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ART SMITH'S STORY

The Autobiography of the Boy Aviator Which Appeared as a Serial in The Bulletin

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CHAPTER I.

PEOPLE are not interested in me. They are interested in my flying. When the crowd on the ground holds its breath, or shrieks, or wildly cheers, it is not because Art Smith is playing a dangerous game with Death up there in the clouds. It is because over their heads a man just like themselves is mastering the dangers of an almost unknown element.

My triumphs are not personal. They are new triumphs for all mankind.

Sometimes, when I feel the wings of my machine give that little, pulling lift that clears the ground, and I skim up into the air, I look down at those thousands of white, watching faces under me. Then I wonder what they feel as they see me sailing up over the Marina, past the seagulls, into the sky.

It is always thrilling to me to do it. It must be more thrilling to see, to a man who has always walked about with the solid earth under his feet.

Some day it will be no more thrilling than using a telephone. Within a short time—five years perhaps—licenses for aeroplanes will be issued as licenses for automobiles are issued now. Then a change will begin in human life—a change so tremendous we can not even imagine it today.

There are no frontiers for the aeroplane. The seacoast is only a green, wavering line thousands of feet below it. Mountains are just heaps of earth—it skims over them. There are no boundaries between States or countries when you look down upon them from three thousand feet in the air.

The greatest barrier between people is distance. Think what fifteen miles meant in the days when the only way to cover them was to walk them step by step. Fifteen miles away—it was an undiscovered country! Then railroads came, and street-cars, and automobiles. A man lives fifteen miles from his office now, and gets to work every morning on

time. Fifteen miles is nothing. Two hundred miles is no more than that to the aeroplane, which will travel easily at 125 to 150 miles an hour.

The libraries are full of books written by men with their feet on the ground—books about human life, and human relations, and why they change, and what will happen next. I have not read these books. I am too busy flying. But I know that everything in the world today is built upon the idea of boundaries. I know that the aeroplane destroys them. I know that the changes which were made when the ocean was opened to travel, or when the railroads were built, meant nothing to mankind in comparison with the changes that will begin when the air-lanes are open.

Of course, there are only a few of us now who feel at home in the air—really at home, knowing the air and its ways, so that we can roll about up among the clouds like a kitten in a basket. Because we are pioneers in the air, with difficulties and dangers to overcome, it is interesting to know how we do it, and what it feels like.

The story of how I learned to do it is doubly interesting to anyone who is trying to do anything difficult in the world, because I think no one can have a harder time realizing his ambition than I had in learning to fly.

"He's just a fool kid with a crazy notion," they said about me, back in Fort Wayne, Indiana, when I said I was going to be an aviator, and left a five-dollar-a-week job to do it. It was a good job, for a fifteen-year-old boy, and they thought I should keep it.

"He has bulldog grit," my friends said.

They were wrong. I had grit—it was all I did have—but it was not the bulldog variety. A bulldog hangs on, but he does it with his teeth alone. I never noticed that a bulldog cared much about what he hung on to, just so he hangs on. I stuck to my idea, but I did it with all the brains I had.

A good illustration of my whole life is in the way I first looped the loop. It was after I had got through most of my early difficulties. With no money, no teachers, without ever seeing another aeroplane, against every opposition, I had built my first machine and learned to fly in it.

I had made a success in straight flying. Then I decided to loop-the-loop.

I was testing a new propeller. It worked all right. So I turned the machine upward, and flew straight up into the air. There was a bank of clouds above me—it was a gray day, down on the earth. I flew up through them, and came out into bright sunlight, about 2,500 or 3,000 feet high.

The man who said "Every cloud has a silver lining" knew what he was talking about, although probably he did not realize it. No matter how gray the clouds seem from below, when you look down at them they are always a fleecy, shining mass, with a shimmer like white silk.

They curled and shifted under me. The sky was bright blue overhead, full of sunshine.

"Good time to practice a loop," I said to myself, and pushed the wheel over hard.

Just as the planes stood on edge the engine stopped.

The only thing that keeps a machine off the ground is the resistance of the air under the horizontal planes.

When the engine stopped, half a ton's weight of wood and iron, with me strapped to it, fell like a dropped brick.

Six hundred feet below I managed to catch the air with the planes. The momentum of the fall gave me a little speed. I swung the machine upward again, on this speed, preparatory to volplaning back to earth. As I tilted her upward the engine started. I swung up into the blue sky with that engine humming along as sweet as ever.

As I swung around in a circle above the clouds I tried to figure it out. Nothing was wrong with the engine. After a time I tried it again. With all my strength I pushed the wheel over. The machine stood on edge; the engine stopped. Again I dropped.

This time I was ready. I caught the support of the air again in about four hundred feet, swung upward—the engine started.

Bulldog grit would have kept me at it—kept me at it until an air current down in those shifting clouds caught me just at the wrong second, and then—

But after that second time I flew back and forth until I had thought out the problem. When the machine is on end the gasoline in-take fails. The engine stops. The only thing that starts it again is that upward swing. If she picks up on the upward swing, I reasoned, all I need is sufficient momentum to turn the machine completely over and swing her upward—that was it—the momentum!

I flew another five hundred feet higher, pushed the machine over into a vertical dip, and dropped clean. When I judged the momentum was great enough I rammed the wheel over with all my might.

The machine turned completely over, in a beautiful curve. The engine picked up. I had looped my first loop.

CHAPTER II.

IT was my determination to think things out which made it possible for me to loop-the-loop. It is the same determination which has made my success. That, and the fact that I have never had any real interest in anything except flying—and, of course, Aimee.

I remember when I first made up my mind to learn to fly. It was six years ago, the summer I was fifteen. Five of us had gone up from Fort Wayne to James Lake for a two weeks' camping trip—mother, Al, my chum, with a girl friend of his, Aimee and I. Aimee was fourteen. She was the only girl who had ever interested me as much as roller skates or a circus billboard.

I never cared much for girls till I met Aimee. My big interests were skating, Buffalo Bill and mechanics, especially mechanics—making things that would go. I made the first little wagon in town that would run with pedals, long before such things were on the market. I had a barnful of kites of all sorts, rigged up to drop little parachutes, or to whirl in the air. I experimented with electricity, too, and once shocked the solemn old house cat by giving her a saucerful of milk attached to a dry battery circuit.

When the circus came to town I was the first boy to get down to the railroad tracks in the middle of the night to watch them unload the elephants. Every stunt those circus performers did I tried for weeks afterward.

I remember when "leaping the gap on the bicycle" was first done in Buffalo Bill's big show on the circus grounds at the edge of town. I did not own a bicycle, but next morning I was up before daylight with a hammer, rigging up the same sort of springboards in our backyard, and I was leaping the gap on roller skates before my mother's horrified

eyes that afternoon. I could leap a gap ten feet before the boards fell to pieces and I tried something else.

Girls were never interested in such things, and so I was never interested in girls. Then I met Aimee. She was a chunky little girl with red cheeks and the jolliest laugh I ever heard. She used to wear a little red sweater and a cap with a tassel on it, and she was game to the core, even then—one of the best pals a boy ever had.

She stood by me afterward through all the difficulties of the years when everyone told her I was a failure, when my clothes were in rags, and I was living on borrowed dimes. She was one of the prettiest, most popular girls in Fort Wayne, but she disobeyed her father, left her family and friends, and risked her life for me without a quiver. All that I have ever done of value and all that I can ever do belongs to Aimee, in return for what she did for me then.

All these things happened later. That summer at James Lake Aimee was a little girl with her hair in braids.

We had two tents beside the lake. Mother and the girls had one, Al and I bunked in the other. We made coffee over a camp fire and went fishing and swimming. Aimee was a great swimmer.

