanguine anticipations for the flyer have been more than realized. In order to demonstrate the efficacy of the aeroplane, a flight was made yesterday and a distance of three or four miles was made with perfect ease and precision. The machine proved perfectly dirigible and sudden and short turns were made with the same ease as the flight was maintained through a straight course.

The remarkable speed of fifty miles an hour was maintained throughout the flight and even to the minutest detail the experiment was highly satisfactory. The Wright Brothers, by whom the flyer was conceived and perfected, feel that they have accomplished a great achievement and have succeeded in the solution of a problem that until a few years ago was regarded as merely an idle dream.

Their practical and theoretical experiments, preliminary to the completion of the machine, have extended over a period of eight years, about evenly divided.

The Wright flyer is the only machine that ever lifted a man off the ground. The other inventions of this character have been of the airship variety, while this is a true flying machine and is operated by means of aeroplanes, that serve as wings to carry the machine through the air. An even higher rate of speed is contemplated for it than has so far been achieved, as now, merely to avoid the necessity at this time of rearranging the engine and other equipment sufficiently to maintain the equilibrium of the machine, a weight of about seventy-five pounds was carried on the flight made yesterday. It is estimated that a speed of seventy miles per hour can be attained with little difficulty.

The flight was made at a height of about forty feet above the ground. It had been contemplated by the Wright brothers to make several spectacular flights for the benefit of the public, but the weather has now become unfavorable for the best results and the work will be abandoned until next spring. The Wright brothers are especially gratified with the result of their experiments, inasmuch as experts have announced that the flight over the distance of a mile, together with the ability to pursue a circuit, would solve the problem of air navigation. Both have been accomplished and an excellent degree of efficiency attained in both.

The Wright flyer is a true flying machine. It has no gas bag or balloon attachment, but is supported by a pair of aerocurves or wings having an area of about 510 square feet. It measures a little more than forty feet from tip to tip and the extreme fore and aft dimensions are about twenty feet. The weight, including the body of the aviator, is about 700 pounds. The machine was driven by a pair of aerial screw propellers placed just behind the main wings. The power is supplied by a gasoline motor designed and built by the Wright brothers in their own shop, and has four cylinders. The pistons are four inches in diameter and have a four inch stroke. At the speed of 1,200 revolutions a minute the engine develops a sixteen-brake horse power, with a consumption of a little less than ten pounds of gasoline per hour. The weight, including carburetter and fly wheel, is 152 pounds. The wings, though apparently very light, have been tested to more than six times their regular burden, and it is claimed by experts for the entire structure that it is a practical machine capable of withstanding the shock of repeated landings, and not a mere toy, which must be rebuilt after each flight. As soon as the weather becomes such as to justify a flight will be made and the public will be invited to witness it.

1904-12-10, "Baldwin and Santos-Dumont", Scientific American, New York, December 10, 1904, vol. XCI, no. 24, col. 1-2, p. 406.

BALDWIN AND SANTOS-DUMONT.

It is refreshing to meet with an enthusiast who takes such a common-sense and dispassionate view of his art as does the aeronaut, Mr. Baldwin, whose work at the St. Louis Exposition gives him the same standing among experimentalists in the dirigible balloon in this country as is held by Santos-Dumont in France. During a recent visit to this office, Mr. Baldwin paid a high tribute to the Brazilian aeronaut, stating that, in his opinion, no one man had done so much to place the airship on a practicable basis as the young Brazilian; and he took occasion to scout the idea that the failure of Santos-Dumont to appear at the World's Fair contest was due to any other cause than the malicious act of some jealous or crazy fanatic. It was his opinion that, had the balloon not been willfully damaged, Santos-Dumont would undoubtedly have been one of the contestants and would have added very largely to the interest of the aeronautical programme. This testimony from the man who, as events proved, would have been his most active competitor, will be taken at its full significance.

It was Mr. Baldwin's opinion that the many failures of inventors of airships of the dirigible-balloon type are largely due to their lack of aeronautical experience "in the air." He himself is an old gymnast, and he attributes much of his own success to the art of balancing acquired in years of work on the tight rope. In the successful aeronaut there must be a certain amount of what might be called the instinct of equilibrium. This will enable him to almost anticipate the sudden lurches and deviations, and apply that instant correction which is necessary for successful navigation. Although all his work has been done with the gas-balloon type, Baldwin believes that the ultimate successful airship will be of the aeroplane type, and will be framed, driven, and balanced on the same principles that govern the flight of birds. He frankly admits that the dirigible balloon will never have a commercial value; but he believes that, in its perfected condition, it will come to be recognized as one of the most attractive forms of sport, taking its place with the yacht and the automobile. Incidentally, it should be mentioned that Baldwin compares the pleasure of sailing in his airship with that experienced in holding the wheel of a sailing yacht, the response to the slightest changes of the rudder being immediate and proportionate. Although he was the most successful competitor at St. Louis, he is so firmly convinced that the future of human flight lies in the direction of the aeroplane, that he has already directed his attention to this type, the practical possibilities of which were shown by the successful flight of the Wright brothers not many months ago.

1904-12-17, "Airship Yarn Pronounced False by the Wright Brothers, Who Say Their Machine Has Been Housed Since Dec. 1.", The Dayton Daily News, Ohio, US, December 17, 1904, col. 4, p. 2.

AIRSHIP YARN

Pronounced False by the Wright Brothers, Who Say Their Machine Has Been Housed Since Dec. 1.

Orville and Wilbur Wright, the airship inventors and enthusiasts, are reported to have made a flight of between three and four miles with their

aerial frigate Friday, but the Wright brothers say that the ship has not been out of its house since Dec. 1, and only once before that date, on Nov. 9, for the past several months. On these dates, they claim, successful flights were made. There will be no experiments until next spring.

1904-12-17, "Anniversary of Wright Experiments. Dayton Boys Commenced on Their Aeroplane Just One Year Ago Today.", The Dayton Herald, Ohio, US, December 17, 1904.

ANNIVERSARY OF WRIGHT EXPERIMENTS

Dayton Boys Commenced on Their Aeroplane Just One Year Ago Today.

Just one year ago today the Wright brothers, of this city, began a series of experiments with their aeroplane, and the experiments have been crowned with success. Their machine is said to be the best type of a distinct air-ship having absolutely no balloon attachment whatever. The Herald has previously given a minute description of the "Wright Flyer," the machine that has attained a speed of fifty miles an hour at an elevation of several hundred feet.

The maximum distance covered by a single flight is nearly four miles, this having been accomplished about five weeks ago. The present machine is an improvement over a number of machines with which Messrs. Orville and Wilbur Wright have experimented theoretically and practically for the last eight years.

The famous young Dayton mechanics were expected to enter their machine in the St. Louis Exposition contest of dirigible air-ships, but deemed it inexpedient. Public tests will be made in the early spring, where the former experiments have been invariably conducted — at Simm's Stop, on the D. S. & U., several miles east of the city.

1904-12-17, "Trials Over for Season", Dayton Press, Ohio, US, December 17, 1904.

