Reminiscences of James Harold Doolittle : oral history, 1960

Preface

This manuscript is the result of a tape-recorded interview conducted by Mr. Kenneth W. Leish of the Oral History Research Office with James Harold Doolittle in April, 1960. Only minor corrections and emendations have been made, and the reader should bear in mind, therefore, that he is reading a transcript of the spoken rather than the written word. This manuscript is housed at the Oral History Research Office at Columbia University.

Interview with James H. Doolittle

Question: How did you happen to get into aviation in the first place?

James H. Doolittle: Well, I was studying mining engineering at the University of California. I worked in the mines on the Comstock Lode in Nevada, and while there, in the summer of 1917, I was shocked to read of the Moody case, and came to a realization that the First World War was very real.

It was one of the cases that broke in San Francisco in the middle of 1917, where two people were accused of being traitors or whatever it was. But it shocked me that the Western part of our country had no realization that the war was very real. As you realize, the Western part of the country is always a little further from war in Europe, and the Eastern part of the country (as a result of geography) is a little further from a war in the Pacific. That was shown during World War II: we were here, in the West, more interested in the Pacific War, while people in the East were more interested in the war in Europe.

So during the First World War those of us on the West Coast didn't seem as close to it as the folks in New York. And that was the first time that I really realized that the war was serious and that we all had to participate, and I thought that possibly the most interesting way to participate So I made application for training as a cadet.

In those days there was no Air Force. It was the Aviation Section of the Signal Corps. I enlisted in the Aviation Section of the Signal Corps.

I saw my first air meet at Dominguez Field, near here, in the winter of 1909-10. I don't remember whether it was late 1909 or early 1910. I remember in those days it was customary for a flier to fly early in the morning and late in the evening or late in the afternoon, when the winds were lowest. I remember that it was customary for a pilot to wet his finger and then hold it up, and if there was enough wind to cause one side to get cool through evaporation there was too much wind to fly.

I was quite young at the time of this first meet. Don't forget, this was fifty years ago, so my memories are fairly vague. Those men were the aviation pioneers of the day, surely, and some of them I came to know later. One or them who flew a little while after that was Art Smith who was a test pilot at old McCook Field in the early twenties, when I was. He was a magnificant pilot and a very interesting character. He was killed flying the mail a few years later, in Ohio.

In the early days of aviation, wing walking would have been out, because the airplane flew just barely, and it wasn't until airplanes became much sturdier, more reliable, and with better performance that wing walking came in. Wing walking really came in after World War I.

Q: As a boy, did you have any particular idols among the aviators?

Doolittle: Well, I recall Bleriol, Farman, Huxley, and the chap that was killed at the World's Fair in 1915, Lincoln Beachy, and then Art Smith, of course, whom I came to know later very well. He took over Beachy's contract at the World's Fair in 1915.

Q: Did you feel then as a boy that you'd like to get into aviation?

Doolittle: Yes. You spoke of Popular Mechanics. In about 1910 or '11, Popular Mechanics came out with a model or a small airplane--rather, with the drawings or a very small airplane. It was the Antoinette, and it was very small. I remember that I was very interested and saved my money until I had enough to build a glider somewhat along the lines of this little airplane. I remember the first time I tried to fly with a glider, I jumped off a low cliff. I didn't jump high enough and the tail of the glider hit the cliff and I cracked up at the bottom, came straight down.

After a couple of crack-ups there weren't enough pieces of wood and fabric left to make another biplane, so I made a little monoplane, and was waiting, saving up money to buy a motorcycle engine, which I hoped to put in it, when the wind came a long and blew it out of the back yard over about two blocks and completely cracked it up. My funds were gone and my glider was gone and that was the end of my flying experience until I got into the Air Force in 1917, or rather the Aviation Section of the Signal Corps.

During the First World War, I took my flying training at Rockwell Field, was ordered overseas but did not get overseas due to a shortage of aircraft. I was sent back to Rockwell Field by various way stations and finished the war as an instructor in aerial gunnery and combat.

Gunnery during the First World War was not too different from gunnery practice at the present time. It was customary for you to take a student up, as an instructor, and put him through the gunnery practice, part of which was machine-gun practice at targets on the ground, and at tow targets in the air. Then he was sent up on his own. In addition to the machine-gun practice, it was also customary to do practice with a camera, and you did the same sort of work with the camera, in order to bring back a record of what you had done.

That same type -- much improved, of course -- of training is still used.

Q: You knew Cecil B. de Mille at that period?

Doolittle: Cecil B. de Mille had a field here, shortly after the war, not too far from here, and we used to fly up from San Diego occasionally and land there. That was before there was any field at Municipal Airport. I had known him for a great many years. You refer to the story that Quentin Reynolds wrote, I think, and all that is in his book.