One afternoon just before sunset she and I were in a boat out on the lake. She was sitting up in the stern with a big bow in her hair, and I was lying on my back in the bottom of the boat looking up at the sky. There was a big turkey-buzzard up there, sailing around in big circles without moving his wings. I got to puzzling how he did it. Somewhere I had seen an article about the Wright brothers, who were just beginning to fly, and I thought about them, too, and wondered how a heavier-than-air machine could stay off the ground. I thought about the buzzard's wings and aeroplanes, and wondered if the same principle kept them in the air, and what it was.

"Don't you think so?" I heard Aimee say.

"Uh—what?" I said.

"Well, if that's all the attention you are going to pay to what I'm saying I think you can just go rowing by yourself after this," said Aimee, tossing her head.

"I was figuring out how to fly. I'm going to make a machine and fly in it," I said.

"How?" said Aimee. She was thunderstruck at the notion.

"Well," I answered, and lay there looking up at the sky again. It was a clear, blue sky, as placid to look at as a pond. I knew nothing about the treacherous whirlpools in the air, or the swift, rushing torrents and dangerous rapids in it.

"I don't know just how I'll do it, but I will. You'll see," I said.

"Well, of course, if you say you will, you will," Aimee admitted.

When we got back to Fort Wayne I collected all the mazagine articles on aeronautics I could find—they were very few then—and spent all my evenings poring over them.

Before that time dad and I usually figured on contracts after supper. Dad was a carpenter-contractor. He was a slow, quiet man, with a kind of silent strength. When I read "Snowbound" the "man of few words" in it reminded me of dad. He never had much to say, but you always knew he was there.

He had worked for seventeen years to come to the point when he could begin on his real ambitions. He wanted to do big things in his work. Then, just as he had started a business of his own, when the big things he wanted to do were almost within his reach, he had begun slowly to go blind.

It was the effect of a sunstroke, brought on by working too hard when he was a carpenter's helper.

He never spoke of it, but he fought the idea of blindness terribly. He was determined to see. Little by little he lost his grip on business. The good contracts went to someone else. But he held on, fighting every inch of the way.

The year before the trip to James Lake I had left school and gone to work in an architect's office. All dad had was the little cottage we lived in, and the income from his work was getting smaller every month.

Poring over those articles on aeronautics, I found there were thousands of dollars offered in prizes. There was the Scientific American prize, the Schebler prize, and others—in all nearly $100,000 was offered for good work in the air. It seemed to my fifteen-year-old mind that even the smallest of those prizes would make me a millionaire for life. And just a little money, even a few hundred dollars, perhaps, might save dad's eyes.

One evening, a month or so after I had begun reading these articles, dad reached for something at the supper-table and upset his glass of water. Mother caught it just as it splashed over. None of us said anything about it.

When supper was over and mother had cleared away the dishes and gone to the kitchen to wash them dad spread paper and pencils on the table and took his memorandum book out of his pocket.

"I guess we'll figure on that Robinson contract tonight, Art," he said.

I was sitting on the other side of the table, with my elbows on it, and my chin in my hands, thinking.

"Dad," I said, "I want to be an aviator."

CHAPTER III.

DAD turned the idea over in his mind without speaking. It must have been like a bombshell to him, he had been so proud of my work in the architect's office. He had thought I would be a successful man in his own line of work—the work his slowly approaching blindness was making impossible for him.

"Why?" he said, after a while.

It is hard for a fifteen-year-old boy to tell why he wants things. I wanted to learn to fly, but the reasons why I wanted it were all tangled up in my mind. Dad had to know just what they were. That was dad's way. He always had his own ideas in order in his mind; he thought things out in a straight line.

We sat there at the table a long time, while I talked about the Wright brothers, and read him some of the articles in my magazines. Mother came in while I was doing it.

Mother was a little, quick woman, all nerve and energy. Whenever she undertook to do anything, she did it. I never remember seeing her idle. She kept the house clean, had a big garden, did a great deal of church work, and always had time to help me make a kite or build a boat. She was president of the Ladies' Aid Society, and whenever she started to get a new church carpet or pay up the minister's salary it was as good as done.

This evening she came in with some mending, and went right to work at it.

"'Art' wants to be an aviator," dad said to her.

"Goodness me! Isn't it awfully dangerous?" said mother.

Of course that was the natural way for her to look at it. There had been three children older than I. They all died when I was little. I was the only one left.

"I'll be careful," I told her, and explained to her as well as I could that there is no danger if the aviator keeps his head, and the air currents hold steady, and nothing is wrong with the machine.

"But doesn't the machine cost a great deal of money?" mother wanted to know then. To this day I have never convinced her about the danger.

"How much would a machine cost?" dad asked.

I figured up roughly—the engine, the planes, the wires, the supports.

"About eighteen hundred dollars," I said. "But there are nearly one hundred thousand dollars in prizes."

"I asked, how much would a machine cost. When you know that we'll talk about this again," said dad.

A week later I had all the figures.

"An aeroplane will cost $1,756.60, if I do all the work on it myself," I said one night at supper. Dad nodded.

"You could get that much by mortgaging the house," I said.

The muscles over dad's jaws tightened and set; he was pale. The house was clear; it was all we had.

"I suppose I could," he said, after a minute. He must have been talking about it with mother for she said nothing. She just looked anxious.

Then I built the little aeroplane. I worked on it at night, in my workshop in the barn. It was about twelve inches long, all made of tiny pieces of wood. Even the wings were wood. I could not get any cloth light and strong enough, so I bought some sheets of veneer from a furniture factory and sandpapered them until they were thin as tissue paper, and transparent. The engine was a tiny affair of wooden wheels and rubber bands.

I made that machine with most minute care, studying every drawing of an aeroplane I could find for ideas. I was sure it would fly.

It took me three or four months to finish it, and when it was done it was a beauty. One evening after supper I brought it out.

"It will fly," I said to dad and mother, and started it on the sitting-room carpet.

It ran along the floor. We stood there hardly breathing, watching. Then suddenly the little planes caught the air. Up it went. Three feet in the air the little machine sailed down the room.

"Come outdoors—I'll fly it there," I almost shouted. Dad and mother followed me out into the backyard. It was a still evening, just after sunset. I wound up the little engine and let it go running down the garden path between the tomato vines. Ten feet away it rose again, flying beautifully—rose and rose, steadily.

Then, before I could catch it, it struck the clothesline and smashed to bits.

"You see, it flew," I said to dad.

"Yes," said dad. "How did you make it?"

I told him. He made no comments. When he had gone into the house mother and I gathered up the pieces of the little aeroplane. They were good for nothing but kindling.

"You know about dad's eyes," I said to mother. "If I could make a real machine and fly in it I could make money, lots of money. Dad could go up to Chicago and see the doctors there."

Mother was still thinking of the danger to me. Besides, with dad's eyes failing every day, and his income already almost nothing, it was a big thing to stake everything they owned on a fifteen-year-old boy and his chance of success in a new thing like flying.

It seemed to me then that if I could only get a real aeroplane built the rest would be easy. That was because I knew nothing whatever about flying. The air, to me then, was only something to breathe, and to use in flying kites and aeroplanes. I did not know that air has the fluid, swirling force of a roaring waterfall and the crushing weight of an avalanche. The worst storm that ever smashed the sea to pieces against the cliffs at Land's End is calm as a cup of coffee compared to some things in a sunny blue sky. I learned that later.

Eager as I was for that aeroplane I said nothing more to dad about mortgaging the house. I suppose I had unconsciously learned from him to keep silent about my big thoughts.

I turned about in my mind every possible hope for getting eighteen hundred dollars—figured up, I remember, how long it would take me to save it from my wages of five dollars a week. I thought of the men I knew who had that much, and planned how to approach them and get them to lend it to me. I read everything I could find about aviation, and I began to build another little machine.

Dad helped me sandpaper some of the parts, and I told him all I had read, and explained the principle of flying—how the planes rest on cushions of air, compressed by the speed of the machine. He listened, companionably, but said nothing. I knew by the light shining in the sitting-room long after I had gone to bed that he and mother were talking it over.

