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Louis P. Christman

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WRIGHT BROTHERS - CHARLES F. KETTERING

ORAL HISTORY PROJECT

UNIVERSITY OF DAYTON

Project Director, 1967: Dr. Wilfred S. Steiner
Project Director, 1975-76: Johannah Sherrer

Editor: Kathy Kelto

LOUIS P. CHRISTMAN

Interviewed by

Susan Bennet

in

April or May

SB 1967, and I'm talking to Mr. Christman, now, I didn't get your first name.

LC Louis, Louis P. Christman.

SB Louis B. Christman.

LC P. like in Paul

SB Oh, P., Louis P. Christman.

LC It's Philip. See, I'm named after or before the, the queen's husband, Louis Philip.

SB Oh.

LC Only his name is Philip Louis.

SB Oh, is that so? I didn't realize that. How did you, wait, how did you come to work for the Wrights?

LC Well in 19...beginning in the late '14, I was with the Recording Computing Machines here in Dayton and they were manufacturers of streetcar registers. Then they got into munitions manufacturing by being a subcontractor to the Canadian Foreign Foundries in the manufacture of seventy-five millimeter fenders, fuses. Howitzers. So the Russians came here with some interpreters, but because I was able to speak German, and they could speak German and French along with their Russian, I could speak no French, I was assigned to keep close to these Russians and learn the business and later on I became Mr. Ohmer's...

SB Now, what, what business, I mean why were they here?

LC The manufacture. They supervised the set-up of the plant here. The Recording Computing Machines Company.

SB Oh, was it, was it a Russian patent or why?

LC Well, no. I'll tell what they were. They were really German fuse. See Russia never had a munition plant of their own. And prior to the outbreak of the War, they bought their munition from Germany. And of course, going to war against Russia and Germany, they were caught so they had to make arrangements with the Canadian Foreign Foundry Company of Canada, and the Canadian Foreign Foundry sublet these contracts. W.I. Ohmer, head of the Recording Computing Machines Com-

pany had one contract. We built the fuse; Mr. J.E. McAllister, with the boys in the experimental department of the recording computing, built the first fuse. But after we had all the tooling done, see I worked on the tooling of it and getting the manufacture...

SB Now this, this was for the gun, the seventy-five millimeter gun?

LC Nine feet, seventy-five millimeter. And this was in 1915. So I was put through they might say, the paces. I had to perform every operation excepting such operations like operating the screw machine. I didn't operate the screw machine, never used to make a certain part of the gun. The process of preparing the timberings and all and I have some they're upstairs, by.... and I was put through the paces and we made fuses. Well, I made the first slot of twenty-five hundred fuses all under the watchful eye of these Russians. And when they were done, they were all sitting there in respective crates with their leg coverings over the top, all lined up there. And the big brass of the Russian commission here in Dayton. And I made my, a remark to Captain Crendisky (?). I said, don't they look nice? One just like the other. And, of course this big general of the Russians, I can't, Orinifsky(?) I think is his name, wanted to know what I had said; he couldn't speak English. So Capt. Crendisky told him. And his response to Capt. Crendisky was to tell me you Americans think making it all look nice on the outside; it's what's on the inside that counts.

SB (laughter)

LC Well, after they were all examined that way, that is, discussions and everything, put on a static test. That is where they were sent off by mechanical means, striking the primer. And then we rotated on the drum.

(break in tape)

LC I had the displeasure of seeing them fail. And that was due to powder blend. So the time range was thrown out and new ones were made of another powder blend. We used to get the powder from Don King's Mills. I don't think we ever built a complete lot of twenty-five thousand. Did I, I said twenty-five hundred fuses.

A lot was twenty-five thousand, I didn't say a thousand, I built twenty-five hundred. And that was the Russians way of telling me pick out different ones out of different lots, see. Make sure that you didn't have any pieces made in there with what they say loving care so to be sure that they would be right. Well, after a number of failures and I had gone to Canada, sent to Canada through Camp Hedabow, Ontario (?) with about two hundred and fifty fuses that were selected out of a lot of twenty-five thousand and then we went there to fire at different ranges, and on a different classification like maybe we, the corn bears would burst that was equivalent to miles here. And then to canister, that was where fuses are all set for canister firing and in case of a charge of the enemy, they didn't have time to strip the lead covering and to get the fuses for timing, that they would screw them into the shabble and fire. All you had was a seventy-five millimeter shotgun, becomes like shrapnel, the bullets in them. Well, we had prematures on them, and that was one thing we had a difficulty in finding out where it was. Well, it was an expansionary around the primer.

SB Were these the fuses that were used in the Kettering bomb?

LC Beg your pardon?

SB Were these the same type of thing that was used in the Kettering bomb?

LC Oh, no this was, this was in 1915 and '16.

SB Oh, I see. Is that how you got...

LC I, that was in the Russian thing. Well, I'm leading up to W. Ohmer lost his contract here in Dayton. A failure to deliver. The contract was moved to Philadelphia. The Eddie Stone Ammunition Company which was part of the Balwin Locomotive. New plants were built down along the Delaware River. And they had less success down there because those buildings were down along the river. No, no, thermcontrol, thermostatic control on them, with the result that you get one thing one day and results the next day. And finally after six months, the contract was taken away from Eddie Stone and moved up to the Neptune Meter Works in Rhode Island. Then instead of me going on up there with them, I decided I had had it.

I got married in, in April of that year, 1917, because I had an agreement when I went up to Philadelphia that I would have time off to come back to Dayton and get married. That was agreed. So, of course, when I came back, two of the Russians came here. Well, we got married and, as a matter of fact, I was, with five others, was slated to go to Russia in August, where set up munitions plants in Russia. But the revolution took place over there in June or July, knocked the feet out from under them, and the result was that nobody got to go. Well, my wife was kind of sick and tired of being over there, a total stranger, and me going to work at six o'clock in the morning, coming back at seven. Alright, we go back to Dayton. So we come back to Dayton and I got in touch with some friends. Then starting up Dayton-Wright. And I went to work for Dayton-Wright Airplane in 1917. So well, I started in over, over at the South Field in engineering then over in the engineering department. And, finally, as things got to rolling, I was, delegated as the convection engineer on drawings. So we had to make drawings, that we had an engineering department of almost sixty men. And what, all the work was, their new work in process, but the idea was get these drawings out because there were no drawings of an airplane in this country when we started in, except those with the Standard people made on their Standard Airplane Jenny. We called them Jennys, but the DeHavilland was copied from the British plane, and drawings had to be made from them, transferring, transcribing the, the measurements from Metric to English, and so forth. Well, as time went on, we built, let's see July, 1918, we had our one thousandth airplane finished.