Q: After the war was over, did you go into barnstorming?

Doolittle: No. After the war was over I remained in the service, and I was in the service until 1930 when I resigned. So I did a considerable amount of cross country flying, but all of a military nature. I was never in the barnstorming business.

Immediately after the war, Colonel Harvy Burwell was in command at Rockwell Field, and he authorized the first cross country flight. On that flight were a group of very fine pilots -- A.D. Smith, who now lives near San Diego, and they made a very fine flight across the country. Bob Worthington was on it. Dr. Reem, for whom Reem Field was named, was on it. This was one of the first transcontinental flights.

Shortly after that, three of us, a lieutenant named Smith, another whose name escapes me, and myself, were authorized to make a cross country flight across the continent. In those days there were no flying fields. We flew first to India, landed on the sand, and our next flight was to Needles. We landed at Needles, and on the landing one airplane broke up. On the take-off another airplane broke up. I reported to Colonel Burwell that his flight was two-thirds busted up, but I would go on. He said, "Come on home," so I returned from Needles to San Diego and while over the hills just east of San Diego, had motor failure and was forced down. I had to land in a pasture. It was rough, and the airplane turned over on its back. That was the end of my first transcontinental flight. I had a mechanic with me. We'd broken the propeller; we got another propeller, repaired the airplane, cleared the field and flew it out of there, flew it home a few days later.

I recall another flight. I had to fly from San Diego up to the then brand new March Field -- March Field had just been built. That was not a long flight out an interesting one. Upon landing at March Field I found I had no castor oil. My airplane used castor oil. So I had to go to all of the drugstores in the San Bernadino Riverside Redlands area, and buy castor oil, in order to get enough castor oil to put in the engine, to get back.

The flight to which you referred was made in 1922, and on that flight I flew from Pablo Beach, Florida, to San Diego. On the first flight I cracked the airplane up taking off. On the second flight, I flew first to San Antonio and then on to San Diego. It was a fairly interesting flight. I do not drink coffee ordinarily, and so I brought a thermos jug of coffee with a tube going into it, and whenever I began to feel tired, took a sip of coffee. It acted as a very strong stimulant to keep me awake.

Q: As all the early pilots do, you speak of crack up after crack up -- but there was never any thought of giving up?

Doolittle: You must remember that in the early days of aviation, an airplane was quite fragile and it landed quite slowly, so that a crack up was not a serious thing, particularly if you could hook your wing tip on a tree or on anything that would cause it to break up gradually. If you went in head first, nose first, of course this would be dangerous. But if you were able to break the initial impact, a crack up was not at all serious. While I have a few cuts and bruises -- a cut over my eye here and one on my chin, where I stuck my face into the instrument board from time to time -- the results of crack ups in the early days were normally not severe.

However, you must remember also that before getting into aviation, I was a tumbler. A tumbler learns how to fall, and he learns how to break the fall and not be hurt. I think some of the things that I learned in tumbling came in very useful in acrobatics and in the crackups that used to come in early days, learning how to absorb the shock. I used to be an acrobat.

Q: Did you get peculiar reactions from the farmers and other people whose property you landed on?

Doolittle: Well, in the early days there were very few flying fields, and consequently you landed wherever you could. Ordinarily if you landed on a flat piece of ground and it wasn't planted, the farmer would be quite kindly disposed towards you. On the other hand, if you landed in a field and destroyed his young wheat -- or particularly if people came to see you -- this was the thing that annoyed the farmers most, not the fact that the airplane landed there but the fact that the airplane was unusual and people would come from miles around to see the airplane. It was these people coming in who usually stomped his wheat flat and caused the farmer to be somewhat opposed to airplanes landing on his property.

But it was customary to land on a street, land on a road, land on a farm, land on any flat piece of country that you could find, and in those days, the airplane landed very slowly, so only a small field was required. Today's airplanes couldn't do that.

Q: To get back to the 1922 flight, how long did it take you?

Doolittle: About 221/2 hours, as I remember it. That's all in the record.

Q: Could you talk a little about Billy Mitchell?

Doolittle: He was an aviation zealot. He believed in air power, and he did everything within his power to cause the American public to awaken to the potentialities of air power. I knew him reasonably well, admired him tremendously, was his aide for one day -- and on that one day, I have never moved as fast or covered as much country before or since. He was a veritable dynamo of energy. Everything he did, he did just as hard as he could.

Q: Can you tell me about the Schneider Trophy races?