One evening late in the fall mother and dad both seemed awkward and nervous at supper. I wondered what had happened, thinking perhaps the doctors had said dad's eyes were worse than we thought.

After I had finished my pudding and pushed back the plate mother got up suddenly and stood by dad, with her hand on his shoulder. They both looked at me across the table.

"Art," said dad, "we think you can be depended on. We mortgaged the house today. You can have the money for your aeroplane."

CHAPTER IV.

WHEN dad laid that $1,800 check on the table between us I felt for the first time a man's courage and strength. I knew I was going to fight, and win.

I realized what it meant to dad and mother to mortgage their home, with dad's sight growing less every day, and give the money to me, a fifteen-year-old boy, to use for an aeroplane. I knew, too, as surely as I do now, that I would make good and repay that money many times over.

It was a great moment for me.

Next morning I was almost too excited to work in the architect's office. About noon I went to see Mr. Weatherhogg. He was owner and manager of the firm, and just beginning to be known as a very successful architect.

Every boy has his hero, his ideal of a successful man. Mr. Weatherhogg was mine. It was because I knew he would have a better opinion of me if I did not drink that I never made friends with the boys who hung around the saloons. Of course, when I became interested in the aeroplane I was too busy to drink, and have been ever since.

"I am going to quit Saturday, Mr. Weatherhogg," I said, standing by his desk. He leaned back in his chair and looked at me.

"What's the trouble? Is it a matter of salary?" he asked.

"No, sir," I said, "I'm going to build an aeroplane."

"Build a WHAT?" he said, sitting up straight.

"An aeroplane, sir. I'm going to be an aviator," I said.

"Do you mean to say you can build an aeroplane, and make it fly?" he asked.

"Yes, sir," I said, confidently.

"How soon will you get it done?" he wanted to know.

"In about six weeks. I've ordered the engine," I answered.

Sometimes when I look back now I think that if I had not been absolutely ignorant of everything about aviation, and full of a boy's enthusiastic ideas, I never would have attempted the almost impossible things I did.

I could see that Mr. Weatherhogg did not believe I would succeed. He told me very cordially that I could have my job back at any time. On Saturday he came out to my desk to repeat it. That night I walked out of the office with my five-dollar check in my hand—the last of the family income. Dad was still doing all the work he could, but there was nothing regular about his earnings.

I cleared out my old workshop in the barn, white-washed the windows so nobody could watch me, and began work on the aeroplane. The whitewash on the windows was necessary, because I had a great invention in my mind. I was not only going to build a machine like that of the Wright brothers—I was going to improve on their ideas. I had a great idea for a stabilizer. When that stabilizer appeared all danger in flying was to be over. I would be not only rich, but famous.

Every part of that machine I drew with greatest care on paper, from pictures I had seen in the magazines, before I tried to begin the actual construction. Of course, I knew nothing of the engineering problems involved, the stresses, the shifting of the center of gravity, the balancing. I thought over every detail of that machine hundreds of times. I was quite sure it was going to fly.

Late that fall the Wright brothers gave an exhibition in Indianapolis. I hated to spare the money; I needed it for materials, but I felt I must see those machines. I saw them. I sat in the bleachers and saw those machines rise from the ground and fly.

I had no chance to examine the machines on the ground. But before my eyes they flew. They went perhaps 200 feet high, and landed, and rose again for another little flight. I felt sure my machine would do even more wonderful things when it was done.

I hurried back to my workshop in the barn, more confident than before. My six weeks had lengthened to three months, and still the machine was not finished. Every piece of wood used in an aeroplane must be air-dried, absolutely flawless, and tested in every possible way for strength. Every bit of wire must be tested. I used several hundred feet of wire—piano wire—on that first machine.

I scarcely swallowed my breakfast in the morning, I was so eager to get to the workshop. All day I worked. Al Wertman, my chum, helped me sometimes, and mother sewed the cloth for the planes on her sewing machine. I did all the rest of the work myself, except that dad helped with the sandpapering. I kept that for the evenings, and worked at it until I could not keep my eyes open any longer. Then I went to bed, asleep before I got there.

Aimee was allowed to see the engine when it came. All that summer I had seen her every day. After dad gave me the money for the aeroplane I had no time for anything but building it. I saw Aimee only on Sundays, and once in a while she came over, and she and mother watched me at work. Aimee did not mind my neglecting her for the aeroplane, she was excited about it almost as much as I was.

"Do you think it'll really fly, Art?" she asked me one day.

"Of course it will. You'll see me flying over your head just like that bird up at James Lake," I told her. I never doubted it.

The months went by, while I worked. I did nothing but work at the machine all that fall and winter. Through the worst of the cold weather I had a little stove in the barn. At noon mother came out with something hot for me to eat. I would not waste a minute that could be spent on the machine, for time was going fast, and dad had not been able to get the mortgage for longer than a year.

Hard as I worked, half of that year had gone by before I finished the aeroplane. I had built it every inch with my own hands, carefully tested every part, spent hours of hard thinking on every principle in its construction.

At last it was done, a Curtiss-type biplane, with a two-cycle, 40-horsepower Eldridge engine. It had only two wheels; I used wooden supports under the wings. On top and bottom the parts of my great invention, the stabilizer, stood out. To me it was the most beautiful thing in the world.

It was finished the 17th of January. That day I walked down town, enjoying the open air, and feeling more triumphant than I have ever felt since.

I had just $23 left of the money dad had given me, but the machine was finished. All that remained was to fly in it.

I remembered that at a high altitude the cold was said to be intense. I felt that I must prepare for it, so I spent eight dollars of the twenty-three for a warm sweater to wear when I made my first flight.

In the middle of that night, so that no one should see the machine, dad and Al and I ran it out of the barn and through the deserted streets to the old ball-ground. We had a tent put up there for it. I meant to astonish all Fort Wayne next morning with the sight of me flying high over the town.

CHAPTER V.

THE great day had arrived—I was going to fly for the first time! My fingers shook with excitement when I dressed that morning. I had it all planned—I was going to have my stabilizer patented, win at least two of those aviation prizes, send dad to the best oculists in America. The mortgage was to be paid, dad's eyes were to be saved, I was going to be rich and famous.

Mother had asked Aimee to breakfast. We were all too excited to eat much. I remember dad did not say a word, and mother could not sit still a minute. She saw to it that I had more on my plate than a dozen boys could eat.

Al Wertman, my chum, and Will Peters, another of the boys, were waiting at the tent on the old ball-ground. Al had stayed there all night to watch the aeroplane. No one else was there. We intended the first flight to be kept secret, for fear someone would see the stabilizer before I had it patented.

Dad's sight had failed so much that winter that he could not help much. We boys fastened back the tent flaps and pushed the machine out, while mother and Aimee watched. It was a clear, sunny morning. The machine looked beautiful, all new wood and bright metal in the sunlight. I looked it over carefully, to be sure all the nuts and bolts were tight.

"Is she all right, Art?" dad asked, trying to see it for himself.

"Now, don't go too high the first time," mother said. I remember how anxious she looked.

I took the supports from under the wings; Al and Will held the machine steady. I settled myself in the seat and took firm grip of the wheel.

"Let 'er go!" I called.

Al gave the propeller a whirl; the engine started. I was off on my first flight.

An aeroplane must pick up a speed of nearly fifty miles an hour before it leaves the ground. There was a light snow, perhaps a couple of inches, over everything, and it sparkled so I could not see clearly, but I felt the wind hard against my face as the machine raced down the ball park.

When I judged I was going fast enough I leaned back, pulling the wheel toward me.

The machine rose into the air.

To this day I still feel like shouting for joy at the little lift of the wings as my machine leaves the ground. I was really flying, at last!

That feeling went through me, and was gone in a flash. I was driving straight up into the air—too straight.