Trials Over for Season

The Wright flying machine made its first flight just one year ago today. Messrs. Wilbur and Orville Wright, who are the owners and inventors of the machine, have succeeded in reaching a higher state of perfection than any other inventors, who have attempted to solve the problem of aerial navigation.

Their work and trials have been carried on quietly. They have not made any public trial, and have no intention of making any in the near future.

The 1904 flights as recorded in W. Wright's notebook E

1904-07-30 – 12-09, W. Wright, "Wilbur's notebook E, 1904-1905", July 30 - Dec. 9, 1904, pp. 3-40.

July 30, 1904

Inside engine test with 10 in. × 29° screws.
gear. 33 & 10

1 min.	372 turns
2 "	358 "
3 "	350 "
4 "	347 "

Aug 2 - 1904

Wind North - 6-8 mi
14] 1st Flight 160 ft.
Tail stick broken in starting. W.W.
15] 2nd Flight 370 ft.
Tail wires disarranged by truck.
Turned to right and landed near fence. End bow broken. W.W.

Aug 4 - 1904

West wind 4 mi

16] 1st Flight. No start.
Time down track 195 ft in $10\frac{2}{5}$ sec.
17] 2nd Flight 272 ft.
Time from start on track 20 sec.
Runner injured.
Anemometer 205 meters.

Aug 5.

Wind 2-12 mi. North West
236 ft track.
18] 1st Flight. OW.
Did not turn up and struck ground at start. Accidentally shut off records. First 60 ft on track $4\frac{3}{4}$ sec.
19] 2nd Flight. OW.
Distance 356 ft
No anemometer records.
Last 80 ft on track $2\frac{3}{4}$ sec. Picture.
Wind probably about 4 mi.

Aug 6.

Wind W. 12 mi.
21] 145 ft track
Time down track $8\frac{1}{4}$ s
Length flight 600 ft. W.W.
22] 2nd Flight 13 mi.
Flight $7\frac{3}{4}$ sec.
Meters 235

The new machine, which is 20 feet from rear to front, and 40 feet from tip to tip, is the first machine to make complete circles. Since September 20, the Wrights have made 20 complete circles with the machine. The machine carries no gas bag, but depends entirely on its gasoline engine for propelling power. The weight of the flyer is 900 pounds.

The longest fights yet accomplished by the machine occurred on November 9 and December 1, when the flyer made almost three miles in five minutes. The Wright brothers experiment station is situated in a field almost one mile square on the Torrence Huffman farm on Huffman Hill. All the experiments have been finished for the present season and the flyer is being brought back to the city for the winter. The Wright flyer is the only machine that ever lifted a man off the ground, and is also the only flying machine ever accomplishing the purpose for which it was designated. It is operated by means of aeroplanes, that serve as wings to carry the machine through the air. A speed of 40 miles an hour can be obtained. The only changes in the mechanism of this year's flyer were made in the steering apparatus, the success of which has been thoroughly demonstrated by the ability of the machine to fly through the air in circles.

1905-02-03, "A Successful Flying Machine", The Holt County Sentinel, Oregon, Missouri, US, February 3, 1905, col. 5, p. 1.

A Successful Flying Machine.

After years of unsuccessful efforts by some of the world's greatest scientists, it appears that the Wright Brothers, of Dayton, O., have solved the problem of the flying machine. Accounts of a successful test made by them appeared in the papers last summer, and it seems that they are making rapid strides toward perfecting their invention.

We quote the following from a letter from their father, Bishop Milton Wright, of Dayton, to his niece, Mrs Frank Petree.

"Wilbur, on November 9th, celebrated Roosevelt's election by a flight of nearly three miles, in five minutes, and Orville did the same December 1st. I was there. They are improving their engine and will put the experience of 1904 into a new machine by April."

The boys are not using the balloon, but are making a real flying machine, one that supports itself in the air without any support from a gas bag. They deserve all the more credit for their work, since they are doing it entirely unaided. They own and operate a bicycle factory and their studies and experiment in aerial navigation have been conducted at odd times as a recreation.

Watch 17 sec.
Shut off 1-2 seconds after landing.
OW. Engine stopped. 200 ft flight.
23] 3rd Flight. W.W.
150 ft. 7 sec

Anem. $\left\{ \begin{array}{l} 210 \text{ meters} \\ 17\frac{2}{5} \text{ sec} \end{array} \right.$

Aug 8

Wind North 2-5 miles.
24] One trial W.W.
Struck wing before leaving track.

Aug. 10

Wind West. 5-8 mi. 145 ft track
25] 1st Flight OW.
360 ft. - 11 sec.

Anem. $\left\{ \begin{array}{l} 205 \text{ meters} \\ 17\frac{2}{5} \text{ sec.} \end{array} \right.$

26] 2nd Flight W.W.
640 ft - $20\frac{3}{5}$ sec.
Broke rudder before final landing.
Broke screw.

Aug 13.

Wind West 8-12 mi. 195 ft Track
27] First Flight O.W.
Did not turn up till too late. 200 ft.

28] Second Flight W.W.
1304 ft. in $39\frac{1}{4}$ sec.

Anem. $\left\{ \begin{array}{l} 705 \text{ meters} \\ 50\frac{2}{5} \text{ sec.} \end{array} \right.$

Av. Wind 12.2 ft sec
Speed 33.2 " "
Rel. Speed 45.4 " "

29] Third Flight O.W.
640 ft in 15 sec.

Anem. $\left\{ \begin{array}{l} 425 \text{ meters} \\ 26 \text{ sec.} \end{array} \right.$

Picture

Av. Wind. 17 ft. sec.
Speed 42 " "
Rel. Speed 59 " "

30] Forth Flight W.W.
784 ft in $22\frac{3}{4}$ sec.

Anem. $\left\{ \begin{array}{l} 475 \text{ meters} \\ 32\frac{2}{5} \text{ sec.} \end{array} \right.$

Picture.

Wind 14 ft. sec
Speed 35 " "
Rel. Speed 49 " "

Broke F. Rudder &c.
The last was our Thirtieth Trial.

Aug 16th

160 ft Track

Last 60 ft in 2 sec.
Wind 5 to 18 N.W.
31] First Flight O.W.
Wind quartering almost 45°. Start good. Distance 432 ft. No anemometer or time measurements. Shot down and struck on front rudder, breaking support.

Mon. Aug 22.

Wind 14 mi. N.W.
160 ft track.
60 ft $2\frac{1}{5}$ sec.
32] First Flight W.W.
Distance about 400 ft. No time of flight.
33] 2nd Flight. O.W.
Distance 179 = 1432 ft.
Time 36 sec.
Anem { 635 meters
44 sec.
34] 3rd Flight. W.W.
175 ft in 7 sec. Wind very light.
Unable to fly.
35] 4th flight W.W.
195 ft track.
60 ft in $2\frac{1}{10}$ sec.
1296 ft. in 36 sec.
Anemom. { 630
 $48\frac{1}{2}$ sec.
1 sec. after stop.

Aug 23.