Doolittle: In the early days of aviation, it was very difficult. You must remember that after World War I, there was peace in the world, and our military establishment became very small. It was very difficult to get money to buy aircraft for military purposes, and it was very difficult to get money to improve aircraft. In those days, racing did have the effect of forming an incentive, a stimulus, to the development of aircraft and engines. In the Schneider Cup Race in 1925, the Army and the Navy went together and put up $500,000. Now, that doesn't sound like a lot of money today, but that half a million dollars bought new engines, bought four new racing airplanes and all of the design and engineering that was required to bring them into being. Those airplanes were good for their day. They were designed to fly either on wheels or pontoons. It happened that of the four of them, one was tested to destruction statically in order to find how strong it was. The other three were given two to the Navy, one to the Army. Fortunately the Army got the fastest one of the three, and St.

Betlis won the Pulitzer Race on wheels, and a month or so later I won the Schneider Trophy Race on pontoons, with the same airplane.

Q: Does any particular race of yours in that period stand out in your mind? Either because you had trouble on it, or because you won narrowly over an opponent?

Doolittle: In that era, no. However, one race stands out in my mind because I won it and almost lost it. In the Thompson Trophy Race -- I think it was ten laps of 15 miles, 150 mile race, three pylons, 15 miles around -- and I marked up on my instrument board each time I completed a lap. On one lap, I marked up, and then wasn't sure whether I'd marked up or not, and I began wondering about it, and when I ended up at the end of nine laps I had marked up ten marks. Still I just had a hunch--I knew I was way ahead, and the fastest airplane by far -- (1932) so I just had a hunch that maybe I'd better go round again. There was a bare possibility that I had marked twice on one lap. And I flew around another lap, just for the hell of it, and it was fortunate that I did because I'd only made nine laps before. Had I not had this hunch and made the extra lap, I would have lost the race, because I would have thought I'd finished the race when I hadn't. As it was, I won it.

Q: Was there any particular rivalry between some of the pilots?

Doolittle: At the time that I was doing acrobatic work for the Army, Sanderson of the Marine Corps was an outstanding Marine Corps acrobatic pilot. Williams of the Navy was an outstanding naval acrobatic pilot. And there was always some rivalry between the three of us, when we gave stunting demonstrations at the same place. We always tried to do the best we could, hoping we could outdo the other one.

Q: What kind or stunts did you specialize in?

Doolittle: You always did the routine stunts, and then tried to think of some new ones that somebody else hadn't done, because you always got a little extra accolade if you could do all of the routine stunts that everybody else did, and then do something that somebody else hadn't done.

One experience that I remember that was rather embarrassing -- at the Spokane Air Races in 1927, Sanderson and I both did acrobatic flying, he representing the Marine Corps and I the Army. A short time later, a few days later, we were all invited to come to Portland, Oregon, to put on a show there. The papers spoke of the competition between Sanderson and Doolittle, and the day that we went out to put on our respective shows, there was only about a 1,000 foot ceiling, which is too low to do acrobatics. You ought to be above 1,000 feet doing it, really, but the ceiling was solid overcast. So Sanderson and I got together before the show and said, "Well, let's both put on our best show, but in no sense have this a competition, because we don't want to jeopardize either our own lives or the lives of anyone on the ground."

So this was our agreement. When we finished the show, thinking that we had made it known that there was to be no competition between us, each one of us would put on a show but under unfavorable weather conditions we wouldn't take any chances--the papers came out that afternoon saying that the in the competition between Sanderson and Doolittle, Doolittle won. I was very, very

embarrassed, because both of us had agreed that it would not be a competition and we thought we had made that clear to the officials and to the press, but I presume this made a little better story.

I tried to do a new thing each time, and there were all sorts of variations. The first time I did the outside loop at Dayton, Ohio, I kept it very quiet. There was only one other chap and myself who knew about it. I went up and did it, and it felt all right. Then I got this chap to watch, and took off and did it again. He said yes, it was definitely an outside loop, and it looked good. I said, "All right, don't tell anybody. Next time I have to put on a show, I'll do this, and this will be a winner."

That was the sort of thing that we always did.

Q: Could you speak of the Bendix races?

Doolittle: I only flew in the Bendix Race once, and won it the time I flew. I only flew in the Thompson --no, I flew in the Thompson Trophy Race twice. The first time was after I won the Bendix Race in 1931, and a piston burned out in the middle of the race and I had to land. The next year, 1932, I won the Thompson Race. So I only flew in the Bendix once, won it; in the Thompson twice, won it once.

Q: When did you go with Curtiss?

Doolittle: I went to South America for Curtiss in 1926, and then again in 1928. I went to Europe for Curtiss in 1930, and I went to China for Curtiss in 1933.

Q: You were trying to sell aviation in general to these countries -- could you tell some of the incidents that happened?

Doolittle: In 1926 I flew a Curtiss Hawk in Chile, and later up to LaPaz, Bolivia, and back, and later to Buenos Aires, and left the airplane at Buenos Aires. I went down there with the idea of demonstrating this airplane. My job was just to fly it and demonstrate it. There was a salesman along with me to sell it.