SB Yes, what was Mr. Wright's capacity?

LC He was, he was the consulting engineer, Orville Wright, Pardon me just a minute. I think I have...

(break in tape)

SB Would you tell me about how you came to develop that....plane, you know, the plane that's out in Carillon Park.

LC The one that I restored, you mean?

SB Yes.

LC Well, it was back in 1948.

SB Now, Mr. Orville was still living then.

LC Oh, yes, he was still living and I was working at the Acme Aluminum Pottery, or rather, Acme Pottery Tools at that time. We were on Findley Street. And Mr. Harvey Geyer who was an old 1909 employee of Wright Brothers. He wasn't with them very long, but there, even more in 1917, he was at the Dayton Wright Company and he was superintendent of plant three, I think it was three out on Coleman Avenue where Inland Manufacturing is now located. In the first two buildings of Inland Manufacturing was that, is that in the front?

SB Yes.

LC Were the original Wright Company that plant where they built airplanes? In 1909, the planes that were built there for oh, different countries. And I remembered as a kid, 1909, I used to go and in 1903, in 1905, I used to ride my bicycle out on Springfield Pike to watch the Wright Brothers fly out there in 19... at Simms Station. And as kids, why, we got up to the fence, and got a little bolder. And finally, we got on the inside of the fence and that was the only time that I ever met Wilbur. "You boys will have to get back over the fence." So we got over. But, of course, I met Orville several times after that in years. So, I was working at the Acme Aluminum when Mr. Geyer called me and said that I shouldn't take any assignment, he was coming out to see me in a couple of weeks when he gets more information. He did come out to see me, and the assignment was that the Colonel Deeds, with a group of friends, like Orville Wright, Mr. Kelso, Ed Smith, and Bill Chryst and some others that had like a club, helped the honorary restore the airplane. In 1905, because that airplane was more instrumental in the Wright Brothers flying than the 1903. 1903 only flew a total of about a minute and a half, where Wright Brothers flew for quite a while in 1905. He said that Mr. Ed Smith and Bill Chryst felt that they could start work on rebuilding that airplane.

SB Now, are those two people that worked at any time, worked on the plane?

LC Nope, no. They worked with Colonel Deeds, Bill Chryst worked with Colonel Deeds

on the starter and with Ketter, Kettering fusing. And Ed Smith was the big plant engineer at the NCR. I think they found out it was more of a job than they had anticipated. So Mr. Geyer was called in because Mr. Geyer had worked with NCR at one time, and they knew he worked for Wright Brothers, Colonel Deeds knew him, and Mr. Geyer went out to see them. But he was handicapped with arthritis. He said he had two men in view for this work. One is down in Florida, the former superintendent, Charles Nellis, superintendent of Dayton Wright Airplane and myself who worked at Dayton Wright Airplane and then later worked for Orville Wright in 1923. Well, Mr. Nellis was contacted, but he said yes, bring the job down to Florida and I'll do the job. They didn't want that. They wanted him to come up. So, I got the assignment. And I was employed as an employee of the NCR engineering department, but out on special assignment. I never worked with NCR but that was my assignment.

SB Who were you actually working for? At the time?

LC At that time?

SB Yes.

LC NCR? Well, Colonel...

SB No, I mean what company were you with actually at this, before you?

LC Prior to going out there?

SB Yes.

LC The Acme Aluminum.

SB Acme Aluminum, yes.

LC That was, they've changed their name, it was Acme Tool and Pattern, or Acme Pattern and Tool.

SB Okay, so then, so then they got you on alone to go out and build a plane.

LC No, I quit over there.

SB At NCR.

LC I left that job to go to NCR. See, this was like taking another job. But...

SB Oh, I see.

- LC But NCR then employed me as a member of the engineering department. And the understanding was that at the completion of the job, I was to go into some branch of engineering at the NCR, either engineering, tool design, or special machines. Well, as time went on, it took quite a while to rebuild that airplane.
- SB How long did it take?
- LC Well, it took me about a year and a half.
- SB A year and a half. Why was it, why did it take that long?
- LC Oh, it was a lot of work. You had to do on that. You see, for three months prior to when I went to work there in, I think it was November, last part of October, November, I spent afternoons with Orville Wright talking about the airplane.
- SB What did he say?
- LC Well, he was telling me different things, you see. And what I had read up or when I questioned him, and the odd part of it was that if I was to sit down with a pencil and paper, and take notes, he would clam up.
- SB He wouldn't talk.
- LC So, my job was to pay attention to what he said, and the minute he left, I'd get busy. Now I was working then...
- SB Now, did he have, did he have any blueprints or drawings, or anything?
- LC No.
- SB How, how could he expect you to, to learn fill in? Did you have a skeleton to start with at all?
- LC Just a minute, I'll show you something.
- SB What you had, was there any part of the plane to begin with, is what I mean?
- LC Well, no. You see, when the Wright Brothers....let's stop this a minute so I can explain something to you, get it straight.
- SB Well, that's okay, just leave it on. It won't make any difference.
- LC You see, in 1908, 1908, Wright Brothers built a new engine which was a vertical four cylinder vertical type, and they they put a seating arrangement in it. So that instead of laying in the plane prone, and controlling, they sat up and could

control it with levers.

SB With two men.

LC So they had already built and shipped to France, their first airplane. That airplane was over in France for almost a year. They were also building an airplane for the United States. But never having flown sitting up in a plane, they decided to take this 1905 plane, put this engine in it, they shipped it to Kitty, Kitty Hawk. And there they acquired a little information on an experience of flying sitting up in a plane. And they did alright until Wilbur crashed with it, did so much damage to it that they didn't have time to fix it. Well...

SB And that was the plane that you, that you redeveloped.

LC Restored.

SB That restored.

LC Now, what happened there because of the damage they stored everything in their hangar. And they were storing it, right up on Kelly's book is. Wilbur left for New York and went to Europe, France. And Orville returned to Dayton to work on this airplane for the United States Government. Because in September, the eight--teen...

SB In other words, the plane, the plane that they used, that they actually delivered to the government in 1908 was a new plane that they had started...

LC That was a new plane.

SB But it was a more or less of the same pattern as this 1905 plane that they had taken to Kitty Hawk.