The speed was terrific. I was headed right up into the blue sky.

I pushed the wheel forward. The machine turned over, and drove directly downward.

There is no time, in an aeroplane, to feel any panic. If an aviator once lets a dangerous situation get hold of his nerves, for even an instant, it is too late to save himself. The second I realized that downward drive I pulled the wheel back. It was just in time. The machine grazed the snow, they found later.

Up I went again, straight up. Something was wrong, somewhere. I had no time to think what it was.

I pushed the wheel again, just the least bit. The machine was going fast, about twenty feet high. At my touch on the wheel it dived straight downward, almost on end. I pulled the wheel back again. Up I went.

I tried desperately to think what to do.

I was about forty feet in the air, driving straight upward with all the power of the engine. There was nothing before me but blue sky.

For the third time I pushed the wheel over. The machine turned a half circle, at tremendous speed, and dropped.

It crashed to pieces upon the ground.

I know it is hard to believe, but just as I struck I knew what was wrong. My controls were too sensitive. I had an elevating plane in front, and flaps on the tail, both. Either one would have answered the wheel with an up or down slant to the flight. Both of them, on my light machine, were too much. They tipped the machine either straight upward or straight downward.

I was thrown clear of the wreck, hard on the frozen ground.

Dad reached me first. He had been standing by the tent, listening to the sound of my engine. He heard the crash, and heard mother

scream. He could not see what had happened. When I opened my eyes he was groping about the smashed machine, shaking terribly.

"Art! Art! My boy! Art!" he said, over and over.

"Dad! I'm all right!" I called to him. I will never forget the look on his face when he heard me.

"Daddy!" I said. "I think the engine's all right, too."

Then I tried to get up and fainted.

CHAPTER VI.

THE aeroplane must be rebuilt.

I thought about it all the five weeks I had to stay in bed, after that first accident. My back was badly wrenched, and I was black and blue all over. The thing that bothered me most, though, was the delay in rebuilding the machine.

I had fifteen dollars left of the money dad had got by mortgaging the house. The mortgage was coming due in less than five months. The machine was wrecked. I knew I would have to hurry, or there would be no hope of winning one of those aviation prizes in time.

"No, Art, don't worry about that aeroplane; you just get well and go back to work for Mr. Weatherhogg. We'll manage, somehow," mother said to me every time she came into my room and found me working over a drawing of some part of the machine.

Then I told her again how I planned to make enough money that summer to send dad to Chicago, or even to New York to consult the best oculists.

One night, just as I was going to sleep, dad came up to my room and sat down.

"How are you feeling now, Art?" he asked.

"Fine," I said. "I guess I'll be able to get back to work on the aeroplane tomorrow.

He said nothing for a long time.

"I've been thinking perhaps you had better go back to the office," he said then. "You know your mother and I don't want you to get hurt."

"What will you do about the mortgage?" I asked.

"That doesn't matter. We don't want you hurt," he said again.

"I lay there and thought it over. Suppose my flying never did make enough to pay the mortgage, or to save dad's eyes? Suppose I only kept on trying, and having accidents, and never was very successful? Suppose some day I fell from four hundred feet, instead of forty?

"But dad, I WANT to be an aviator," I said.

After a minute dad got up.

"All right, Art," he said. "I will help you all I can."

Next day I was back at work on the aeroplane. There were materials left from the supplies I had first ordered, but there was another six months' work to be done in rebuilding.

I brought the engine back to the barn, and began. I worked on that machine sixteen, eighteen hours a day. It was maddening how many small details had to be gone over and over. I borrowed the money to get my idea for the stabilizer patented, but I did not try to build another. There was not enough time. I took off the elevating plane I had in front of the machine, and left only the tail-flaps.

Nobody believed the machine would fly but dad and mother and Aimee. I did not see my boy friends very often; I was too busy; but I knew they were all laughing at my idea of being an aviator. Most of them were working and earning good wages. They were having good times that summer. Half a dozen of them were taking Aimee out to picnics and parties during the week. I had no time to see her except Sundays.

She always kept her Sunday for me. I took her to church in the evening, and she said I never talked about anything but the aeroplane. She believed it would fly, she told me a dozen times every Sunday. After I talked with her I always hated to wait until Monday morning to get back to work on it.

Dad had given up his carpentering altogether, but he made a couple of small deals in real estate. They kept the bills paid. In the evenings he sandpapered parts of the machine for me while I worked on something else. We never spoke about the mortgage, but I thought about it all the time I was not thinking about the aeroplane.

We did not have many fancy things to eat in those days, but mother was a great manager. She always saw to it that I had all I could eat of good substantial food, and she made the best pudding of stale bread that I ever ate. She was worried a great deal about the mortgage.

"Do you think she will fly this time?" Al asked me one night. He came often in the evening after his own work was done. He was a cigar-maker.

"She's got to," I said.

Even Al was not very sure of it, but he helped me as much as he could.

One day I went down town for something, and met Mr. Weatherhogg on the street. He stopped and asked me when I was coming back to

the office. He said I would make a good architect, but it was foolish of me to waste so much time on the aeroplane.

"Whenever you get over that idea, you come and see me," he said. I told him I was going to fly, first.

I never knew time to go so fast as it did that summer. Something was always going wrong and making me do the same piece of work over again. The connecting rods had been badly bent, and I had to straighten them out again and make them fit. They had to be absolutely straight. It was hot work in the barn those summer days.

I will never forget the week before the mortgage fell due. Dad was trying to get it renewed for another year. He had managed to get the interest paid, but times were hard and our place was beginning to be a valuable piece of property. It is worth today ten times as much as it was then.

I worked hard all week on the aeroplane. If I could only get it to flying well, I thought perhaps we could raise some money on that. It was almost done.

That Saturday night at supper mother was so determined to be cheerful I knew dad had not succeeded.

"What did you do about the mortgage?" I asked him finally.

"Your mother and I were going to speak to you about it," dad said. "We have a chance to trade our equity for a couple of lots out on the edge of town. The bank will not mortgage again."

"Is there a house on the lots?" I asked.

"No," dad said. Mother got up and went into the kitchen.

"I got permission for you and me to live in the barn for a couple of months. Mother can go visit cousin Annie," dad said.

Mother had always been so proud of the house, and so independent. I could not say a word. Then she came in from the kitchen, cheerful as ever, and started to say something about how she would enjoy visiting cousin Annie. I got up from the table.

"I guess it's all we can do, dad," I said.

I went out on the front porch and walked up and down. Then I thought I would go and see Aimee.

When I got to her house she was on the porch, all dressed up, and there were three other boys there. I never saw a girl so popular as Aimee. She loved to tease, too. Think of having three boys call at once, and then sit there, innocent as you please, and entertain them all, while they did not know what to do!

"Hello, Aimee!" I said, standing on the steps. I was wearing my best suit, but it was a year old, and I could see the other boys looking at it.

"Oh, hello, Art. We were going for a walk, weren't we?" she said, right away. She got up and came down the walk with me and left the other boys sitting there.

When we got to the gate she stopped.

"You mustn't come here any more, Art," she said. "Papa says I can't go with you any more. He says you're no good, because you haven't any steady job."

CHAPTER VII.

OF course Aimee did not know about the mortgage, and that dad and mother had lost their home that day on my account, or she never would have told me I could not come to see her again, She was nervous, I suppose, with those three boys waiting on the porch, and afraid her father would come out and speak to me before them.

Perhaps it was the best thing she could have done, though. I had been so discouraged. When she said that I felt like fighting.

"Your father thinks I'm no good, does he? I'll show him!" I said. "Don't you think for a minute I'm licked. I'm going to fly. He'll see."

"Hush," said Aimee. They'll hear you."

"I don't care who hears me. I'm going to fly. You just wait and see," I said.

Aimee looked frightened.

"Im coming over tomorrow night, too, you tell your father that," I said. "You want me to, don't you?"