Q: Did you find yourself having to do strange or unusual things?

Doolittle: Just did my best, all the time.

Q: Could we talk about the blind flying?

Doolittle: As far as I am concerned, the most useful contribution that I made to aviation was in 1928, and in 1929, when under the auspices of the Guggenheim Foundation I conducted a series of experiments in blind flying and participated in the development of the instruments necessary to do the job. Among the instruments were the artificial horizon, directional gyroscope, and of course we worked with sensitive altimeters although I had no hand in the development of those. We worked also with the Bureau of Standards, on the development of aids to navigation, to assist in finding the airport and making the blind landing. We worked with the Radio Frequencies Laboratories radio company at Boontown, New Jersey, worked with a very fine group of people led by Dr. Hull at

Boontown, N.J., in the development of radio equipment for the flight. The Sperry people of course built the directional/gyroscope and the artificial horizon. I worked very closely with Elmer Sperry and his father put Elmer on the job to develop those instruments.

On a day late in 1939, fall of 1939, I took off, flew a set course, and landed, being up about fifteen minutes, without having seen the ground. I was covered with a canopy. In the front seat I carried Second Lieutenant, now Brigadier General, Kelsey, who was a safety pilot, to make sure that I didn't run into anybody else while up there, but he didn't touch the controls. This was the first time that a flight had been made -- take-off, flight and landing -- completely on instruments. I think that flight and the assisting in the development of the instrumentation necessary to do the flight was my greatest contribution to aviation.

I had worked on it over a year. I started in 1938, got the airplanes, the equipment, assisted in the development of the equipment. I made dozens and dozens, literally hundreds, of practice flights, before making this final flight. Incidentally, one of the experiments being conducted by the Daniel Guggenheim Fund for Safety in Aviation was a fog dispersal apparatus, and at Mitchell Field they had set up this fog dispersal apparatus. It was a tremendous blowtorch that was supposed to heat the air up and disperse the fog, similar to Fido that was developed in England and we had it on the Field here. As far as I know, that's the first time that was tried. It came about with a chap that had a quarry in Cleveland and he used to break the rock in his quarry by heating it up, and he noticed that whenever there was a fog and he turned on this tremendous heat to heat up the rock in his quarry, and break it off by differential expansion, that the fog would dissipate. So he wanted to try this as a fog dispersal.

This morning for the first time there was a zero-zero fog. You couldn't see from here to the wall. So we went out to see this thing work, and it didn't work very well, because there was a slight breeze and the breeze would blow away the cleared place as soon as it was cleared. In order to have that sort of thing work you have to have a dead calm, so the dispersed place stays there instead of blowing away.

I told Harry Guggenheim, who'd come out to see this, "This is a wonderful time to test this airplane. Let's test it."

Harry said, "All right, go ahead, but take Ben Kelsey with you in the front seat." I wanted very badly to go alone, in order to prove that there was nothing funny about it. So we took off in a dense fog, and flew around in the fog, but by the time we came back 13 minutes later the fog had risen enough so that we could have made a comfortable landing under the fog without any instruments -- had we been able to see out, we could have landed by looking out, without the instruments. But the take-off of that flight was actually made in dense fog, which isn't generally known, and we flew around in the fog for some time before we came in to land. When we came in to land, the fog had risen slightly.

Q: Who conceived of that George Washington route for the airmail?

Doolittle: I believe it was either the George Washington Society or a relative or descendant of George Washington who flew with me on the flight and was a member of the Society. We

endeavored to fly over practically the entire route covered by George Washington in his life, in one day; I think we flew 17 hours that day. I was then with Shell. That was after 1930. In 1930, I resigned from the Air Corps and joined the Shell Oil Co., and that flight was made afterwards.

I had various chores. When I first went with Shell, my primary chore was to develop and sell aviation products. A secondary chore was to bring favorable publicity to Shell, and this flight was made with a Shell airplane, Shell pilot, Shell products -- so Shell was very interested in sponsoring any such flight, both because it was a good thing to do and because it brought them favorable publicity. Everything went very smoothly.

There was only one other flight that got some publicity. I made the first flight tying together the three capitals of Canada, the United States and Mexico. This was 1932. I took off from Ottawa, flew to Washington, then on down to Mexico City. This was a fairly interesting flight for two reasons.

In the first place, when I got to Washington the weather was very bad and I had trouble landing there. The second trouble was that in those days, with a high compression engine such as I had, you could not buy gasoline anyplace, and so I carried a little can of tetra-ethyl-lead, about that big, in back of my seat. In flying over the mountains, coming in to Mexico City, I had to go up about 18,000 feet, and I began to feel real goofy. I began to feel so goofy that I couldn't understand it, because at this altitude the altitude shouldn't have bothered me. But I began to feel that I was passing out, so I began to consider whether I should get out of the airplane. There was no place to land, I was right over the most jagged mountains of that range, coming in from Tampico to Mexico City. But I thought, if I pass out I'll surely crash, so as soon as I can't answer a simple question, I'll jump.