LC Well, with some modifications to it, see. As they went along, they improved.

SB Changed it all the time.

LC You take the 1904 plane because the Kitty Hawk was wrecked in 1903, and it crated, in fact they were going to burn it up. But it was still crated, and with, through Roy Knabenshue, that the plane was saved. Because he convinced the Wright Brothers not to burn it. But in 1904, Wright Brothers built a duplicate of that plane, and their wing curves were differed in what they used in the 1903. They

used the wing curve which was developed by Lilienthal. Lilienthal was mostly on gliders. But he died. But the Wright Brothers incorporated his wing curve and found out that it was not as efficient as their plane. In 1905, that plane was revamped. They made new wings for it, they extended the front surfaces on further, and the rear back further.

SB Well, now when you talk with Mr. Wright, in the afternoon, what would he talk about? I mean what would he say, this plane is going to be, was this long or was...

LC Just what he said there.

SB ...or use what curve or what? I don't. Did he give you any pictures to work from?

LC No. I got these pictures from NCR.

SB How did they happen to have them?

LC Oh, from Wright's laboratory. See our Orville, Orville Wright had all these plates in his laboratory on Broadway.

SB Oh.

LC And of course, when...

SB I'm curious that what he talked about, if he didn't...

LC Well, I want to show you something here. If I can see it, because I had a lot of information, oh.

SB When, where did you all talk? At his home? Or his laboratory? Or where?

LC No, at the NCR.

SB At the NCR; he would come down there.

LC In an office up there in Mr. Smith's department. Sat back in the back office of Mr. Smith's. And later on, when he came out, to as I was working over there in that frame building he'd come over there in that frame building. Maybe two, three days a week. And I know one time I talked to Colonel Deeds. I said, Colonel, I have an idea and I want your approval. I would like to get a tape recorder concealed and conceal the microphone so that when I talk to Mr. Wright, I get this

data. Because I said that I've got an awful job trying to memorize each day as we go along because the minute he gets out of here, I sit down and try to put notes down, and then start working on my drawing. And I said I won't do it. Mr. Wright would never forgive you for going a trick like that and he'd never forgive me, because I knew Orville. So please don't do it. I didn't.

SB Well, he would, would he tell the angle fuse or things like that, or what would he talk about?

LC Oh, different flights...

SB Oh.

LC How, how he'd shape. Orville Wright had, he'd had the habit of little notebooks. They were books about that long, about that wide see, carry it in the vest pocket, and that was full of all kinds of notes what they did. And as they went along, they made changes in their plane. If it broke something, smashed up, they had notes in there. Those are now in the Library of Congress in Washington, D.C. Now I had the permission to go through those papers, through the administrator of Wright State, Mr. Buzz Miller. And I was allowed to go to Washington and under supervision of a guard there...

SB When, when did you go?

LC That was in 1948.

SB Oh, oh, when you, when you were working on this plane, they let you do that.

LC (Late?) '48.

SB Yes. Was he very much interested in the development of the plane?

LC Oh, yes he was.

SB Do you think he liked to have it done.

LC Because, you see what happened, the Guggenheim interest at one time, decided, to they were going to build this plane. A replica of the Wright Brothers plane. And when they had it finished, I had these pictures all separated at one time.

SB I hate to have you mess them up, because they, I think you got, you've got them

in sequence.

LC Oh, I have to go over these again. They had a start of a plane started over there and called Mr. Wright. Mr. Wright went over to see it, and the minute he got there, and saw what they had, he shook his head.

SB It wasn't right?

LC He said, no it isn't it. Don't do it.

SB (laughter) Was he, was he a hard man to work with?

LC Orville Wright?

SB Yes.

LC No. Never had anything to say, very calm, easy going, oh, some of these, you can tear these after a while. But I wanted to show you...

SB Did he...

LC This one...

SB Did you ever stop for coffee or anything like that, or was it all business?

LC Oh, we talked about different things, all the time. He'd...

SB What did he talk about?

LC Mostly flying, and his trip over to Europe, and then his fall in 1908 when he crashed over there with a Lieutenant Selfridge.

SB What did he say about it?

LC Well, he said, if I would have had about twenty-five more feet, he says I would have cleared it. But as it was, I was just beginning to level off when the wing tipped in. Orville was pretty badly injured.

SB Did he ever talk about, did he ever express any particular views on the dangers of flying?

LC No, he just simply said that, that it requires concentration, confidence in yourself, and having had the experience experimentally with their wind tunnel and so forth, and with their gliders, I've got a lot of pictures here of their gliders here.

SB Don't get them out, alright?

LC Now, you saw those pictures.

- SB Yes, I have, I think I've seen really most of them. What were some of the difficulties that you ran into, in rebuilding the 1905 plane?
- LC The fact was that we had a lack of information, but...
- SB Was it in Building the motor or building in rebuilding the...
- LC Well, now this is part of the motor here, but what I was going to say, in 1908 when Wright Brothers stored that airplane in the hangar at Kitty Hawk, people used to get there in later years, and pick souvenirs of it, see. The elements of the weather got hold of the hangar and it was more or less blown down by the wind and so forth, and people would take this and take that. Well, the Wright Brothers finally got busy and made a collection of all they had, and everybody that had any part of that airplane was rewarded by getting, oh, I'll show you that, a piece of wood and the wing covering put up in plastic form. And therefore, they collected a lot of that...
- SB Careful, don't put them on the microphone. (laughter)
- LC Excuse me. They were the start of them.
- SB That was the start...
- LC Guggenheim. That's the one that Orville Wright refused.
- SB Now, what's wrong with it? It looks...
- LC Oh, heavens, nothing like the plane.
- SB Is that so?
- LC See, they were incorporating, there's some inscription on the front end of it.
- SB Oh, I see it fuller in the reproduction.
- LC Now you see here, there was services like that those were the two runners, rear runners. Now this is the wing.
- SB Now, these, now is this what you constructed, or is this part of the old...
- LC That was part of the old plane, see.
- SB Oh, that, just all torn up, isn't it.
- LC Yes, it's all torn up there, see.
- SB How did you ever find that same, did you try to find the same kind of fabric?