She said she did.

"All right, I'll be here," I told her, and left her.

Going home I thought again about dad and mother. I thought of poor dad, nearly blind, turned out of his house, away from mother, having to live in a barn. I thought of all his plans for being successful in his work, and prosperous, and giving mother and me a nice home. I thought of mother, how game she had always been, always doing so much and proud of doing it well. I knew just how she would feel, visiting around, with no money and no home of her own.

I walked up and down the street a long time.

Then I met Al, my chum. He was a fine, true pal, white all the way through. He stood by me then in a way I will always remember. We

were only boys; he was about my age, 16, but that night he showed me what real friendship between men is.

"Hello, Art!" he said. "I heard about the mortgage."

I did not say anything. He turned around and walked with me.

"Look here, don't you need somebody to help you with that machine?" he said. "you can't do it all by yourself. I've been thinking about it. What do you say if I quit my job and come help you? I have some money saved, too, almost fifty dollars, we could use that."

"Al, that machine's going to fly. I know it's going to fly," I said.

"Sure it's going to fly. You can pay me back when it does," he said. He walked all the way home with me, talking over plans. He said he had talked his father into letting him help me for awhile, anyway. He had been wanting to do it all summer. "I'll come over Monday and begin," he said when he left me.

"Ill pay you back some day," I told him.

"Don't you worry about that, that's all right," he said.

He has a cigar factory of his own now, in Indiana. He is doing well. It is a great pleasure to me to think that I was able, later, to help him a little in getting started. I care for him today as deeply as I do for anyone on earth. Every ounce of manly affection I can feel belongs to Al Wertman, for the splendid, unselfish service he gave me in those days.

Next evening, when I went over to take Aimee to church, her father was not there. On the way home I asked Aimee what he had said.

"Oh, mamma told him not to make such a bother. She said it was a boy-and-girl affair," Aimee said.

"They don't know much about it, do they? It's lots more than that, isn't it?" I asked her.

She said, yes it was. I suppose if I ever really proposed to Aimee, in words, that was the time.

Next day Al and I put up the big tent on the old Buffalo Bill circus grounds and moved the aeroplane out there. One of us stayed there every night to see that nothing happened to the machine. All day we worked at it, eating a cold lunch at noon.

Mother went to visit, and dad and I lived in the barn.

Before the two months were up dad made a real estate deal and got enough money to rent a house for him and mother. Then Al and I moved to the tent. We put a couple of cots in it, beside the aeroplane, and got a camp stove.

It was great fun, living there. After a long day spent on the machine we slept like tops in the fresh, open air. We were up early in the morning, cooking bacon and cornbread at the fire; then we put something to stew for dinner and supper and went to work again. The only thing that disturbed us was the wind. It used to come up in the night and sweep across that open field so hard it pulled the tent pegs out. Then we rushed out and hammered them in again.

I took the machine out almost every day. That first accident had taught me the value of the aeroplane; I never risked it foolishly again. I was determined to be cautious. It rose like a bird, but I had the controls tied so that it could not go more than four or five feet high. I was going to learn to fly before I tried it again.

Up and down across that field I went, just a few feet in the air, learning how to fight bad air-currents, how to manage the aerilions and balance, how to turn around.

Turning around is one of the hardest things to do in an aeroplane. Suppose you are going as a rate of sixty miles an hour against a wind blowing at the same rate. The machine will stay in the air, but it will be standing still. Then you turn around—the velocity of the wind and your own speed added means that you will go at the rate of 120 miles an hour. To make the turn sharply, as you would in an automobile, will catch you in such a whirl of air and at the same time give you such a tremendous increase of velocity that your machine will be blown to earth like a leaf. You have to tack carefully, like a ship in a terrific storm. When an aviator makes a beautiful, sweeping curve he may be making a desperate fight up there in the sky.

Every time I landed that summer I broke something, usually a wheel. Automobilists need not think they have the only troubles with pneumatic tires. An aeroplane must pick up momentum before it flies; it has to do it on pneumatic tires. A blowout when your speed is fifty miles an hour, before you rise, or just as you land, is a serious matter. That summer, landing from only a few feet in height, I had one every day. Usually I smashed the entire wheel.

At last we had so little money and were so desperate over the time involved that we hit on a new idea. The rims of the wheels were iron; when I crushed one out of shape we hammered it back into something like a circle, and wound the rim with good stout rope, in place of a tire. We fastened the rope in place with baling wire. Then I took the machine out and smashed the wheel again. Sometimes it was discouraging.

Dad came over every day. He used to stand by the tent, listening to my motor, and when it came down without an accident he was as happy as I was. One day, after months of this work, he brought me an amazing bit of news. The Curtiss string of flyers were to give an exhibition at the driving park the following week.

I was delighted; it seemed almost too good to be true that after nearly eighteen months' work on my own machine I was going to have a chance to examine another one. I thought perhaps I could make arrangements to fly at the exhibition, too.

When I got to the driving park to see the manager one of the aviators was already there, watching his machine being put up. It was a proud moment when I was introduced to him. He seemed very much inter-

ested at finding an aeroplane in Fort Wayne, and listened in amazement when I told him how I had built it.

I took him to see my work. Al and I wheeled the machine out of the tent and the aviator went over it carefully while I explained parts of it to him. I certainly was proud of that aeroplane.

It was a great moment, showing it to a real aviator.

After he had looked it over the man stood back and shook his head.

"That machine won't make a flight," he said. "Never in the world."

CHAPTER VIII.

I FELT stunned for a moment.

"But she has been flying. I have had her off the ground several times this summer," I told the aviator.

He was one of those men you cannot convince by facts, if their own opinion is different.

"That machine won't make a successful flight," he said. "It is built all wrong."

He went on to show me every point in which it differed from his own. He was absolutely sure it would not last through a real flight. He told me hair-raising things about the upper currents in which I had never been.

When he had gone back to the driving park I sat for a long time and thought. I was sure my machine would fly. Of course, I had never taken it more than a few feet from the ground. I was only a boy, ignorant of aviation. He was a real aviator, trained in the famous Curtiss school. But I knew my machine would fly. Nothing would alter that conviction.

All that night I thought about the aeroplane. I went over it point by point in my mind. Next morning I told Al that I would make a high flight that day.

By this time Fort Wayne people were very much interested in my machine. All summer little groups of them had come out to watch my work—we call such low flying "trimming the daisies." I had never been more than three or four feet from the ground.

When word went out that I meant to attempt a high flight a large crowd came to see it. Mother and dad were there, full of anxiety. Dad went over the machine with me, trying to see every bolt for himself. I did not tell them what the aviator had said.

When I was sure the machine was in good order I untwisted the wires which had held the controls and got into the seat. Al started the engine. I was off.

I ran straight down the field, picking up speed rapidly. The machine was going about fifty miles an hour. I was just about to pull back the wheel and rise when I felt a fearful shock.

The machine skidded sidewise, leaped over the rough ground in great, shaking jumps. There seemed to be a smash every time it hit. Then it stopped. I had crushed the rear wheel beyond any hope of repair.

When they saw what had happened some of the crowd cheered a little to encourage me; some of them laughed. They began to go away.

I stood there looking at the machine. I was terribly disappointed. Al came over and clapped me on the shoulder.

"We'll never get that wheel pounded into shape again, will we?" he said.

"Al, that machine will fly. I know it will fly," I said. "That aviator may be right about the wheels. He may be right about the chassis. But I know he's wrong about her flying. I'll make her fly yet."

There was no hope of my attempting to fly at the aviation meet with that smashed wheel. A new one would have to come all the way from New York. I had no money to pay for one, anyway; they cost $6.50 each, plus express charges.

Then Al had a great idea. He suggested that I take my machine to the driving park, put it in a tent, and charge admission to see it. He said Fort Wayne people would pay twenty-five cents to see an aeroplane made by a Fort Wayne boy and to hear me explain it.