So I would say to myself, "What year did Columbus discover America?" "1492." "What year was I born?" and so forth--"How much is 13 x 13?" As soon as I couldn't answer a question, I was going to jump. However, I did get over the mountains, get down lower, and get in to Mexico City before I passed out. I landed there very sick and regurgitated almost as soon as I got out of the airplane. I didn't know until the next morning what was the matter. This little can of tetra-ethyl-lead had burst, and the tetra-ethyl-lead, which is extremely toxic, had gone all through the airplane. I was sick for several days. Had I not been in such excellent physical shape, I would have had serious trouble.

The aviation fraternity was small, and we all knew one another. They were all fine people. Anecdotes about them -- that just isn't my line,--I'm a technical man, not a literary man. I don't recall anything that would be of interest.

Q: Mr Reynolds said the biggest gamble of your career was on the hi-octaine business, with Shell -- do you agree?

Doolittle: That was perhaps the biggest commercial gamble, but there are various types of gambles. I don't think that any commercial gamble can be as great as a gamble with your life, and I don't believe that any gamble with your life can be as great as a gamble with your good name. As far as a commercial gamble was concerned, yes, that was a gamble, because I believed that there was a future for 100 octane fuel, but there were then no engines to use it, and it was like the hen and the

egg, which came first? If you waited for engines to be developed for 100 octane fuel, they'd never be developed, because there'd be no fuel for them. So I felt that we had to go ahead with the fuel and make the fuel available, and when the fuel was available at a reasonable price, I felt that there would be enough engines developed that required it so that it would be a profitable venture. This turned out to be true, but it was a gamble. However, a commercial gamble is the least of all gambles.

Q: You felt that the U.S. would get into a war, and a hi-octane gas would be necessary?

Doolittle: At that time, I wasn't sure -- I wasn't sure until a month before the war started that there would be a war. I was in Germany a month before the war started in 1939, and I was sure then that there'd be a Second World War, and I felt sure that we'd get into it. But 100 octane fuel was developed long before that. It was merely that I felt that it would give a tremendous advantage to us militarily and in our commercial aviation.

Q: What were your impressions of German aviation when you were over there in '39?

Doolittle: I was there in '37 and in '39. In '37 I was shown everything they had, and I was tremendously impressed with the strides they had made. In 1939, one of the reasons that I knew war was imminent was that they wouldn't show me anything.

I went back into the Air Force in 1940. I got out in January '30, went back in July '40.

Q: Could you tell us about your relationship with Hap Arnold?

Doolittle: Well, he was my commanding officer in World War I, when I was a second lieutenant and he was a colonel. I have known him since 1918. He is a remarkable character, a truly great man. I knew him when he was in command at March Field here, used to go out to see him occasionally, and that's when I was out of the service. When I came back from Germany in 1939, I went directly to Hap Arnold and told him what I had seen. I went to him in 1937 when I came back and reported on what I had seen. He was very interested. I came back to him in 1939, and told him that in my mind war was imminent, in Europe, and that I didn't see how we could stay out of it; I would therefore like to offer my services, either full time, part time, in uniform or out of uniform. He said he would like to have me come back full time in uniform but it would be a little while before they could do it, because as a field grade officer it was not possible to call me back to extended active duty. It would take an act of Congress to bring that about. That act of Congress was some six months in coming, at which time I was recalled to active duty.

During the war I worked for him. The first job he gave me after the war started was to go to the Allison plant in Indianapolis. They were not putting out enough engines and the engines coming out were not very good. I was supposed to participate in straightening that out. Then I went to Detroit to work with the automobile industry while they converted from the manufacture of automobiles to the manufacture of aircraft and engines. General Arnold sent for me and I came to Washington and was on his staff. One of the first jobs he gave me was to prepare for the Tokyo Raid. I went there in December, 1941, to Washington, and January, 1942, he called me in and gave me this chore. I came back, reported to him again, and he was then real busy, did a magnificent job.

I still see Bee Arnold, his charming wife, who is up at Sonoma. I think he was one of the truly great men of the war, and, as I say, I knew him from 1918 to the time he died.

Of course, General Marshall had great confidence in General Arnold, and very much turned the aviation side of the war over to General Arnold. He was largely responsible for the excellence of our aviation effort, and was the competent aviation right hand of General Marshall.

Q: The Tokyo Raid is on the record, but could we talk about it from your personal point of view?