Wind. E. Track 145
36] 1st Flight O.W.
95 × 8 = 760 ft
Time = $20\frac{1}{2}$ - $22\frac{1}{4}$
Anemom. { $30\frac{2}{5}$
525
Broke Tail. KW present
37] 2nd Trial WW
192 ft in 7 sec.
Anem { 160
 $15\frac{3}{5}$
Unable to continue.

Aug 24.

Wind E. 6 - mi. 145 ft Track.
38] 1st Flight W.W.
 $157\frac{1}{2}$ turns in $32\frac{1}{4}$
Anemom { 530 met
 $39\frac{1}{2}$ sec.
Shut off. 2 sec. before landing.
39] 2nd Flight. O.W.
201 ft in $7\frac{1}{2}$ sec.
11 miles
Struck by gust and turned downward. Rudder framing broken & machine turned over and stood on front edge. O.W. had back of hand scratched & bruised, and sore all over.

39 Trials to Sept 1

Sep. 7. W.W.

Derrick. Drop $16\frac{1}{2}$
Geared 3 - 1 = 50 ft.
Wind about. 2 mi.
40] 1st Trial Wt. 600 lbs.
Distance 136 ft.
Time 6 sec.
Slowed up and stopped.

89 meters 9 sec.
41] 2nd Trial Wt 800 lbs.
Distance 200 ft
Time 7 sec.
Wind. about 2 mi.
Almost got a start.
42] 3rd Trial. W.W. 1000 lbs.
On track 77 ft. $2\frac{4}{5}$ sec.
Distance 1360 ft
Time 37 sec.
Anem. 422 ft.
Anem { 610 meters
 $39\frac{1}{4}$ sec.
Shut off about $1\frac{1}{2}$ sec before landing.
K.W. & Melba S.

Sept 9. W.W.

43] Wt 1200 lbs.
Pull 49 ft. Track 79 ft
Down track $3\frac{2}{5}$ sec.
Distance 20×8 in 5 sec.
" 24×8 + track
Anemom { in $8\frac{4}{5}$ sec.
79 meters
About dead calm to side or slight rear.
44] W.W. Wt 1200
track $3\frac{2}{5}$
Dist 62×8 ft = 496
Time $13\frac{3}{4}$
No anemometer record
45] WW
Dist $69\frac{1}{2} \times 8$ ft = 556
Time $14\frac{1}{5}$ s.
An. { 18 s
205 m.
Wind = 2 ft. Dead Calm.

Sept 13. W.W

Wt 1200 lbs. &c
46] 1st Trial
Distance 35×8 = 280
Time. $9\frac{1}{5}$ sec.
Wind. 100 ft in $9\frac{1}{5}$ sec.
Anem. { $10\frac{4}{5}$ sec.
140 meters
Broke tail sticks.
47] W.W.
Dist 37×8 ft = 296
Time $8\frac{1}{5}$ s.
Wind at 90° from left
Wind 100 ft in $8\frac{1}{5}$ s on ground
Anemometer in machine 135 m.
 $12\frac{3}{5}$ s

Sept 14 - W.W.

North Wind 12-18
48] Distance 82×8 656 ft
Time $19\frac{4}{5}$ O.W..
" { 22 sec C. E. T.
458 ft. }
Anemom { $23\frac{2}{5}$ sec
370 meters.
1200 lb. Wt. 50 ft.

Sep 15 W.W.

North Wind 4 - 9 m.
49] Dist 286×8 ft. 2288

Made half circle landing with wind. Anemometer at start point recorded 637 ft in $55\frac{1}{5}$ s.

Anne. in machine 845 m in $59\frac{3}{5}$ s.

50] W.W.

Wind 87 ft $50\frac{1}{2}$ s.
Dist in str. line 237×8 ft. = 1896
Dist in circuit 300×8 ft
C. E. Taylor Time $50\frac{1}{2}$ s
OW Time. $49\frac{4}{5}$ s.
Anemometer on machine 835 m in 54 seconds
Almost touched west fence with wing tip.
The last was fiftieth trial in 1904

Sept 20th W.W.

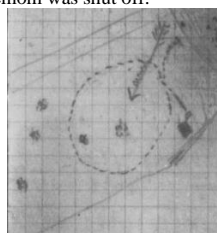
Cloudy. N.W. Wind. AM
51] First Flight W.W. Sep 20
Distance 315×8 = 2520
Time OW $1.01\frac{2}{5}$
" { CET $1.01\frac{4}{5}$
Anem. 473 ft.
Anem. { $1.05\frac{3}{5}$
1005 meters.
Flight lasted about 2 sec. after engine shut off.



Rain N.E. Wind. P.M.
52] 2nd Flight W.W. Sept 20
Complete circle
Distance 510×8 = 4080
Time OW $1:35\frac{2}{5}$

C.E.T. 1 $35\frac{1}{5}$

Anemometer 1 $35\frac{4}{5}$
Dist 1505 met
Anemometer on ground recorded 900 ft. in 1.35
Flight lasted about 3 sec after anemom was shut off.



(Root present)

Sept 26

Wind Calm. O.W.
1 sq ft resistance left wing
53] Distance 156 ft
Time $5\frac{3}{5}$ sec
Anemom { 8 sec
70 meters.
No Start.
54] 1400 weight O.W.
1 sq ft resistance left wing.
Distance 111×8 = 888
Time. 25 sec. W.W.
Anemom { 375 meters
 $29\frac{1}{5}$ sec.

L.W. { 23 sec
115 ft.
Unable to stop turning.

Sept 27

Wind N.W.
1400 lbs. OW.
Engine tests 345 - 335
55] 1st Flight
Distance 44×8 = 352
Anem. CET { $10\frac{1}{5}$ sec.
30 ft.
Anemom { 209 meters.
 $18\frac{2}{5}$.
Tail set to one side to turn to left.
56] 2nd flight O.W.
1400 lbs.
Distance 34×8 = 272
Time W.W. $7\frac{1}{5}$
Anem. C.E.T. { 7 sec
59
Anem { 11 sec.
105 meters.
Eng. Test 355 - 339.
57] 3rd flight
1400. OW
Distance. 120 ft
Time 4 sec W.W
Anem. C.E.T. { 4 "
3 ft.
Anem { 8 sec.
75 meters

Sept 28.

1400 lbs.
Eng tests 365 + 35[5?]
58] 1st Flight O.W.
Wind 2 mi from rear.
Distance 120 ft
104 ft in $3\frac{3}{5}$ sec.
Anemom { $6\frac{3}{5}$ sec.
56 meters.
59] 2nd trial WW.
Wind 1 mile rear.
Distance 34×8 = 272
 29×8 = 232 in 6 sec.
Time 6 sec.
Anem { 12 sec
115 meters.

Sept 29th

Simultaneous measurements of wind speed at heights of

5 ft.	20 ft.
650 meters × 3 = 19.50 mi.	30.4 mi
575 met"rs × 3 = 17.25 "	23.4 "
577 met"rs × 3 = 17.31 "	24.1 "
555 met"rs × 3 = 16.65 "	23.6 "

Comparison of Anemom.