We took the machine over and tried it. Al was wrong. They would not pay twenty-five cents, but they would pay a dime. After we reduced the price we had some one in that tent all the time. We took in $15.50 that week.

Every day the aviators came over and laughed about that machine. None of them took it very seriously. They thought it was a great joke, all patched up as it was. One wheel was gone and the other had been hammered into shape so often it was about as round as an egg.

They were fine fellows, most of those aviators. They liked me. Several of them said that I might become an aviator if I would build the machine differently and would go to aviation school to learn to fly. They let me look at their machines and spent a great deal of time explaining them to me. It was the first time I had ever seen another machine.

When the exhibition was over Al and I discussed what to do with that $15.50. It was more money than either of us had seen for months. It would buy another wheel and leave us something for food. For the last few weeks we had been living on bread and butter and apples. On the other hand, both of us felt that I should learn more about aviation.

Those Curtiss flyers had made me realize the great handicap of my inexperience. I knew there were aviation centers in Chicago and St. Louis where I could learn a great deal.

I thought it over carefully and decided to go and visit them. Al said he would come with me. I went out to talk it over with mother and dad. They had just moved into a little rented house in the edge of town. I never went into it without thinking that they had lost their own nice home giving me my start. I was resolved to make it up to them some day.

Mother was cheerful, as ever, but when I told them my idea of going to Chicago she looked troubled. She said she did not like my going so far away from home. Mother was never meddlesome, but she always had a great influence over me.

People often ask me why I do not smoke or drink. They think it is because I must keep my nerves steady. It is partly that, of course, but the reason I never began those habits when I was a boy was because of mother. She wanted me to keep away from things that were not clean and fine. I suppose all mothers feel the same; but when my mother wanted anything done she saw that it was done.

"I've got to know more about aviation before I fly," I told them. "I know I can fly if I can just keep at it a little longer. Those aviators are all wrong. My machine will fly, and I'm going to fly it. I want just a chance to see how the other men do it in the big schools."

Finally they consented to my going to Chicago. I went to see Aimee and tell her good-by the night before I started. It was lonesome for her in those days. There never was a girl who enjoyed being out with her friends more than Aimee. I was working too hard on the aeroplane to see her often. I did not have a dime to spend in taking her to the parks or to parties. But she stood by me without a word of complaint all that time. She stayed at home because she would not worry me by going anywhere with any other boy. When I did see her she was always encouraging. She always seemed to believe in that aeroplane as much as I did.

When we said good-by that evening I told her that when I came back I would win one of those aviation prizes and buy her a ring.

That night, when the late freight pulled out for Chicago, Al and I were in one of the empty box cars. We had to travel that way. We had to save the $15.50 for food.

CHAPTER IX.

ON that trip to Chicago I had my first glimpse of poverty in a big city. It is horrible. I had never imagined that there are people in the world so poor that they cannot bathe. When times were hardest in Fort Wayne I could always have a good bath at night. It was a matter of course. In a big city it costs money to be clean.

We got rooms at the Buck Hotel in Congress street, fifteen-cent rooms. They were like cells in a bath-house. There were no windows; the partitions did not reach the ceiling. Not even the sheets were clean. It was the best we could do; we had to save our money for food.

Early the first morning we got to the Chicago School of Aviation. I felt I must not lose a minute in finding whether or not I would have to rebuild my machine. The school was a good-sized factory on the South Side, and there were about twenty young fellows there, all making aeroplanes. I envied them. They seemed to have every sort of material needed, and models, and drawings from which to work. They were turning out complete machines, beauties.

We hunted up the manager and asked him about the requirements for studying there. The charges, he said, were $350 for permission to work in the factory; lessons in flying were extra. We thanked him, and left.

That afternoon we spent at the Hawthorne racetrack, looking at aeroplanes there. I was delighted to find that they were using the same make of engine I had. My engine was right, it seemed, but I was beginning to think I had built my chassis wrong. That was the reason I had smashed the wheels so often, I found.

When we had exhausted the opportunities for asking questions there, we walked a mile to the Cicero field. There we found every possible

sort of aeroplane. It was a mine of information. It was there I first saw a Hall-Scott motor—an eight-cylinder beauty, all nickel-plated, running like a watch.

I saw a machine, too, which was built of gas pipe instead of steel tubing. It was heavier, but much cheaper. I knew where I could get gas pipe at home, and made a note of it. To rebuild my chassis would be expensive.

Every day, as soon as it was light, Al and I got to Cicero field. Every day I learned a hundred new things about aeroplanes. I examined them one by one, and asked every question I could think of. The more I learned the greater became my conviction that I did need a new chassis.

At night we tried to sleep in the Buck Hotel. It was hot. The odors were bad. There was no chance to take a bath. The nights were horrible. That was the only way we could live, because we had no money. We stood it for two weeks.

I was studying aeroplanes every minute of the day, and hated to leave Chicago. At last we had only twenty cents left. We could not both have a bed for that, but I felt I could not start home without thoroughly examining a new kind of machine that had come to Cicero field. I thought one more day would be enough.

We went back to the Buck Hotel and Al got a room. I waited until nobody was in sight and then went quietly down the hall and slipped in. We had bought a bag of buns for supper. We ate those, and then tried to sleep. The room was close and hot for one person; it was almost unbearable for two. We got through the night somehow, and I had one more day to study those aeroplanes.

I definitely decided that day that my machine would have to be rebuilt. I was still convinced that it was right in principle; it would fly if it could get off the ground. However, the chassis was wrong. It had only two wheels, and was built into the machine the wrong way. If the machine got off the ground without breaking a wheel it would fly, but there would surely be a wreck when it landed.

I knew that in some way I must get money enough to build a new chassis. It would cost about $200, I figured. If I could get that money I was sure now that I could fly.

Late that evening we went to the Chicago Public Library and found a map which showed the location of the Wabash yards. We were going home.

At the yards we met two hobos. They showed us how to "grab a blind on a rattler," as they said. That means to watch your chance and hop on the front platform of the front baggage car on a passenger train. We rode there half the night. Then, at a stop, we were not quick enough. A brakeman caught us, and drove us off the train. We slept till morning in a strawstack.

Most of the rest of the way home we walked. It was a hard trip, but not as bad as a cheap hotel in Chicago. The farmers usually were glad to have us work for a meal, and sometimes let us sleep in the barns. It was summer, and when we had to sleep outdoors we did not mind it.

Three weeks from the day we left Fort Wayne we came back again. It was a warm evening. When I got out to the little house where dad and mother lived I saw mother sitting on the steps reading the evening paper to dad. I pushed open the gate and went up the walk.

When mother first saw me she thought I was a tramp. I was so ragged and dirty and tired I looked like one.

The next minute she met me, in the middle of the walk. I never was so glad to see any one. I guess she remembers the hugging I gave her yet. Then I went and shook hands with dad. I certainly was glad to get back home.

By the time I had bathed and got into clean clothes mother had a fine supper all ready. She and dad sat and watched me while I ate and talked. I told them everything that had happened on the trip, especially about the aeroplanes. Dad wanted to know what I planned to do next.

"It will take $200 to fix the machine up right, dad," I said. "Do you think I can get anyone to lend me the money?"

"We can try," dad said.

All that week we tried to borrow money on my machine. We went to the banks; they would not lend a cent on it. We tried the business men in town, dad's friends. Every one made some excuse. Money was tight, they said. Aeroplanes were too risky.

That Saturday night I was discouraged. I sat on the porch and thought and thought. I was sure, now, that if I could only get the money I would make a success of flying. Dad sat on the porch, thinking, too. After a long time I got up to go to bed.

"Art, your mother and I have been talking it over. I can get $200 on my personal note, secured on those lots," dad said. "I will get it for you tomorrow."

The lots were all dad had left in the world after he lost the house he had mortgaged to give me a start. I tried to say something and stopped.