When the idea was first suggested, it came, I believe, from Captain Lowe of the Navy. He discussed the idea with Admiral King, Admiral King discussed it with General Arnold, and General Arnold called me in to implement it. So it was not my idea. The implementation required the study of aircraft to determine which aircraft, which airplane was the most suitable for the job, the modification of the aircraft, and the training of the crews. By the time this was half done, I realized that it was to be a carrier operation, and being a carrier operation, I had a very good idea what it was going to be.

I then requested permission to lead the flight, telling General Arnold that I knew more about it than anyone else, I had trained the crews and modified the aircraft and I knew more about the people and equipment than anyone else, and I would like to lead it. And he let me lead it.

Q: What were the crucial moments of the raid?

Doolittle: Well, the first crucial moment was when our government asked the Russians to permit us to land at Vladivostok. This would have made the flight very easy. It would have shortened the distances, given us a prepared landing field and friendly territory to land on-- would have made the flight very easy. The Russians refused.

The next decision that had to be made was where we would go in China. We decided to go to the little town of Chu-Cho, which had a prepared flying field. We then asked the Chinese if we could go, and Chiang Kai-Shek was not anxious at all to have us go, because he felt there would be reprisals from the Japanese and that China would suffer for that flight. It was decided that we would go anyhow, and as a matter of fact his permission was not asked until the thing had gone so far that it was practically impossible to call it off.

The flight was made, and when we were ready to land at Chu-Cho, we found that the weather was bad. Chu-Cho lay in a little valley between mountains, and the homing device that was supposed to tell us where the field was did not answer. This was the most critical point, I guess, when we found we would all have to either crash land or jump. We found out later that the airplane bringing the homing device and our supplies in and people to run it had crashed and all a board were killed, and the little homer was lost. So when we arrived that night in bad weather, it was impossible to land at our destination.

The weather, of course, when we took off, was very rough. None or us had ever taken off from a carrier before. That, however, was good -- the fact that the weather was rough -- because there was a strong wind blowing, and the only worry we had was that we might have to take off in a dead

calm. If so, then it would have been very difficult to get airborne with the very heavy load that we had. So we were delighted to have a rough sea and plenty of wind.

Each plane had a target, and the target maps were distributed as soon as we put out to sea in the *Hornet*, and each crew made a very complete study of the target area and all of the terrain in that vicinity, so that we could find each target readily, bomb it promptly, and get out rapidly. My target was a military plant more or less in Tokyo. Each one of us had our own target. We went in low, dropped our bombs, then stayed on the deck and got out to sea as quickly as we could. After getting out to sea, we turned half right and went to China.

There was moderate flak, moderate inaccurate flak. The flak was not intense. None of the planes were shot down, though many of them had hits. The fighters chased some of the planes, but none of the planes were shot down by the fighters. In my own case, I saw five fighters converging on me, and there were two little hills. I swung very quickly around the hills, did an S turn, and the fighters turned also but they didn't make the second half of my S, and the last I saw was the fighters going off in the opposite direction, apparently trying to pick me up, not having seen me make the other side of the S turn. So I did not get shot at by fighters, and it was only this one group of fighters that actually formed and were preparing to attack.

Q: When you reached China and landed, you felt you had not succeeded in your mission?

Doolittle: I was very distressed. I realized that we had accomplished the first part of our mission, which was to bomb Japan, but I felt very distressed because the second part of our mission was to collect our aircraft and make them available to the CBI people, and I was sure when I got to China that we would all lose our aircraft, because when we got to the coast there was dense fog and we all had to climb up into the fog. We had two airplanes that crash-landed right near the coast, in the water. So the likelihood or saving the aircraft was remote or nil, so I felt very badly about having lost my entire force of aircraft and having scattered my entire force of men over a considerable area of China.

Two men were killed in one crew, but the other eight were picked up by Japanese, tried, and three of them were executed. One was starved to death. The other four we got back, after the war was over. They were in very bad shape. One of them we couldn't move for six weeks. He just had to be fed until he could get strength enough. He could be moved off his bed, that's all. Another man was killed when he jumped.

The raid had three advantages, really. The first advantage was to give the people at home a little fillip. The news had all been bad until then. The second advantage of the raid was to cause the Japanese to worry and feel that they were vulnerable, and the third and most useful part of the raid was that it caused a diversion of aircraft and equipment to the defense of the home islands which the Japanese badly needed in the theatres where the war was actually going on.

The actual damage done was minimal. When you think that we had sixteen airplanes with one ton of bombs each -- sixteen tons or bombs -- and in the late raids they were dropping 5,000 tons of bombs in one raid 16 against 5,000 is pretty puny.

After I came back from Japan, General Arnold said that there was to be an invasion of North Africa,. "General Patton is in charge of it, he's looking for an airman -- would you like to do it?"

"Yes."