Richard	English
$560 \times 3 = 16.80$ mi	16.8 mi
$655 \times 3 = 19.65$ mi	18.8 mi
$620 \times 3 = 18.60$ mi	18.6 mi

Sept 30

Wind N.W. O.W.
60] Distance 190×8
Time W.W. $33\frac{3}{5}$
Anem C.E.T. { $35\frac{1}{5}$ sec
260 ft
Anem { 36 sec
565 meters.
Stored machine &c. from middle of field in 20 min.
Harshman & Miller present.

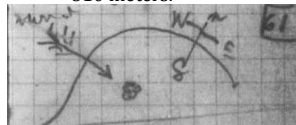
Last was 60th flight

Oct 1.

1200 Wt
Wind NW.
61] First Flight O.W.
Distance $288 \times 8 = 2304$

Time CETaylor { 49 sec.
605 ft

Anem. { 56 sec
810 meters.



62] 2nd Flight OW
Distance ?

Time { $51\frac{2}{5}$ sec
425 ft

Anem { 55 sec
870 meters

Passed over cattle and soon after touched wing tip. Broke skids, & f. rudder struts.

Oct 4

Wind South @ 5 mi

63] 1st Flight. O.W.

Distance 440 ft

Time $12\frac{1}{2}$ sec.

Eng. stopped

64] 2nd Flight O.W.

Distance. $230 \times 8 = 1840$

Time 44 sec. W.W.

Anem. { $45\frac{2}{5}$ sec.
681 meters.

Oct 11

Wind N. 4-5 mi.

Drizzle & rain.

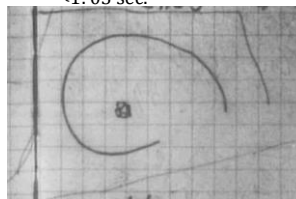
65] 1st Flight O.W.

Distance —

Time 1: 03 $\frac{3}{5}$

Anem { 1010 meters
1:06 sec

C.E.T. { 500 ft
1:03 sec.



Caught in rain before getting into shed.

Oct 13. Jonah day.

Wind E. @

66] 1st Flight O.W.

No. start.

67] 2nd Flight O.W.

Distance —

Time. WW $54\frac{3}{5}$

CET { $54\frac{1}{2}$ sec.
548 ft.

Anem ? { 59 sec
850 meters. ?



Oct 14

W E by north

68] 1st Flight. O.W.

Distance. Circle

{ Time 1: 16

Anem. 758 ft.

Anem. { Time $1.22\frac{1}{4}$
1220 meters.

69] 2nd Flight. OW

Time { 1: 31
358 ft.

Anemom

{ 1: 38

1505

Picture

70] 3rd Flight. W.W.

{ CET 1.26

OW $1.23\frac{1}{5}$

Anem { $1:27\frac{3}{5}$
1495

Dead Calm

Anem 52 ft in $1\frac{1}{5}$

Went over two herds of cattle.

Oct 15

71] Wind. E. by S @ 6-8 mi

Chanute present

Distance.

Time. $23\frac{4}{5}$

Anem. 190 ft.

Anem. on Mach. {420 meters

Unable to stop turning & broke engine & skids & both screws.

Oct 26

Wind N.W.

72] First Flight W.W.

Distance 1040 ft

Time 26 sec

Anem { 34 sec

465 meters

Darted into ground and broke upper spar, & skids & screw.

72 trials

Nov. 1st

Pulled stake from ground and ran down track with O.W. partly on. Broke forward struts on right side.

Nov 2nd

73] 1st Trial. O.W.

Unable to get good start. Wind from rear.

74] 2nd Trial O.W.

No start. Wind bad.

75] 3rd Trial W.W.

Distance Circle.

Anem { 1290 meters.
 $1:26\frac{2}{5}$

O.W. 1: 25

CET $1\frac{24}{5}$

76] 4th trial O.W

Poor start.

77] 5th trail O.W.

Broke tail in starting.

Nov 3rd

[78 79

Three trials but only got off once.

[80 W.W.

Anem { 1325
 $1:27\frac{2}{5}$

C.E.T. 1.28

Struck wing soon after finishing circle & broke screws & rear lower spar.

Nov. 9th

81] 1st trial O.W.

Anem. { 255 meters

18 sec

Power insufficient.

82] 2nd trail W.W.

3 Pictures

Almost four rounds of field.

Time 5 min. 4 sec.

Engine probably heated.

No Anem. records.

Brown & Reed of D.S.&U. present.

83] 3rd trial. O.W.

Wind slightly from rear.

Anem. { 115
 $11\frac{2}{5}$

Nov 16th OW

84] Anem { 820 m
 $56\frac{4}{5}$ sec Picture

W.W. { $53\frac{1}{5}$
495 ft.

85] 2nd Flight. OW.

Anem { 535 m
 $40\frac{1}{5}$ sec. Picture

WW. 45 sec

86] 3rd Flight. OW.

650 ft over ground

No anem. record

Time $19\frac{1}{4}$ sec

Gasoline turned too low in last three flights. Stalled.

87] 4th Flight W.W.

Gasoline in 3rd Niche

Time 3 min $10\frac{3}{4}$ sec.

$2\frac{1}{4}$ rounds of field

No anem. record. Unable to stop turning.

Nov 22.

- 88 - 89 - 90 & 91 & 92] Made five trials but owing to improper gasoline regulation did not get a single start flights ranged from 150 - 250 ft. Furnas & Root & others present.

Nov. 25th

93] 1st Flight O.W.

{ 335 m
 $25\frac{1}{5}$ sec

Time WW. $20\frac{3}{4}$ sec.

94] 2nd Flight W.W.

Anem { 635 m
 $45\frac{3}{5}$ sec

O.W. { $42\frac{3}{5}$ sec
460 ft an.

95] 3rd Flight - OW.

Anem { 690 m
 $45\frac{2}{5}$ sec.

W.W. { $42\frac{4}{5}$ sec

96] 4th Flight - W.W.

Anem { 840 m
59 sec

OW { $55\frac{1}{5}$ sec.

97] 5th Flight O.W.

Anem { 890
1:03 sec

W.W. $55\frac{3}{5}$ sec.

Dec 1

98] 1st Flight. W.W.

Broke cross stick carrying front truck before leaving track.

99] 2nd Flight O.W.

{ 85 m.

$8\frac{4}{5}$ sec

$5\frac{1}{5}$ sec.

Wind from rear.

100] 3rd Flight. O.W.

{ 4515 m.

5:08 sec. ?

CET 4:53

W.W. 4:50 $\frac{4}{5}$

15.4 m

Dec. 5

101] 1st Flight. W.W.

Propeller struck truck soon after leaving track and broke to pieces.

Dec. 6.

102] 1st Flight W.W. Shut off gasoline by mistake soon after start.

Dec 7.

103] 1st Flight W.W.

{ 100 meters.

$7\frac{1}{5}$ sec.

7 sec C.E.T.

Dec 9

104] 1st Flight W.W. No start. Shut off gasoline from force of habit.