"You know I said I would help you all I could," dad said.

"Dad," I said, "you get me that money for ninety days and I will pay it back in time. I promise you I will pay it back in time."

CHAPTER X.

THAT two hundred dollars was on my mind every minute of the next three months. Dad got the money from the bank that had first refused to lend it to me. I remember, just before the banker signed the check, he looked at dad and me over the tops of his glasses for a long time, hesitating.

"Mr. Smith, I ought to tell you that you are doing a very foolish thing," he said.

Dad straightened up in his chair.

"The lots are good security," he answered, and shut his lips tight.

The banker signed the check and pushed it to me across the desk.

"The bank will have to collect the money promptly on time, you know," he told dad.

I spent that money with the utmost care not to waste a cent. Al and I were back in the tent with the machine. We took it apart while we waited for the supplies to come from New York. We went over the engine and got it in the best possible shape. I had the work all figured out, just how much must be finished by a certain time. The note was coming due in ninety days. I allowed six weeks to get the machine rebuilt. Then I meant to try for the cross-country record and win the Scientific American prize.

There were delays. The New York shipment was routed wrong. When it finally arrived there was a mistake in it. I had to order again, and wait. Other things went wrong.

We worked in that tent as I have never worked before or since. From the first dawn, as soon as it was light enough to see, we were at it. We worked until we were too tired to hold the tools.

Al proved then the fine, unselfish friend he is. He had given me months of time without a cent of money in return. His clothes were

as shabby as mine; half the time we had to borrow a few cents from the other boys for food. He had no time for fun, hardly any for rest. There was nothing for him to gain by it, but he stood by me and did his best. I have never had another friend like Al Wertman.

All the time the thought of that $200 coming due made me work harder and harder. Dad and mother came out often to the tent. Mother would bring us something she had cooked, or make us lemonade. Dad listened to our talk about the machine and tried to see it, as we worked.

Aimee came out sometimes with mother. I was too busy to take her anywhere, or to come and see her often, but she was never cross about it. In all those hard days she was never anything but encouraging to me.

The note was due the first of November. Hard as we worked, it was almost the first of October before the machine was ready. Then I had to take it out and make low practice flights with it. I was determined not to risk it by a high flight until I knew it thoroughly.

It was hard work holding myself to that low practicing, with time getting so short. Up and down the field I went, about four feet high. That field was separated from the adjoining one by a deep ditch. One day I sailed over the ditch and flew the whole length of the other field. It was Friday, the sixth of October.

Next morning, just as I awoke very early, I saw a little black kitten come into the tent. It was so small and cunning I called it. It came over and I picked it up and petted it. I told Al it was a mascot, and we named it "Punk," and fed it.

That day I made eleven perfect trips the length of both fields and back. I was sure of myself for the cross-country flight. I announced that I would fly to New Haven, a town about six miles away.

I felt this trip would be the first real test of my success as an aviator. If I made a success of it there was hope of my winning the Scientific American prize in time to meet that note. Perhaps it would be in time to save dad's eyes. It was pitiful to see him trying to examine the machine. He was still fighting that slowly increasing blindness.

"If I make a good flight today I will earn enough money somehow to get the best oculists for dad," I said to mother the morning of the great day. She tried to smile at me, but her lips shook so she couldn't.

I have one of the best mothers that ever lived. She was game all the time. I did not realize in those days how she must have worried over my flying, with the worry over money and dad's blindness on her mind constantly, too.

There was a big crowd out that day. People in Fort Wayne had been growing more interested in my attempt to fly. I suppose a great many of them expected to see a bad accident. The newspapers had reporters there; one of them had arranged to have an automobile follow me to New Haven and back.

There was only one thing missing. Aimee's mother would not let her come over to the tent to speak to me. Neither of her parents wanted

her to see too much of me. They liked me well enough, but they did not believe I would make a success of flying, and they did not want Aimee to marry an aviator, in any case. They imagined they were the only ones who had thought of the possibility. Their idea was to keep Aimee and me apart, so that we would not think of it.

It was a beautiful day, not too windy, and the air-currents were steady. With a boy's idea of keeping luck with me, I had Punk, the kitten mascot, comfortably purring in a birdcage, fastened behind my seat in the machine. Everything was ready.

I went carefully over the aeroplane for the last time. It was all in good order. Then I looked into the gasoline tank. It was empty. Al had forgotten it. We had no gasoline, and no money to buy any.

Al took his cap and went out of the tent. The crowd was impatient to see me start; they only needed to have the situation explained to them. In a few minutes Al collected $2.50. He rushed to buy the gasoline, and we filled the tank.

Then we pushed the machine out of the tent and I settled myself in the seat.

"Now be careful, Art," mother said. She was standing close to dad, to tell him what happened. I promised I would be careful. Al gave the propeller a whirl, the engine began a steady roar, and I was off.

The aeroplane rose beautifully. Little by little I lifted her up into the sky, and at every lift I felt like shouting. There is no sensation in the world like that of driving an aeroplane up and up. The air beats against your face, things below get smaller, there is nothing around but air and light. There is no jar, no vibration, just smooth, swift going.

A couple of hundred feet in the air I stopped rising and started straight-away flying. I could see the crowd down on the ground, a black mass of people, with all the white faces staring up. I swung the machine around above them in a long curve, and started for New Haven.

I was triumphant. This was real flying, all my months of work and thought were justified now. I flew along, high over the beautiful flat farming country, with the wind hard against my face. I wanted to go higher, really high, several thousand feet. I lifted the machine a little more; she answered the wheel perfectly. I drove up to about five hundred feet.

Then suddenly there was a terrible silence about me. I heard a loud squawl from the kitten in the cage behind my seat. The engine had stopped.

CHAPTER XI.

IN a moment like this an aviator's nerves must be steady as steel. There is no time to think. The only chance is to act, to act quickly.

I had never been more than a few feet from the ground before, but I had read of volplaning; I knew the theory of it. With my engine dead, my only chance for life was to volplane.

Before my momentum slacked, almost on the instant the engine stopped, I pushed the wheel forward. The machine dipped downward, hesitated, almost stood on end—I pulled back on the wheel again.

I had to get the right angle to that forward glide. I did not know what the right angle was.

The theory of volplaning is simple. The only thing that keeps a heavy object in the air is momentum. In an aeroplane this momentum is furnished by the engine. When the engine stops the momentum fails; the machine drops like a spent bullet.

There is only one chance to keep it in the air. That one chance is to use the momentum of falling to keep the air-resistance under the planes. Instead of coming down under the power of the engine, you come down under the power of gravitation. Both of them give momentum.

But you have to hold the planes at the exact angle of safety. If you fly too straight you lose the forward momentum. You drop. If you tip the planes too much, fly too straight down, the planes do not offer enough resistance to the air. The machine will fall edgewise.

That day in the air I found the exact angle.

It seemed to take a year to do it. It was perfectly still up there, not a sound after the engine stopped. Once in awhile the cat yowled in the cage.

I remember how my wrists were aching when I struck the right angle and slid down it to the earth and safety. After the machine stopped on the ground I felt quite shaky.

I jumped out to see what ailed Punk, the kitten mascot. The poor little cat was hanging on to the top of the cage by its claws. The bottom of the cage was full of boiling water.

The connecting tube to the radiator had broken, splashed boiling water on the cat and on my magneto connections. The magneto had short-circuited and stopped the engine.

I had hardly got the kitten out of the cage and was looking at it to see if it was really hurt, when an automobile came racing down the road. In it was Aimee, with the two reporters. Aimee knew them, and had come in the automobile to watch my flight.

She was terribly frightened when she saw me coming down so suddenly. She thought I had fallen. We certainly were glad to see each other.

Aimee took the kitten and comforted it, while I examined the magneto connections. I saw that I could fix them and complete the flight, but to do it I needed a soldering outfit. Several people had collected by this time, and a boy on a motorcycle offered to go on to New Haven and bring me the soldering tools.