"Then go and talk to General Patton." General Patton and I had a good talk and hit it off very well together. We reported to General Arnold and General Marshall that we would like to work together, and Arnold and Marshall said, "Both of you go over and see General Eisenhower," who was then in charge at London. We went over and saw General Eisenhower, and the operation grew. Instead of being just a small operation on the west coast of North Africa, it became a large joint British-American operation with landings in the Mediterranean and on the west coast. I ended up as General Eisenhower's senior -- General Eisenhower was then chosen to command the whole thing and I ended up as his senior American airman for the North African campaign.

Q: Did you and General Eisenhower fail to see eye to eye at one point?

Doolittle: General Eisenhower of course was very anxious that I should be his staff officer, and I was much more interested in running a command and also in doing a little flying. On one occasion he called me in and said that he had tried to get me the day before, "Where was I?"

"I was up flying," I told him.

He said, "It takes a major general to command the 12th Air Force. Any second lieutenant can go up and fly and shoot down Germans. You can either be in command of my 12th Air Force, or you can be a second lieutenant and shoot down Germans, whichever you want to do."

I think after that we had a perfect understanding.

Preparations for the North African invasion were routine. We got together in England the aircraft and equipment that we needed. We got many of the aircraft and trained crews from the 8th Air Force. General Spaatz was in command of the 8th Air Force, and General Faker was in command of the 8th Bomber Command. General Hunter was in command of the 8th Fighter Command. We were obliged to get a large number of our aircraft and crews from the 8th, which seriously depleted the 8th, but did give us a trained force.

After North Africa, I was put in command of the 15th Air Force in North Africa, and moved in over to Italy. Then in January, 1944, I was sent back to England to take the 8th Air Force. General Eaker who then had the 8th Air Force came down to take over the Mediterranean Air Command. General Spaatz, who was in charge of the Mediterranean, was sent up to be Eisenhower's senior American airman. General Twining came down and took over the 15th Air Force, which I had commanded. From then on till the end of the war in Europe I commanded the 8th Air Force.

From the overall point of view, we had in the early days a very difficult time making deep penetrations with the heavy bombers. They were able to fight off some of the fighters with their own guns, but the Germans then began to develop rockets, and the German fighters would then stay outside of range of the bombers and lob rockets at them. So the bombers then had no way of

protecting themselves. Fortunately, about that time we began to get more and more fighters, long range fighters. The long range fighters were able to follow the bombers in, and the fighters not only shot down the German aircraft in the air, but made a practice of coming back on the deck and shooting them up on the ground.

So about the time that we were doing real well and losses were getting very low, due to the fact that our long range fighters had pretty well taken over the air from the German fighters-- the Germans then came up with their jet fighters and rocket fighters. This caused us considerable trouble. It would have caused us a great deal more trouble, had not Hitler made the decision to utilize these jets for ground strafing -- something for which they were entirely unsuited, and of course that took them off our backs. So Hitler made a command decision that greatly reduced our losses and facilitated the strategic bombing of Germany.

Q: When the first invasion of Europe came, the German air force was not as much in evidence as expected, and this was credited to your raids before the invasion.

Doolittle: By the time of the invasion the German air force was short of aircraft, but even shorter of fuel. They could stage an air operation only periodically. Still, at the time of the invasion, they were able to come up and hit us occasionally, but rarely. This was largely due to the destruction of German aircraft in the air and on the ground, and to the destruction of their refineries and their supplies of oil.

The British, the R.A.F. Bomber Command, the 15th Air Force in Italy and the 8th Air Force in England all joined together to knock out the oil depots and their oil refineries. Of course, the 8th and the 15th with their long range fighters worked over the German fighters in the air and on the ground. The RAF with their shorter range fighters were able to reach only a short way in, and were not as effective in destruction of the German fighters, although they did a magnificent job -- the RAF Bomber Command -- in taking out cities.

One of the long range fighter problems we had was weather. Our second greatest problem was enemy fighters and our third enemy flak, but the weather was really our worst enemy. We'd go out on a flight and wouldn't be able to get to target. In that case it was customary to have an alternate target. Sometimes our alternate target also was fogged in, and sometimes the weather was so bad that even with radar bombing it was difficult to get through.

Towards the latter part of the war, a chap named Colonel Bud Peasley conceived the idea of having our long range fighters go out and make a reconnaissance before the bombers went out, and be there at the time the bombers took off, so they could tell the bombers exactly what targets were open, exactly what the weather was, what was the best route, and so forth. So we had our own little fact-finder force of fighters, and they were of tremendous help to the bombers. I think organizing and authorizing this was one of the useful things I did after taking command or the 8th Air Force.

The other useful thing I did was to insist that the policy in effect when I came -- it happened to be in effect when I came because conditions were more serious, losses were much greater, and we had very few fighters. At that time the policy was that the first duty of the fighters is to protect the bombers. By the time I took over the 8th Air Force, the losses were less, and I changed that policy

to, "the first duty of our fighters is to shoot down enemy fighters." So instead of our fighters following the bombers and protecting them, from that time on our fighters went out and sought out the enemy fighters and shot them down.