105] 2nd Flight W.W. Front rudder loose at lower end of skids. Unmanageable

The 1904 flights as recorded in O. Wright's notebook G

1904-11-02 - 12-01, O. Wright, "Orville's notebook G, 1904-1905", Nov. 2 - Dec. 1, 1904, pp. 1-6.

g

This book carried on machine in all of flights recorded in it. O.W.

g 1904 & 1905

Nov. 2nd W.W.

1290 m. $1:26\frac{2}{5}$

OW 1:25

CET. $1:24\frac{3}{5}$

Nov 3rd WW

1325	$1\frac{2}{5}$
CE Taylor 1.28	
Nov. 9th OW.	
255 m. 18 s. CE Taylor Lacked power	
Nov. 9th WW.	
No record in An. 5.04. Almost 4 rounds.	
Nov. 9th OW	
Wind slightly from rear. An. $\left\{ \begin{array}{l} 11\frac{2}{5} \text{ s.} \\ 115 \text{ m.} \end{array} \right.$	
Nov. 16th OW.	
An $\left\{ \begin{array}{l} 820 \text{ m} \\ 56\frac{4}{5} \end{array} \right.$ WW $\left\{ \begin{array}{l} 53\frac{1}{4} \\ 495 \text{ ft} \end{array} \right.$	

Nov 16 OW	
An. $\left\{ \begin{array}{l} 535 \\ 40\frac{1}{5} \end{array} \right.$	
WW 45 3 rd Flight O.W. Over ground 650 ft. No anem. record Wind about 3-4 mi Time $19\frac{1}{4}$ sec Gasoline turned low and machine each time stalled. 4 th Flight. W.W. Gasoline in 2 nd niche. Time $3:10\frac{3}{4}$ sec. $2\frac{1}{4}$ rounds of field. No anem. record. Almost dead calm.	
Nov. 25 OW.	
$\left\{ \begin{array}{l} 335 \text{ m} \\ 25\frac{1}{5} \text{ s} \end{array} \right.$	
CET. $20\frac{1}{2}$	

WW $20\frac{3}{4}$	
$\left\{ \begin{array}{l} 635 \text{ m.} \\ 45\frac{3}{5} \text{ W.W.} \\ 42\frac{3}{5} \text{ sec} \\ 460 \text{ ft an.} \end{array} \right.$	
Nov 25 OW	
$\left\{ \begin{array}{l} 690 \text{ m} \\ 45\frac{2}{5} \text{ s.} \end{array} \right.$ WW $42\frac{4}{5}$ CET 43	
Nov 25 WW	
$\left\{ \begin{array}{l} 840 \text{ m} \\ 59 \text{ s} \end{array} \right.$	
OW $55\frac{1}{5}$ CET $55\frac{1}{2}$	
Nov. 25 O.W.	
$\left\{ \begin{array}{l} 890 \text{ m} \\ 1\ 03 \text{ s} \end{array} \right.$	

Dec 1st WW	
Did not rise broke stick holding front truck	
Dec. 1st OW	
$\left\{ \begin{array}{l} 85 \text{ m} \\ 8\frac{4}{5} \text{ s} \end{array} \right.$ CET. $5\frac{1}{5}$ WW $5\frac{1}{4}$ Total dist inc track 39×8	
Dec 1st OW.	
$\left\{ \begin{array}{l} 4515 \text{ m} \\ 5:08 \\ \text{C.E.T. } 4:53 \\ \text{WW } 4:50\frac{2}{5} \end{array} \right.$	

The trials no. 14 to 105 as recorded in the Wrights' notebooks

Wilbur, in his notebook E, kept a systematic record of flight data for all trials of 1904 that occurred starting with Aug. 2nd. Orville also had a similar logbook, labeled G, which only contains information about the tests that took place beginning with Nov. 2nd. His entries are, in general, less detailed than those of his elder brother and some trials were not documented at all.

The current chapter consists of Tab. 7 and

Tab. 8 that summarize the data in the two logbooks, arranging it in a more readable format because, as they were written, the original records are cryptic to a certain extent, being difficult to understand.

Explanations in connection with the headers of the two tables:

- **Date:** The date of the test.
- **Flight No. Day - Abs:** The trial number, of the day and absolute. For example, 2 - 15 means the second test of the day and the 15th of 1904. (Remark: The first 13 experiments, including that of May 26th, at 2 PM, were not cataloged.)
- **Anem. Richard (Dist., Time):** Dist. = the integral of the airspeed (the distance traveled through the air) and Time = the integration interval, as recorded by the combination Richard anemometer - chronometer installed

on Flyer II. The average airspeed = Dist./Time, assuming the anemometer began recording when the aeroplane started and was stopped immediately after landing. If the instrument worked more time than that during which the machine moved, then it integrated just the wind speed while the plane was resting still on the ground.

- **Dist. over Ground:** The distance, covered by the aeroplane, measured along the ground.

- **Time₁ (Person with the timer):** The flight time recorded by a ground chronometer operated by: W. = Wilbur, O. = Orville, L. = Lorin Wright (an elder brother of the two inventors) or C.T. = Charles Taylor (the Wrights' mechanic).

- **Ground Anem. (Dist., Time₂, Person with the timer):** Dist. = the integral of the wind speed, during a flight, indicated by an English anemometer operated by somebody on the ground. Time₂ = the duration recorded by a timer associated with this anemometer. The persons who handled the instrument were: Wilbur, Orville, Lorin or Taylor.

- **Wind speed & dir.:** The wind speed and direction. In some cases, the speed is not stated explicitly and there exists only a record of the English anemometer - chronometer from which I calculated this parameter as Dist./Time.

- **Pilot:** W. = Wilbur, O. = Orville.

- **Explanations:** They are notes, written by the brothers, which offer additional information about most tests. Some clarifications were added by me to make these comments more clear.

Tab. 7. The trials of 1904, from flight no. 14, on Aug. 2nd, to no. 105, on Dec. 9th, as recorded in Wilbur's 1904-1905 notebook E.

Date	Flight no. Day - Abs.	Anem. Richard (Dist., Time)	Dist. over Ground	Time ₁ (Person with the Timer)	Ground Anem. (Dist., Time ₂ , Person with the Instrument)	Wind speed & dir.	Pilot	Explanations
		(m, sec)	(ft)	(sec)	(ft, sec)	(mph or ft/s)		
Aug. 2	1 - 14	n/a	160	n/a	n/a	6 to 8 mph, North	W.	Tail stick broken in starting.
Aug. 2	2 - 15	n/a	370	n/a	n/a	6 to 8 mph, North	W.	Tail wires disarrayed by truck. Turned to right and landed near fence. End bow broken.
Aug. 4	1 - 16	n/a	n/a	n/a	n/a	4 mph, West	n/a	No start. Time down track 195 ft in 10 2/5 sec.
Aug. 4	2 - 17	205 m, 20 s	272	n/a	n/a	n/a	n/a	Time from start on track 20 sec. Runner injured. Anemometer 205 meters.
Aug. 5	1 - 18	n/a	n/a	n/a	n/a	2 to 12 mph, NW	O.	236 ft track. Did not turn up and struck ground at start. Accidentally shut off records. First 60 ft on track 4 3/4 sec.
Aug. 5	2 - 19	n/a	356	n/a	n/a	4 mph, NW	O.	Distance 356 ft. No anemometer records. Last 80 ft on track 2 3/4 sec. Picture taken.