- LC We've got almost the same thing, we bought it at Inland Manufacturing Company, which was a fabric, unbleached muslin that they used in making their hydraulic rehouse. And they have about the same warp and woof that the Wright Brothers used. At that time, we made a search of all the different old stores here in Dayton and they wrote to the different mills that were making that fabric, but we couldn't get any information. Now these are still some of the conditions that some of those parts and they were...
- SB Did he want very much to have it exactly right, or was he particularly interested in whether it wasn't?
- LC See now, it was this, even broken parts like that. (He is showing photographs).
- SB Yes, was he very particular about it being exact?
- LC Oh, yes. You bet he was. I want to tell you a story about this. This was the shape of the front, I call it the front elevator, Orville Wright called it the rudder and everything was the rudder. You couldn't call it, oh, maybe that ball bat.
- SB Oh, no that's alright.
- LC I laid out this job. By measuring everything on here, and at the front end, were these two ends come together, in the front, you know, and they're hinged there, because this, this surface could be flexed see.
- SB Yes.
- LC I had the overall figure from the very tip of that. And Orville Wright looked in a book. He says, no sir, that was three quarters of an inch longer than our figure. I sat there for quite a while, and tried to figure out what he meant. Oh, well, I'll get it right on here.
- SB Don't ruin your pencil now. Or your...
- (break in tape)
- (end of side one)
- (start of side two)

LC (There, those?) are winders.

SB This is on the, on the front elevator.

LC Front elevator?

SB Yes, on the front rudder?

LC The hinge points were put right in here, see. I had to take out three-eighths of an inch off of that end there, each end and when I did that, I had (their old?) figures. And it was a good thing because then we could round off those edges, which would not tear through the fabric. That's how exacting he was.

SB Yes, he really was, wasn't he?

LC Oh, I worked on the(wing curve). I had my drawing too. And I had one of the ribs, ribs downstairs see, and I had it laid out and I made a model and the next time that Orville Wright came out, I showed it to him. He looked it over and he checked my drawings. He asked buy one difference. I'll show you how we fixed the end of the wire. And he showed me what it was, where you had to, uppercut strip of the bottom cut strip come in and put a saw slot in there, and that trailing edge wire of the fabric laid in there, see. So I made the thing, he made another one, and showed it to him. He told me then, he said, "Oh, Louis," he said, "You're going too fast on this job. You got time, you're doing fine here and all this stuff is working out, you just go ahead." And, in fact, just before he died, I had three drawings, and he was out there at the plant with Mr. Hoist (?), Colonel Deeds, and in this room where I was working, at that train building, I told Mr. Wright, I said I'm going to put these out in your car. So next week if you have a chance, just look them over and let me know if I'm on the right track, or words to that effect. I never got those drawings, because Orville Wright died, see, he had that stroke and died. And Miss Beck, his private secretary would not leave me have those drawings.

SB Is that so?

LC Oh, she was a...

SB She must of protected him quite a bit didn't she?

LC Well, I guess she did, she thought she was going to be the king of the roost, but she didn't get very far.

SB Oh, is that so? You mean after he died?

LC Oh, yes. And she, from the way I understand it, she was put in her place.

SB Oh, by the family?

LC By the family and all. Now I'm going...there's the old man that helped me work on that plane.

SB Oh, yes.

LC I went out to the field to get that man's, that gentleman's name there, that was the time that they had this meeting, out there at the field, or out of the building, where all of the big brass come out. Now this was the time when the plane was, before it was covered, ready for covering.

SB What else did he talk about when he'd come out? Did he talk politics?

LC No. Everything was airplanes with Orville Wright. You see, he was what you might say, a man of few words, see. He'd rather sit down and, and listen to you than talk. And the only way I could get him is that I've had maybe magazines or articles and books, I had Kelly's book here and Carmichael's (?) book and I'd refer to that, and he'd correct me on some of the things see the only book that he didn't criticize very much was Fred Kelly's book.

SB Yes. What did he criticize in the Carmichael book? Do you remember?

LC No, to speak of. Well, it covered mostly other planes, see. I don't remember much he said there on, on that one there. But I was referring to were the time, that they had a windstorm over there. It almost blew their, their hangar over. They...

SB The eighty-mile winds, or something like that?

LC Now, these are all planes just before...

- SB I don't, why are they just, why couldn't you have just gone to Washington and gotten all their old notebooks, and built the plane from there?
- LC You couldn't tell from that.
- SB You couldn't tell?
- LC For instance, it would be, it would be in a case of...
- SB They would have all the information you need?
- LC Let me show you something here. Well, here...
- SB Did he ever talk about some of the people that he worked with? That he liked or disliked in those early days?
- LC No, he never mentioned anything. Orville Wright would never criticize anybody, never did. Now here, there's a rudder. You notice this curve down in here?
- SB Yes.
- LC Well, they've changed that so many times, that sometimes they turned that around and have the sharp end forward and back. Then they moved them out further. Kept moving it. They experimented, see. Because they were not able to keep up with all this stuff and this finally cut and try method, they found out what they had to do. Now, for instance, this plane here...
- SB What's this, these are all 1905 planes.
- LC This is the 1905, yes. And this is the way the plane ended up. Now for instance, at Kitty Hawk was way back in here see, and smaller front elevator back in here, and the tail-end was brought up close. You could see that in the...
- SB I know, Mr., Mr. Russell pointed that out to me, too. In the, that the difference in how far back or how far front they, the plane, the rudders were in the elevator. Did anyone ever come with Mr. Wright when he'd come out and see? Did he ever bring anyone with him?
- LC Mr. Wright?

SB Yes.

LC No. He came there alone at the plant, always alone.

SB Always alone.

LC Always alone.

SB Do you think...

LC And he spent, after he get through with up there, and he'd had time, he'd talk to you, Colonel Deeds, or Carl Hoist or somebody. But there were times when he'd drive right up there to the back of the building, and...

SB Did he drive his own car then, or...

LC Yes. Well...

SB What, what did you do for him in 1923. You said you were...

LC He built, he had a design of an enclosed airplane. And it was a, and I don't have a picture of it. And I don't know of anybody that had a picture of it, but it was an enclosed kind, slide doors, you got in through it like a Baker electric automobile. Now, the pilot sat up front, and if I remember it had a three cylinder engine and it was down below in the, in the nose end of the plane and the pilot sat up above. And in back of the pilot was a seat. Three people could sit in back of that. Now this plane was such, so light Orville liked to fly backwards. But it was also a plane that on a real gusty day, it was like throwing a piece of paper out of a tall building.

SB A three cylinder engine wouldn't have much power, would it?