At first the bombers were very worried about this, but very shortly they came to learn that this was by far the better way, and that even if our losses were severe from time to time, this was the only way we would ever begin to get anywhere near a free ride, which we were approaching towards the end of the war.

This is not any criticism of my predecessor, because when he started out conditions were much more difficult and he had very few fighters, so the few he had, he had to put on the bombers. But by the time I got there, there were more fighters, and I changed that policy. That and the utilization of the fighters for reconnaissance and checking where the bombers should go were two of the innovations for which I was responsible and in which I take pride.

Before going to Europe, I had flown a great many missions in North Africa and Italy. Unfortunately after going to Europe I was briefed on the invasion plans and promptly taken off of flying (the fear being that I might fall into enemy hands). As a result of that, I flew no missions in Europe, no bombing missions. I did have an opportunity to fly a few interesting fighter missions. General Partridge and I flew two fighters with the bombers over the invasion forces on the 6th of June, and after the bombers had dropped their bombs, General Partridge and I came back under the overcast, flew up and down the beaches, and saw the very difficult time the boys were having at Omaha Beach. By 9:30 or 10 that morning I was back in the senior headquarters with the first eyewitness account of what was going on in the beaches.

The impression I had was that everything was going relatively smoothly every place except at Omaha, and at Omaha Beach I saw landing craft after landing craft suffer a direct hit and blow up right in front of my face. Both General Partridge and I flew P-38's, which were very distinctive Lockheed type aircraft with two tails and two engines, because we didn't want to fly over our troops and be mistaken for enemies.

Q: Did you have any close calls?

Doolittle: I got shot up quite a few times, but never shot down. I came back. The only time I had a crew man hurt was flying down to Gibraltar from England, in a B-17 that was attacked by JU-88's, and the co-pilot was shot through the arm. I went up and took over the co-pilot's seat after we got him as comfortable as we could.

In North Africa, as in Europe, the greatest difficulties were not the enemy but the weather. We had very severe weather and considerable casualties due to weather. We not only cancelled flights because or weather, but we would sometimes recall a flight after it was halfway to target. The weather came in from the west in England, and it usually came in at a fairly even rate. We had aircraft to the west following it in, and as the weather approached England--sometimes dense fog, our most serious enemy -- we could anticipate, if it kept at exactly that rate, that it would cover the bases by a certain time. If aircraft were not back at that time, then you would suffer very very high operational losses as a result of your airplane crashing on landing.

However, the actual rate of progress of the storm might change when it reached the coast of England. It might speed up, it might stand still, it might slow down. As a result of that, it was customary to recall if you felt that there was a chance of weather closing your bases so that you jeopardized your entire force.

On two different occasions I recalled, on the 5th and 11th of January, when the weather after I recalled slowed down, and the bases remained open. This caused me to be criticized as a timid person.

Q: Was it Spaatz who criticized you, and then finally came around to your point of view?

Doolittle: We got out in one of these storms, and then he realized.

Q: Did you have times when you had to make a decision, whether to jump or try to save the plane, and so on?

Doolittle: Yes, any aviator's career is full of those things -- testing new aircraft, flying across country in bad weather -- you are continually faced with problems. The chap that lives a long time is the chap who does not fly beyond his limitations. One man may have limitations of one type, another chap would be able to do what that chap couldn't, simply because he knows more about that airplane, about the terrain, about the weather--consequently one man can fly in weather with a certain type of airplane and another can't. I think all of us in aviation have always tried to fly within our limitations, but in finding out what our limitations were, we have frequently pushed them closely enough so that we've had close calls.

As soon as the war was over, I returned to the Shell Oil Co. and became a vice-president and director, and was with the Shell Oil Co. until the end of 1959, a year and a half ago. At that time, I came with the Space Technology Laboratories as chairman of the board. Space Technology Laboratories is the technical management organization that does systems engineering and technical direction for the Air Force in connection with their ballistic missile and space programs. Space Technology Laboratories also does some research and some development and some testing. They do not mass produce, but they do fabricate some payloads for satellites, some electronic equipment of one type or another.

I believe we will have airplanes for a long time to come. I believe that the missile is not an immediate replacement for the airplane, but is rather complementary to it. The two work together.

I have dealt with policy, with plans and with people, so I have had nothing to do with the operations and with the technical development that has taken place here. Space Technology Laboratories is manned by a uniquely competent group of young people. There are some excellent scientists and excellent engineers, and some people who are outstanding in that they not only have great scientific and technical abilities, but they know a great deal about people, about dealing with people, and about management.

I can sum my career up in a word: I've been real lucky!