Date	Flight no. Day - Abs.	Anem. Richard (Dist., Time)	Dist. over Ground	Time ₁ (Person with the Timer)	Ground Anem. (Dist., Time ₂ , Person with the Instrument)	Wind speed & dir.	Pilot	Explanations
		(m, sec)	(ft)	(sec)	(ft, sec)	(mph or ft/s)		
								Wind probably about 4 mi.
Aug. 5	3 - 20	n/a	n/a	n/a	n/a	n/a	n/a	There is no record about trial no. 20, not even its number. It could only be the third test of August 5, 1904.
Aug. 6	1 - 21	n/a	600	n/a	n/a	12 mph, West	W.	145 ft track. Time down track 8 1/4 s.
Aug. 6	2 - 22	235 m, 17 s	200	7 3/4	n/a	13 mph	O.	The Richard anemometer was shut off 1-2 seconds after landing. Engine stopped (the cause of the descent).
Aug. 6	3 - 23	210 m, 17 3/5 s	150	7	n/a	n/a	W.	
Aug. 8	1 - 24	n/a	n/a	n/a	n/a	2 to 5 mph, North	W.	One trial. Struck wing before leaving track.
Aug. 10	1 - 25	205 m, 17 2/5 s	360	11	n/a	5 to 8 mph, West	O.	145 ft track.
Aug. 10	2 - 26	n/a	640	20 3/5	n/a	n/a	W.	Broke rudder before final landing. Broke screw.
Aug. 13	1 - 27	n/a	n/a	n/a	n/a	8 to 12 mph, West	O.	195 ft track. Did not turn up till too late. 200 ft.
Aug. 13	2 - 28	705 m, 50 2/5 s	1304	39 1/4	n/a	12.2 ft/s, Headwind	W.	Average wind speed = 12.2 ft/s, plane ground speed = 33.2 ft/s, plane relative speed = 45.4 ft/s.
Aug. 13	3 - 29	425 m, 26 s	640	15	n/a	17 ft/s, Headwind	O.	Picture taken. Average wind speed = 17 ft/s, plane ground speed = 42 ft/s, plane relative speed = 59 ft/s.
Aug. 13	4 - 30	475 m, 32 2/5 s	784	22 3/4	n/a	14 ft/s, Headwind	W.	Picture taken. Average wind speed = 14 ft/s, plane ground speed = 35 ft/s, plane relative speed = 49 ft/s. Broke forward rudder &c.
Aug. 16	1 - 31	n/a	432	n/a	n/a	5 to 18 mph, NW	O.	160 ft track. Last 60 ft of track were traveled in 2 sec. Wind quartering almost 45°. Start good. Distance 432 ft. No anemometer or time measurements. Shot down and struck on front rudder, breaking support.
Aug. 22	1 - 32	n/a	400	n/a	n/a	14 mph, NW	W.	160 ft track. Last 60 ft of track traveled in 2 1/5 sec.
Aug. 22	2 - 33	635 m, 44 s	1432	36	n/a	n/a	O.	Flight distance over ground 179 = 1432 ft. (The distance was measured with an instrument 8 feet in length, 8 ft × 179 = 1432 ft.)
Aug. 22	3 - 34	n/a	175	7	n/a	n/a	W.	Wind very light. Unable to fly.
Aug. 22	4 - 35	630 m, 48 1/2 s	1296	36	n/a	n/a	W.	195 ft track. Last 60 ft traveled in 2 1/10 sec. The anemometer was shut down 1 sec after the plane stopped.
Aug. 23	1 - 36	525 m, 30 2/5 s	760	20 1/2 to 22 1/4	n/a	East	O.	Track 145 ft. Broke Tail. KW (Katherine Wright) present.
Aug. 23	2 - 37	160 m, 15 3/5 s	192	7	n/a	n/a	W.	Unable to continue.
Aug. 24	1 - 38	530 m, 39 1/2 s	157.5 × 8	32 1/4	n/a	6 mph, East	W.	145 ft. track. The Richard anemometer was shut off 2 sec before landing.
Aug. 24	2 - 39	n/a	201	7 1/2	n/a	11 mph	O.	Struck by gust and turned downward. Rudder framing broken + machine turned over and stood on front edge. Orville Wright had back of hand scratched + bruised, and sore all over.
Sep. 7	1 - 40	89 m, 9 s	136	6	n/a	2 mph	W.	Derrick: drop 16 1/2 ft, geared 3:1 = 50 ft, weight = 600 lb. The plane slowed up and stopped.
Sep. 7	2 - 41	n/a	200	7	n/a	2 mph	W.	Weight = 800 lb. Almost got a start.