LC Well, it had power, you see, Orville Wright flew his Kitty Hawk with just twelve horsepower. And that was close to what they had figured. When they built their first engine, they, it developed sixteen horsepower, but then it dropped down to twelve. That was due to carboration and so forth, because in later years when they built more, the next year when they built more four cylinder engines, they improved those things, see. And then they im-

proved those things, see. And then they improved the primate, by the end of 19..., well, I guess 1905 or 19... that's when I'm big enough now. They had duplicated an engine such as they had in the 1903 plane and developed twice as much horsepower. This part, their knowledge and experience and improvements.

SB Well, this 1923 plane, why, why was he building that plane? Was it a private contract? Or was it with the government?

LC No, it was just a plane that they wanted. It was a 1903 plane.

SB Who wanted?

LC Orville Wright.

SB He just built it on his own satisfaction?

LC And Orville Wright and Colonel Deeds were interested in an enclosed plane. There were very few enclosed planes, see.

SB I would think so. I was, there, was he associated with any company at that time?

LC No, he was just a consultant. I don't know if he was an association. He may have been associated with some of the, the plants. In 1923, Dayton-Wright was still in operation. But, see, in 1923, at the cessation of the, of the contract in 1918, the war contract, and we have them, Dayton-Wright stayed in the business. And the first work we had, was converting the DeHavilland-4's into DeHavilland-4B's. In which the gas tank, which was back of the pilot, would move forward and the pilot moved back. The DeHavilland plane - known as flying coffins, because in a crash, the pilot was nailed between the engine and the gas tank, see. So they brought them back. And, well, there were a lot of planes. Some of them have never been used, well, see, I think we had about forty some of those planes to fix up. Then we had a contract to build twenty XB-1A's for the government. They were planes that would be designed by McCook Field under Colonel Clark who was chief

engineer. Then we got into competitive design work. Colonel or Dayton-Wright succeeded in getting three first prizes, one third, or one third, they didn't get a second. But they never had a chance to build the plane. In, instead of building that plane, a place for the Navy was built, but it was not designed by Dayton-Wright. And that was sort of an amphibious plane. And it was, had to be completed by 192...January, 1923. And I think it was on New Year's Day, that the plane was accepted by the Navy. But anyway, the Dayton-Wright was about ready to go under, that is quit. Orville or Harold Talbott was no longer interested in aviation, for some reason. And sitting on top of the world as you might say because DeHavilland or Dayton-Wright had the reputation of building more DeHavilland airplanes during the war time period than any other two planes. On July the first, DeGaulle was set for one thousand planes, on July the fourth it was completed. Four thousand more was set for the end of the year, 1918. But the Armistice came along and cut them off and there were thirty-four, thirty-five hundred of them completed, but we never got to the five thousand. Colonel Clark then started designing a training ship, an all, not a tubic, tubular fuselage and I was sent over to McCook Field that time, to see how McCook Field welded their fuselage. Well, I went over there and I spent about a week there watching the fellows doing it, and they had an awful time with that. I didn't, couldn't, see how they really get a job. Because the tubing is very thinned-walled, and it takes an expert welding to do that because you might burn through that tubing, see. Well, I came back sketched up an idea to Colonel Deeds was what we called the trembling jig, in which everything was prepared, the bulkheads or the cross fingers and the fuselage were prepared ahead of time. And then set in this fixture, which was a long trunnion. It was about almost as long as these two rooms here. And had another under the carriage coming up with two bearings. Now the idea was

that mount all this tubing in there and the welder could stand there and weld and rotate; he didn't have to lay on their back or didn't have to squeeze through. Everything was in the open, they could see it, because that was the job, that I was supposed to take care of. When Colonel Clark and Major Fleet, who often was a contracting officer at McCook Field, had left and they started what is now Consolidated Aircraft Company in Buffalo. And I went to Buffalo with them, and released from Dayton-Wright to go over there. But I took sick...

SB When, when did Dayton-Wright go out of business?

LC 1923.

SB They were out of business...

LC And that's when the 1922, the 1922, I believe it was 1920 those dates are confusing me. I don't know, I never made much of a record.

SB What ever happened to their old plane, that Orville, did Orville design it?

LC He sketched it up, where he wanted and all I did was lay out the dome, the windows and the doors, see and the wings. The wings there, they were, that sketched out easy, see. The fuselage was laid out and it was built out at South Field, with Jim Dickinson and his crew. Now, as that plane as I understand, was taken to Detroit and was suspended from the ceiling from one of the buildings up there. Now what became of it, I don't know. It may still be up there. I have never been able to find out what became of that plane.

SB You mean Henry Ford took it?

LC Not Henry Ford.

SB Oh, DELCO, General Motors.

LC General Motors, yes. No, I don't know what became of that plane. I know that they had a little plane, the little Bug and I have pictures of that, that was built out there for a fast plane, see. And that plane later was

taken up to Detroit and that hung up in one of the buildings up there.

Now what became of that, I don't know.

SB Did you ever...

LC Orville Wright, pardon me, Orville Wright and I think it's quoted in this book, mentioned one time that he didn't have much interest in airplanes when he knew that they could be used for warfare. You see, when France, then Germany got interested, they bought up planes, of course, they were forced to. Come across and build it and sell it to them when they wanted it. But they were reluctant to think that they developed the, a piece of equipment for war and destruction. Now talking about, about planes and speed...

SB Did he ever say this to you, did he ever say this to you, that he felt that he regretted that the planes were used for...

LC No, I'm only quoting Kelly's book. But, he always talked about a slow plane. That's the reason this Kitty Hawk, that weighed only seven hundred pounds complete.

SB Why did he like a slow plane?

LC More maneuverable.

SB Safer?

LC Well, because of the fact that they, if an engine should cut out, they could glide with it, see. In other words, you could take this Kitty Hawk or this other plane and cut the engine and still glide just like they did with their gliders. Now you take your plane today. They are fast, and if that engine cuts out, they plummet. Wilbur Wright (si) quoted in, in this book by Kelly that he could fly a barn door if he had enough power in back of it. And, of course, closest thing to your barn door is your delta plane today, you know, the wedged shaped wings? And you take some of these fast planes they have today, very stubby wings but they can go, till that power come out of, drop off they go down, because they can't soar with it. With the DeHavillands, you could even cut the engine on a DeHavilland and glide.

As big as they were, see.

SB Do you think that he had any idea that the commercial, did he ever speak of the commercial possibility of the planes.

LC That was one thing that he, he was interested in, yes.

SB What did he think about it?