Date	Flight no. Day - Abs.	Anem. Richard (Dist., Time)	Dist. over Ground	Time ₁ (Person with the Timer)	Ground Anem. (Dist., Time ₂ , Person with the Instrument)	Wind speed & dir.	Pilot	Explanations
		(m, sec)	(ft)	(sec)	(ft, sec)	(mph or ft/s)		
Sep. 7	3 - 42	610 m, 39 1/4 s	1360	37 s	422 ft, 37 s	n/a	W.	Weight = 1000 lb. The plane traveled on track 77 ft in 2 4/5 sec. The Richard anemometer was shut off about 1 1/2 sec before landing. K.W. (Katherine Wright) & Melba S. (Silliman) were present.
Sep. 9	1 - 43	79 m, 8 4/5 s	160	5	n/a	n/a	W.	Weight = 1200 lb, pull = 49 ft, track = 79 ft. The plane traveled down track for 3 2/5 sec. The flight distance over the ground was 20 × 8 ft in 5 sec, from the end of the track. The total distance traveled from the point where the pull of the catapult stopped was about 24 × 8 ft. About dead calm to side or slight rear.
Sep. 9	2 - 44	n/a	496	13 3/4	n/a	n/a	W.	Weight = 1200 lb. The plane traveled down track for 3 2/5 sec.
Sep. 9	3 - 45	205 m, 18 s	556	14 1/5	n/a	2 ft/s	W.	
Sep. 13	1 - 46	140 m, 10 4/5 s	280	9 1/5 s	100 ft, 9 1/5 s	7.41 mph	W.	Weight = 1200 lb & c. Broke tail sticks.
Sep. 13	2 - 47	135 m, 12 3/5 s	296	8 1/5 s	100 ft, 8 1/5 s	8.31 mph.	W.	Wind at 90° from left. Wind 100 ft in 8 1/5 s on ground.
Sep. 14	1 - 48	370 m, 23 2/5 s	656	19 4/5 (O.)	458 ft, 22 s (C.T.)	12 to 18 mph, North	W.	Weight = 1200 lb, pull = 50 ft.
Sep. 15	1 - 49	845 m, 59 3/5 s	2288		637 ft, 55 1/5 s	4 to 9 mph, North	W.	Made half circle landing with wind. Anemometer at start point recorded 637 ft in 55 1/5 s.
Sep. 15	2 - 50	835 m, 54 s	2400	49 4/5 (O.)	87 ft, 50 1/2 s (C.T.)	1.17 mph	W.	Dist. traveled over ground in straight line = 237 × 8 ft = 1896 ft. Dist. traveled over ground in circuit = 300 × 8 ft = 2400 ft. Almost touched west fence with wing tip.
Sep. 20	1 - 51	1005 m, 1 min & 5 3/5 s	2520	1 min & 1 2/5 s (O.)	473 ft, 1 min & 1 4/5 s (C.T.)	5.21 mph, NW	W.	AM, cloudy. Flight lasted about 2 sec after engine shut off.
Sep. 20	2 - 52	1505 m, 1 min & 35 4/5 s	4080	1 min & 35 2/5 s (O.)	900 ft, 1 min & 35 1/5 s (C.T.)	6.44 mph, NE	W.	PM, rain (before the second flight). Flight lasted about 3 sec after the Richard anemometer was shut off. (Root present)
Sep. 26	1 - 53	70 m, 8 s	156	5 3/5	n/a	n/a	O.	Wind Calm. 1 sq ft resistance left wing. No start.
Sep. 26	2 - 54	375 m, 29 1/5 s	888	25 (W.)	115 ft, 23 s (L.)	3.4 mph	O.	Weight = 1400 lb. 1 sq feet resistance left wing. Unable to stop turning.
Sep. 27	1 - 55	209 m, 18 3/5 s	352	n/a	30 ft, 10 1/5 s (C.T.)	2 mph, NW	O.	Weight = 1400 lb. Engine tests 345 - 335 RPM (propellers). Tail set to one side to turn to left.
Sep. 27	2 - 56	105 m, 11 s	272	7 1/5 (W.)	59 ft, 7 s (C.T.)	5.74 mph	O.	Weight = 1400 lb. Engine test 355 - 339 RPM (propellers).
Sep. 27	3 - 57	75 m, 8 s	120	4 (W.)	3 ft, 4 s (C.T.)	0.51 mph	O.	Weight = 1400 lb.
Sep. 28	1 - 58	56 m, 6 3/5 s	104	3 3/5	n/a	2 mph, Rear wind	O.	Weight = 1400 lb. Engine tests 365 + 35. Distance = 120 ft. 104 ft in 3 3/5 sec.
Sep. 28	2 - 59	115 m, 12 s	232	6	n/a	1 mph, Rear wind	W.	Distance 34 × 8 ft = 272 ft. 29 × 8 ft = 232 ft in 6 sec.
Sep. 30	1 - 60	565 m, 36 s	1520	33 3/5 (W.)	260 ft, 35 1/5 s (C.T.)	5.03 mph, NW	O.	Stored machine & c., from middle of field in 20 min. Harshman & Miller present.
Oct. 1	1 - 61	810 m, 56 s	2304	n/a	605 ft, 49 s (C.T.)	8.41 mph, NW	O.	Weight = 1200 lb.
Oct. 1	2 - 62	870 m, 55 s	n/a	n/a	425 ft, 51 2/5 s	5.63 mph	O.	Passed over cattle and soon after touched wing tip. Broke skids and forward rudder struts.

Date	Flight no. Day - Abs.	Anem. Richard (Dist., Time)	Dist. over Ground	Time ₁ (Person with the Timer)	Ground Anem. (Dist., Time ₂ , Person with the Instrument)	Wind speed & dir.	Pilot	Explanations
		(m, sec)	(ft)	(sec)	(ft, sec)	(mph or ft/s)		
Oct. 4	1 - 63	n/a	440	12 1/2	n/a	5 mph, South	O.	Engine stopped.
Oct. 4	2 - 64	681 m, 45 2/5 s	1840	44 (W.)	n/a	n/a	O.	
Oct. 11	1 - 65	1010 m, 1 min & 6 s	n/a	1 min & 3 3/5 s	500 ft, 1 min & 3 s	5.41 mph, North	O.	Wind North 4 - 5 mph. Drizzle & rain. Caught in rain before getting into shed.
Oct. 13	1 - 66	n/a	n/a	n/a	n/a	n/a	O.	No start.
Oct. 13	2 - 67	850 m, 59 s	n/a	54 3/5 (W.)	548 ft, 54 1/2 s	6.88 mph	O.	
Oct. 14	1 - 68	1220 m, 1 min & 22 1/4 s	n/a	n/a	758 ft, 1 min & 16 s	6.80 mph, E by N.	O.	Distance. Circle.
Oct. 14	2 - 69	1505 m, 1 min & 38 s	n/a	n/a	358 ft, 1 min & 31 s	2.68 mph	O.	Picture taken.
Oct. 14	3 - 70	1495 m, 1 min & 27 3/5 s	n/a	1 min & 26 s (C.T.)	52 ft, 1 min & 23 1/5 s (O.)	0.42 mph	W.	Dead calm. Went over two herds of cattle.
Oct. 15	1 - 71	420 m, n/a	n/a	23 4/5	190 ft, (possible 23 4/5)	6 to 8 mph, E by S.	n/a	Chanute present. Unable to stop turning & broke engine & skids & both screws.
Oct. 26	1 - 72	465 m, 34 s	1040	26	n/a	NW	W.	Darted into ground and broke upper spar, & skids & screw.
Nov. 1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Pulled stake from ground and ran down track with Orville Wright partly on. Broke forward struts on right side.
Nov. 2	1 - 73	n/a	n/a	n/a	n/a	Rear wind	O.	Unable to get good start. Wind from rear.
Nov. 2	2 - 74	n/a	n/a	n/a	n/a	n/a	O.	No start. Wind bad.
Nov. 2	3 - 75	1290 m, 1 min & 26 2/5 s	n/a	1 min & 25 s (O.)	1 min & 24 3/5 s (C.T.)	n/a	W.	Distance Circle.
Nov. 2	4 - 76	n/a	n/a	n/a	n/a	n/a	O.	Poor start.
Nov. 2	5 - 77	n/a	n/a	n/a	n/a	n/a	O.	Broke tail in starting.
Nov. 3	1 - 78	n/a	n/a	n/a	n/a	n/a	n/a	
Nov. 3	2 - 79	n/a	n/a	n/a	n/a	n/a	n/a	
Nov. 3	3 - 80	1325 m, 1 min & 27 2/5 s	n/a	1 min & 28 s (C.T.)	n/a	n/a	W.	Three trials on Nov. 3, 1904, but only got off once. Struck wing soon after finishing circle & broke screws & rear lower spar.
Nov. 9	1 - 81	255 m, 18 s	n/a	n/a	n/a	n/a	O.	Power insufficient.
Nov. 9	2 - 82	n/a	n/a	5 min & 4 s	n/a	n/a	W.	3 pictures. Almost four rounds of field. Time 5 min. 4 sec. Engine probably heated. No anemometer record. Brown & Reed of D. S. & U. present.
Nov. 9	3 - 83	115 m, 11 2/5 s	n/a	n/a	n/a	Rear wind	O.	Wind slightly from rear.
Nov. 16	1 - 84	820 m, 56 4/5 s	n/a	n/a	495 ft, 53 1/5 s (W.)	6.34 mph	O.	Picture.
Nov. 16	2 - 85	535 m, 40 1/5 s	n/a	45 s (W.)	n/a	n/a	O.	Picture.
Nov. 16	3 - 86	n/a	650	19 1/4 s	n/a	n/a	O.	No anemometer record. Gasoline turned too low in last three flights. Stalled.
Nov. 16	4 - 87	n/a	n/a	3 min & 10 3/4 s	n/a	n/a	W.	Gasoline in 3rd niche. 2 1/4 rounds of field. No anemometer record. Unable to stop turning.
Nov. 22	1 - 88 to 5 - 92	n/a	n/a	n/a	n/a	n/a	n/a	Made five trials but owing to improper gasoline regulation did not get a single start. Flights ranged from 150 - 250 ft. Furnas & Root & others present.