LC And he thought then that mail was a big thing. Because he said that anything for mail. Now for passenger flight, all they had was one seat, so they had no business then at that time, of going to board passengers like they had today, see. And when you stop to think of it. To start out with an airplane, where would you start. And you talk about, I don't know who the Colonel was, who wrote that book, God Is My Co-Pilot, he was way behind times, because I think if anybody was entitled to that, it was the Wright Brothers. When you think of that plane, the way they flew it, it was glued together, wired together and you'd take Rodgers when he flew across the United States with that plane, he wrecked it about forty-nine times. And Charlie Taylor was his mechanic, he usually go ahead on a train, and meet the, carried spare parts. But that plane has really got out there. It's a wonder that it held together.

SB I see. Sure. When you were a kid, you used to go out and watch them, did everybody think they were nutty out there flying around, how did the kids feel?

LC Well, I'll tell you one thing, I gone to this, I went down to this First Lutheran Church, a German Lutheran Church down on Third Street, between Sears and Webster, and Mr. Hugo Snider (?) was our Sunday school teacher. He knew the Wright Brothers and I tried to talk to him, that was about 1906 or '07 if he could use his influence that I could go in and learn to fly, and he told me, you stay away from there. If they want to kill themselves let them kill themselves, but you're not going to do that. And I will not talk to the Wright Brothers for you. And that was Hugo Snider's answer to me when

I tried to get into it. And whenever he saw...oh, in later years, in 1917, I flew with Howard Rinehart, on radiator tests, that is where I had to observe instruments, that is thermometers, because the, I think the propeller shaft went down to the radiator, and that interportion of that radiator was never cooling, they would go up on days just like today while it was about fifty here, it might cold up in the air.

SB I bet it was.

LC I'd sit up there, you know, in an open plane and have to try to write, and I had a pair of flying mittens and used them. I don't know how I held that pencil and tried to make figures on how it was cold.

SB (laughter)

LC No...

SB Did Orville's disability seem to bother him very much when you were working on the plane?

LC Well, for years you know, after that injury, that he received in 1908, stayed with him and there were times when he'd come out there to the factory when I was talking but, he did not seem at the beginning of the construction of the airplane, all he saw was the model that I'd make up and then as he saw these broken parts, I had them laid out on the table. And that's when Orville would come out there and talk to me about these different things. And to keep him from being on his feet, I had a chair, kind of a highchair, not a regular chair, but higher than he could sit on it and he used to sit on it just the side, and one foot on the floor, see, because his hip still bothered him. And I know when he'd get into the automobile to drive away, he'd get in there and he'd have to get himself adjusted just right to see to drive. But his hip bothered him from then, all his lifetime.

SB Did he ever talk about any of his family?

LC No.

SB Nor how Wilbur, when he and Wilbur, when he and Wilbur had...

LC Well, he mentioned once or twice, or something would come up in the discussion of part of the plane, I know one time he pulled a book out and he was talking then about hooking up the controls of the rudder with the wing tips. Before that was independent. So they hooked them up, and they had quite a discussion on that. And he said that, we'd sit down and argue that out and the only way we would do well, let's try it. And just by doing that they both agreed to it, and that's the way they went ahead and accomplished things. They perhaps disagreed with one another, but they would argue and get it straightened out and go ahead. No, Orville Wright, as I say, was reluctant even to talk. He couldn't go somewhere to talk; always in the background. And he'd listen and maybe give a comment or his approval of something like that. And if anything didn't just sound right to him, he'd tell you so, just like on this airplane. Now we had our admonition the incorporated, and put authenticity into this plane as we could. And what we had, and the unfortunate thing was that Orville Wright did not live to see the accomplishment of it afterwards, see. And there was nobody living today that could tell you that that was it. However, of all the photographs that were taken of the plane, and you take the planes like the one that they made here for the government...

SB Yes, in 1918.

LC They look very much like it, see.

SB Yes. Yes, it's too bad that he didn't live to see the final, final plane, how far along were you on, on the completion...

LC I started it in November, talking to him and he died in 19...in January, see. And he didn't have much of a go at that. Just working out a few wing curves and so forth.

SB Did he ever express some strong opinions on some other subjects?

- LC Not that I can recall. Just one time, I did remember that he said that the air curvature of the wing curve far excelled Lilienthal because in 1904, they built wings with Lilienthal wing curve, which differed from the 1903. The results were not as good in 1904 as they were with the 1903 even with the 1903 had just a short period of flying. But they decided from that that their wing curve was better and in 1905 new wings were built on this plane with a definite curve on it, and it proved that they were right with their figures. I think if he was to get into it, a lot of their letters of Chanute and Wilbur wrote, Wilbur was more of the correspondent with Chanute than Orville. And from what I understand, Orville was a better flyer, Wilbur was the mathematician.
- SB Orville, did Orville fly very much out at South Field, he didn't, did he?
- LC No, he had in 1918, it was a Model B plane out there. And now what became of that, I don't know. But he had it and he grasshoppered across South Field. Just up off of the floor. But he flew in DeHavilland planes and, of course, being in the open planes, and those planes are much faster, how well he said, they're, they're pretty fast up there.
- (laughter)
- LC And of course, Roy, Rinehart, argument and so forth, but he says that you can't enjoy the flight, flying a fast plane like you could a slow plane, see.
- SB Can't enjoy it...
- LC That was his theory of a plane, the slow plane.
- SB I wonder what he would have felt like if he sat in a ...(?)
- LC Well, you take today, that these planes here had, he'd take these fellows that would come in, he must admire these pilots, the training they have to undergo to maneuver a ship that costs millions of dollars and to bring it in and to think the, well, I've flown in some of these transport planes to-

day, with maybe ninety passengers. I think that they go up in the air with ninety humans on the plane, and then bring them down, bring it down so smooth you couldn't hardly tell that the plane hit. Oh, of course you could hear a little bump and so forth, but...

SB It's a tremendous responsibility isn't it? To fly those planes?

LC I was talking to Orville Wright in Deeds, the replica of Deed's (home?) in which there was a lotus, Lotus Flower. That was Deed's yacht. That was turned over to the government, became the submarine chaser during the war. And it was a, well it's about as long as this couch in a glass cage, and we are talking there. And there was a davit on there for lifting a plane out of water. And Orville said then, along with at that time, when they were guests on this yacht with the, with the Colonel Deeds, prior to the war, that they'll be able to take off planes from these decks, and that's what you got today. Your catapults and so forth.

SB He could foresee that, in other words. He could foresee that in other words.

LC Oh, yes.

SB What did, did you ever see him between the period of 1923 and 1948, did you ever see him in town?

LC No, never saw him.

SB Yes.

LC 1923.

(break in tape)

(end of side two)

(start of side three)

LC I went into engineering with Mr. Garr (?). There was only two of us there at the time. And we developed a wrapped steering wheel. Laminated wood, because something had to be done, there was no need of letting things going to waste there. There were two fashions of it in the manufacturing of it.

One went into the, into the custom-built automobile body, and the other was Mr. Garr and myself and J.P. Henry started the steering wheel business. I think it was through the development of this steering wheel business. I think it was through the development of this steering wheel that Inland Manufacturing, which was named by Mr. Garr, got a contract for General Motors to building those steering wheels for Chevrolet. And a couple of years later, the corporation took them over. But the automobile body that they started out, all they had a couple of fellows oh, Pete Mock (?) was one of them. Pete and Gill, the idea was to build a custom built body so that you could say well, I got this, see. Where they built these bodies for Speedwell, and Cadillac Chassis, see. Or Speedwell and ^{Peerless} Pearlis(?), I should say, Speedwell and ^{Peerless} Pearlis. Speedwell was here in Dayton at the time. Automobile plant, that was out there where Chapel Road out there. I don't know what's out there now.

- SB That's where they built the old Dayton-Wright Company. That's where they built the plane.
- LC The Dayton-Wright is out on the west side.
- SB Oh.
- LC Dayton-Wright Airplane out on Coleman Avenue.
- SB Oh, they built something. What did they build the Speedwell with the...?
- LC Stoddard.
- SB One of the...
- LC Old Stoddard of Dayton was down below. Speedwell was a, Speedwell Automobile Company out there on the Chapel Street, I think out in that Edgewell district. Stoddard Dayton, of course, was down here on MacDonald Street. I worked at Stoddard Dayton oh, 1906, I think it was, in the engineering department. I had just what you say graduated from YMCA Night School. See, I went to work at the age of twelve in a shop.

SB Oh, my goodness.

LC I served my time in a shop, a machine shop. And then, I got a chance to go into an engineering department. I quit a job paying sixteen dollars a week at that time to take a job at six dollars a week just to get into an engineering department. And I didn't get very far in that engineering department because what they wanted there was a boot point, a blueprint boy. And I was to make blueprints and...

(break in tape)

LC Crankcase of the Kitty Hawk engine.

SB Now that you put on the...

LC That's not, that was the ninth hanging up there. See it on the wall. That's a 1903 plane. That was the crankcase that was broken on the, where the plane was damaged, by the wood hangar.

SB Now this, these are all out. Did you, you had this out at NCR when you were working on the 1905 plane?

LC Yes, there are a few. Some of this construction here. Oh, this is covered up here. Wait a second. You can tell the difference in the color of the wood. See this if I can show you here.

SB Yes, these pictures.

LC Well, I had one of the pictures.

SB There you are working on...(?)

LC Well, that was when I completed a complete set of drawings for the Kitty Hawk which is now going present it to the Smithsonian Institute.

SB Oh, I see.

LC So, at that time, they had to have it. NCR was great on taking photographs of everything.

SB Oh. (laughter)

LC But...

SB Keep it for a permanent record, right? Was there anything you didn't like about Mr. Wright after having worked for him?

LC Did you say what?

SB Was there anything you didn't like about Orville Wright?

LC No, not at all. He (laughter) every once in a while, I'd cut loose and always said I whistled when I worked in the Queen's English. And he wouldn't stand for that.

SB Oh, is this so? He didn't like that.

LC Well.

SB Well, some people didn't like him, they said he was, you know, too silent.

LC Everything, everything on my front end elevator is new.

SB That's what you had to change. That was too, too broken up.

LC I don't know if I can show you here, but some of this woodwork. Yes...

SB Did he have...?

LC ...the dark, the dark wood was from the original plane.

SB Oh, I see.

LC That you saw in this wreckage that we have here.

SB Yes.

LC And wherever; there was, why he, even these strips that we have here, you know, like this? I used as much of that as I could.

SB No wonder it took you so long. How, what did you glue it together with, where there were pieces off.

LC Beg you pardon.

SB What did you use for glue?

LC Well, we had different glues out there. Wood glue...now this shows you something here. See, now there's a front leading edge spiraling the wing, and there is the...

SB Is the old one.

LC Old one there.

SB Yes. Were you, you made a whole set of drawings then, before you did anything.

LC Layouts, yes, my own layouts of this stuff. See, this is the way the wings come here, see. Stuff like that.

SB I talked with one, one gentleman whose, whose job it was to burn up the old gliders. Isn't that a shame?

LC You see, Orville Wright was going to destroy the Kitty Hawk engine, our airplane. It was crated and brought back from Kitty Hawk in 1904 and oh, about 1904 and was in its crate in fact it went through the 1913 flood. Whether it was down in the water or not, I don't know. But in 1916, Orville Wright with Charlie Taylor and maybe some other men, they repaired the breakage and got the plane ready to ship to the Smithsonian Institute, and the plane was sent over there to the dedication of a big building of some kind. And when the plane came back, their crankshaft and flywheel of the engine were missing. Well, during this, see Orville Wright was much incensed over the fact that the United States did not recognize them as being the first to fly. Then, consequently, he decided that the plane would go to England, the Kitty Hawk would go to England. So what they did then, now I'm getting this through my research of engines here, they took the crankshaft and flywheel from another engine, of the same type and put it in the Kitty Hawk and shipped that plane to England. Now when that plane came back here in 19..., 1949, I think it was when it came back here. I went to Washington to get my batter, to make these drawings, in fact, Mr. Geyer and myself were scheduled to go to England to make these drawings of the Kitty Hawk, because so many people wanted to build a model or replica of the airplane, but

they got their information from this magazine, that magazine, everybody seemed to be an authority on it, but nothing was authentic. But then Orville Wright had decided that the plane was to come back here when the United States government gave them the recognition, and so the plane was brought back here, and I made, well just before they set it up. And then when it was set up over there, and I almost killed myself on one visit over there, by getting up on a high ladder and the plane is suspended by four cables and I was leaning against that edge, see? And here I was pushing that plane, and it started swaying.

SB Oh, Oh.

LC But I finally, I finally got down, and when I got down I wasn't worth a darn for the rest of the day.