Date	Flight no. Day - Abs.	Anem. Richard (Dist., Time)	Dist. over Ground	Time ₁ (Person with the Timer)	Ground Anem. (Dist., Time ₂ , Person with the Instrument)	Wind speed & dir.	Pilot	Explanations
		(m, sec)	(ft)	(sec)	(ft, sec)	(mph or ft/s)		
Nov. 25	1 - 93	335 m, 25 1/5 s	n/a	20 3/4 s (W.)	n/a	n/a	O.	
Nov. 25	2 - 94	635 m, 45 3/5 s	n/a	n/a	460 ft, 42 3/5 s (O.)	7.36 mph	W.	
Nov. 25	3 - 95	690 m, 45 2/5 s	n/a	42 4/5 s	n/a	n/a	O.	
Nov. 25	4 - 96	840 m, 59 s	n/a	55 1/5 s (O.)	n/a	n/a	W.	
Nov. 25	5 - 97	890 m, 1 min & 3 s	n/a	55 3/5 s (W.)	n/a	n/a	O.	
Dec. 1	1 - 98	n/a	n/a	n/a	n/a	n/a	W.	Broke cross stick carrying front truck before leaving track.
Dec. 1	2 - 99	85 m, 8 4/5 s	n/a	5 1/5 s	n/a	Rear wind	O.	Wind from rear.
Dec. 1	3 - 100	4515 m, 5 min & 8 s	n/a	4 min & 50 4/5 s (W.)	4 min & 53 s (C.T.)	n/a	O.	15.4 m. (4515 m / (4 min + 53 s) = 15.4 m/s). The average airspeed of the plane was calculated by dividing the distance recorded by the Richard anemometer to the flight time measured by Charles Taylor.
Dec. 5	1 - 101	n/a	n/a	n/a	n/a	n/a	W.	Propeller struck truck soon after leaving track and broke to pieces.
Dec. 6	1 - 102	n/a	n/a	n/a	n/a	n/a	W.	Shut off gasoline by mistake soon after start.
Dec. 7	1 - 103	100 m, 7 1/5 s	n/a	7 s (C.T.)	n/a	n/a	W.	
Dec. 9	1 - 104	n/a	n/a	n/a	n/a	n/a	W.	No start. Shut off gasoline from force of habit.
Dec. 9	2 - 105	n/a	n/a	n/a	n/a	n/a	W.	Front rudder loose at lower end of skids. Unmanageable.

Tab. 8. The trials of 1904, from flight no. 75, on Nov. 2nd, to no. 100, on Dec. 1st, as recorded in Orville's 1904-1905 notebook G.

Date	Flight no. Day - Abs.	Anem. Richard (Dist., Time)	Dist. over Ground	Time ₁ (Person with the Timer)	Ground Anem. (Dist., Time ₂ , Person with the Instrument)	Wind speed & dir.	Pilot	Explanations
		(m, sec)	(ft)	(sec)	(ft, sec)	(mph)		
Nov. 2	3 - 75	1290 m, 1 min & 26 2/5 s	n/a	1 min & 25 s (O.)	1 min & 24 3/5 s (C.T.)	n/a	W.	
Nov. 3	3 - 80	1325 m, 1 min & 27 2/5 s	n/a	1 min & 28 s (C.T.)	n/a	n/a	W.	
Nov. 9	1 - 81	255 m, 18 s	n/a	n/a	n/a	n/a	O.	C E Taylor (name mentioned but with no measurement). Lacked power.
Nov. 9	2 - 82	n/a	n/a	5 min & 4 s	n/a	n/a	W.	The plane made almost 4 rounds.
Nov. 9	3 - 83	115 m, 11 2/5 s	n/a	n/a	n/a	Rear wind	O.	Wind slightly from rear.
Nov. 16	1 - 84	820 m, 56 4/5 s	n/a	n/a	495 ft, 53 1/4 s (W.)	6.34 mph	O.	
Nov. 16	2 - 85	535 m, 40 1/5 s	n/a	45 s (W.)	n/a	n/a	O.	
Nov. 16	3 - 86	n/a	650	19 1/4 s	n/a	3 to 4 mph	O.	Gasoline turned low and machine each time stalled.
Nov. 16	4 - 87	n/a	n/a	3 min & 10 3/4 s	n/a	n/a	W.	Gasoline in 2nd niche. The plane flew 2 1/4 rounds of the field. Almost dead calm.
Nov. 25	1 - 93	335 m, 25 1/5 s	n/a	20 3/4 s (W.)	20 1/2 s (C.T.)	n/a	O.	
Nov. 25	2 - 94	635 m, 45 3/5 s	n/a	n/a	460 ft, 42 3/5 s (O.)	7.36 mph	W.	
Nov. 25	3 - 95	690 m, 45 2/5 s	n/a	42 4/5 s	43 s (C.T.)	n/a	O.	

Date	Flight no. Day - Abs.	Anem. Richard (Dist., Time)	Dist. over Ground	Time ₁ (Person with the Timer)	Ground Anem. (Dist., Time ₂ , Person with the Instrument)	Wind speed & dir.	Pilot	Explanations
		(m, sec)	(ft)	(sec)	(ft, sec)	(mph)		
Nov. 25	4 - 96	840 m, 59 s	n/a	55 1/5 s (O.)	55 1/2 s (C.T.)	n/a	W.	
Nov. 25	5 - 97	890 m, 1 min & 3 s	n/a	n/a	n/a	n/a	O.	
Dec. 1	1 - 98	n/a	n/a	n/a	n/a	n/a	W.	Did not rise. Broke stick holding front truck.
Dec. 1	2 - 99	85 m, 8 4/5 s	n/a	5 1/4 s (W.)	5 1/5 s (C.T.)	n/a	O.	Total distance including track 39 × 8 ft.
Dec. 1	3 - 100	4515 m, 5 min & 8 s	n/a	4 min & 50 2/5 s (W.)	4 min & 53 s (C.T.)	n/a	O.	

Note: Orville's logbook does not assign a relative and absolute number to each test. The column "Flight no. Day - Abs." was filled with the help of Wilbur's records.

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