(laughter)

LC But I got a pair of field glasses, so I could get up in distances, in different elevations, and I'd studied things from that plane, on that plane from I don't know, used my imagination a little, that's just so far, see? And I come back and check my drawings that I had. I had to make a complete set of those drawings and by the way....

SB Well, that was a lot of labor wasn't it?

LC Oh, this another picture of the Dayton-Wright days.

SB Did, when you were down at Dayton-Wright, did Mr. Wright, was he there every day, did he come to the office every day?

LC No. He'd only come in oh, once in a great while. And, of course, when he'd come in he's always there with a Mr. Schoonmaker (?) or...

SB With the brass.

LC Or some of the big brass. We never got a contact. Here is another picture of the engineering department. Dayton-Wright in April 24, 19...It's on Sheats, Powers, Whitmore, Herb Bowman, Krause (?), Howard Rinehart, Schoon-

maker, Lou Luneke, he was the assistant chief engineer, this fellow here was oh, I can't, Thomas Hutchinson. These two fellows were new, that's Cruneck (?), that's myself...

SB (laughter)

LC I got to call you for being late in getting there, and I'd come in see, I was supposed to be there for this picture, and when I got there they were waiting for me.

SB You were in trouble. (Laughter)

LC But, that's Freeman he was a pilot. Benny Whelan, I don't think was with the company then. Oh, yes, now here are the first two plants. These were the first two buildings, at Wright. These were added by Inland Manufacturing, later on, but there were the first two, of the Wright Airplane Company. There they are. You notice that design. That's the trademark of Inland Manufacturing.

SB Oh, is that so? I didn't know that. That's interesting. Wright Brothers.

LC These are just some...Oh, here he is, Joe Fallo. He built a model of the Kitty Hawk.

SB Now, who's he? I don't know who he is.

LC And he made, he's Wilbur Wright's model maker, or I mean Wright Field.

SB Oh, the model maker, yes.

LC He's one of the best model makers in the country. But he built a model...

SB 1965.

LC ...of the Kitty Hawk which is on display at the airport, out there. I don't know if it is this municipal airport of the Cox Airport, north of Dayton. Vandalia?

SB Yes.

LC And it's on display there in a glass cage.

SB Oh, yes, I've seen that.

LC I ask him when I met him, told him I had heard that there was a model plane out here and I'd like to see it. He said, it's not here. He says that it is

in his home. Would he take me over and show it? Well, at that time, I was out at that field on that buzz bomb, you know, Kettering buzz bomb. And I told him I couldn't go then, but we'd get together later, and I says ask him.

SB When was this? What year was this?

LC That bomb?

SB Well, you were working on, oh, you mean this man was working on a model...?

LC Oh, he had built this plane already.

SB Oh, I see.

LC He had built this. And I don't have the...

SB Was this, you mean this was back in 1917?

LC He built this plane in 1940 or 1964.

SB Oh, I see. Then it...

LC And I asked him where he had his information. He said he got them from a set of drawings from the Smithsonian Institute.

SB That you had done?

LC And I told him then that, I said, well if you got them from the Smithsonian, I says I made those drawings, will you look at the drawings and see if my name is on there. And he said they were. Now here's another case in Washington: another man was working on the plane. You see it was looking up information like this, and get the magazine number out at NCR, they make me photostats of it see?

SB Oh, I see.

LC And where I get my information from a photograph or something like that. And this is taken from the German copy there. Here's Fred Kelly's book. This explained everything here as to how they controlled their air speed, their throttle, and how they cut off. Well, they had a stop watch that never worked right, now Orville Wright had given me some information here.

SB Why didn't he let you copy any of this down when you talked with him?

- LC He would not, he would not liked to be quoted. He didn't care to be quoted in fact I bought that book and I was going to have him autograph it and I was told, wait until you get further along with it, because if he feels you have merit the...
- SB Autograph?
- LC Through your work, he'd be glad to autograph it. But, well, it's just like, now I'll show you this other.
- SB Would he feel that you might sell the book and make money on it or something?
- LC Well, I don't know, that's what's he afraid of.
- SB (laughter)
- LC When Wilbur Wright went to Europe in 1907, he had to get there in order to set up his plane and demonstrate it for the French government, he had difficulty with the fabric, had absorbed so much moisture that he couldn't bring in the fabric, to pull in properly. He built a fire underneath the wings, see the heat would come up there and dry up the fabric, he set it afire, and he had to make an entire new wing service over there. He borrowed the sewing machine from some man's wife over there, and that was a handicap he had there. But that fabric being cut on the bias, you see if it was straight across there, you couldn't pull it either way, but being on the bias, you could put it and make it give, so that's the trouble with that plane out there. I used to get out there at the Carillon Park and watch that, thinking maybe it would get to the point where it would begin to draw too tight, but they have taken care of that, that humidity in that room.
- SB Yes, with a dehumidifier should have been able to do it, but I guess maybe they didn't have them then, a regular humidifier.
- LC How's that?
- SB A dehumidifier should be able to do...
- LC Well, we had then, we had four dehumidifiers out there afterwards, see?

And in that see, the Corliss engine plant of the NCR is now enoused over there in a building right across from Wright Hall. And there was talk then of running a heat pipe across into Wright Hall, bring the heat in there. They said they could do it but they never did. But in that time, when we were working down there and putting that together, it was so hot and humid that Mr. Deeds would come down there and he couldn't stand it in the building, see. And he used to say, come on Chrisy, let's set out here in the shade and rest. So we'd sit outside in the corner of the building there under some trees where the sun wasn't striking. He'd talk to me about different things. I complimented him on building up something for future generations to realize what the first of everything, that was what it is, you see the first of everything in Dayton, like the stagecoach, trains, and so forth. A wonderful thing. And you know, he told me, he says you know, anything in this building, in this plot of ground could go but not this building. And that's the reason that building is fireproofed. He said, this is more important than anything in the Carillon Park.

SB He was a personal friend of Orville Wright's, wasn't he?

LC Oh, yes. Yes. He was a...

(break in tape)

LC Was down there he'd come...

(break in tape)

LC You never talked to them when they were together, see you'd just sit there and listen. But they talked about different things, you know, kidding Mr. Smith and Bill Chryst about going ahead with this airplane construction.

(break in tape)

SB Well, thank you.

LC Well, I'm sorry I don't have much that pertains, I found out now that you wanted something to pertaining to Orville...

(break in tape)

(end of tape)

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