While he was gone Aimee and I walked up a little hill and sat on the grass. It was a beautiful day; we talked and played with the kitten. It did not seem any time at all before the boy was back with the tools.

"Dollar, please," he said.

I did not have a nickel in the world. I had not supposed getting the soldering outfit would cost anything. I thought the boy had offered to get it in pure friendliness, and I had been feeling grateful to him all the while he was gone.

Aimee came to the rescue. She lent me a dollar, and I gave it to the boy. Then I repaired the magneto connections, Aimee put the kitten back in the cage, and I went on in the aeroplane.

I finished the trip. I will never forget the landing, back on the circus grounds in Fort Wayne again. I came down beautifully, stopped so gently it hardly woke the kitten, sleeping in the cage.

That was the first time I ever saw mother cry. She ran across the field, clutched me in her arms, and went all to pieces.

The crowd had gone wild. It surrounded the machine and cheered for five minutes. Every time they stoppeed they went at it again. I hardly knew what to do. Dad and mother and Aimee were proud as could be, and it certainly seemed good to me, after all those months of effort.

Somebody took his hat and started a collection on the spot. That crowd gave me $28. It was the first money I ever made in aviation. When they gave it to me I could not say a word, I was so pleased. I made up my mind right then to celebrate by taking Aimee to a show that night.

She would only let me take her to moving pictures and buy her a soda. She said I needed the rest of the money for the machine. It was a wonderful evening for me, though.

Next day I had an idea. The $200 note was due in two weeks. I thought if I could give an exhibition at the driving park, as the Curtiss flyers had done, I might make enough money, with what I could borrow here and there, to meet it. I went to see the park managers, Mr. Streetor and Mr. Sprague.

I knew nothing about making the arrangements, but I was willing to give them most of the gate receipts if they would let me have a little. They were keen, clever business men; I expected to give them the larger part of the profits; I told them I thought they could make good money out of it.

I sat on the edge of a chair and felt uncomfortable while they talked together in low tones. I was afraid they would not consent to the plan at all. I will never forget how I felt when finally Mr. Streetor told me their decision. ,

"A boy like you is a credit to Fort Wayne," he said. "The whole town ought to do something for you. If the newspapers will give us space, and the printers will give the tickets, we'll give you the use of the park. You can have every cent that's taken in."

I was the proudest boy in Fort Wayne that day, walking down the street with them to make arrangements. The printing company said they would give the tickets, the men in the newspaper offices were enthusiastic. Everyone on the street stopped to speak to me and congratulate me on the flight.

"Now, you take care of that machine between now and the twenty-first," Mr. Streetor said to me. The benefit was to be on the twenty-first. The $200 note was due on the twenty-third.

I hurried out to the tent. I had promised to meet mother and Aimee there at noon. It was already almost 3 o'clock.

When I got to the old circus grounds I was amazed. The biggest crowd I had ever seen was there. The street car company had put on extra cars to handle the rush. When I appeared they threw their hats in the air and cheered till they were hoarse. Aimee was there, waiting for me with mother, but I did not have a chance to speak to them.

Half a dozen men got me up on their shoulders and took me through that cheering crowd to the tent. Al, excited by all this enthusiasm, had put up the sides of the tent and wheeled the machine out. The crowd was shouting to me to make another flight.

I knew I should not do it. The air was a little choppy. I was so wrought up by all the excitement and enthusiasm of the crowd, though, that I felt I could do anything. None of these people had believed in me for so long it was intoxicating to have them cheering me for minutes together.

Then I saw Aimee, on the edge of the crowd. She was standing on something high, and she waved and clapped her hands at me. I said to myself I would make another flight, I would show her again what I could do.

I got into the seat and took the wheel, while the crowd cheered again. Al started the engine, and I skimmed down the field and into the air.

The minute I was up I knew I should not have done it. Air-gusts kept catching at the planes, tipping them. It was hard fighting to hold the machine steady. I could not make a curve and return to the starting place.

I went higher and higher, hoping for a smooth, flowing current of air. At about 200 feet I found it. I got the machine around and came down.

Just before I touched ground a great gust of wind caught me. It turned the machine on edge. There was not enough space to save myself.

There was a tearing, crashing shock. The machine dragged along a bit, and stopped. The crowd was cheering again, but the left wing of the machine was smashed to bits.

CHAPTER XII.

AL and I pushed the machine into the tent and looked it over. The crowd was still cheering and shouting outside.

I felt mighty sober. The left wing of the aeroplane was hopelessly wrecked. In ten days the $200 note would be due. I knew there was no chance that the bank would give dad a minute longer than that. My only hope of paying it was to fly in the benefit Mr. Streetor had spent all that day arranging for me.

"Al, we'll have to rebuild that wing this week," I said.

"How can we, when we haven't any material?" Al wanted to know.

Mother and Aimee came in then. I told them about the benefit, and they looked at the smashed machine. Neither of them said a word about how foolish I had been to make a flight just because the crowd had cheered.

I made up my mind that day never again to make a risky flight because the crowd wants it. I have made hundreds of flights since, more risky than that one, but never because the crowd cheers. The same foolish feeling I had that day has killed more aviators than I like to count. It is an aviator's business to know the air, to know his machine, and to take the risks which he must take with a cool head. I am glad I smashed only the machine the day I learned that lesson.

Smashing that left wing was disaster enough. Even if I had had all the material, rebuilding it in time for the benefit would have been a big job.

"Are you going to be able to get it done in time, Art?" was the first thing Aimee said.

"It's got to be done in time, somehow," I told her. Al began to say something about having no material, and having too little time, but she would not let him finish.

"If Art says he can do it, he'll do it, and you know it!" she said. She has always felt that way about my flying.

Al was willing to work all day and all night, if necessary. The great trouble was material. The ribs of the planes were of wood. Every piece had to be air-dried, tested and varnished again and again to make it moisture-proof. The cloth had to be the right strength and weight. It had to be varnished thoroughly, too. An aeroplane goes through so many stratas of damp air that if any part of it absorbs moisture it makes a difference in the weight of that part. This is especially true of the planes, because they are so large and have so much surface.

In all Fort Wayne there was no wood or cloth properly prepared.

Mr. Streetor was doubtful about the benefit when he heard of the accident. He came down to the tent to suggest postponing it. I told him I would have the machine ready in time. He knew so little about the difficulties of doing it that I persuaded him that I would.

Al and I worked all that night getting wood for the ribs in shape. They could not dry properly in a week, but we thought we could make them do. Next day I hunted for cloth to match as nearly as possible the cloth on the other plane.

There was a crowd around the tent every day. The newspapers were giving a great deal of space to the benefit; everyone was interested. Inside the tent Al and I worked. We worked every minute. We did not waste a motion or a second. Time seemed to go like lightning.

We got the substitute ribs in place and varnished them afterward. We experimented with several kinds of cloth that were no good before we got linen that was light and strong enough. There was no time to varnish it. We used shellac.

The benefit was to be given on Saturday and Sunday. The note was due Monday. Late Friday afternoon we got the left wing finished so I thought it would do. That night it rained.

I lay on my cot that night and listened to the wind and the little gusts of raindrops.

I was out at dawn looking at the sky. It was cloudy, but the rain had stopped. Summer was gone, the fall weather was setting in. It was cold, and the wind was coming in heavy gusts. The air was very rough, but I was glad to see that the ground was not too soft for the aeroplane wheels.

I tried a little practice flight that morning. My hands got numb on the wheel, from the cold, and the planes kept tipping badly. I almost had another bad accident in landing.

That forenoon I went down to the bank to see if they would extend the note. The banker said it would be impossible.

I went back to the tent, and Al and I moved the machine to the Driving Park, where the benefit was to be.

The crowd came early, disagreeable as the weather was. Several hundred were in the grandstand by 2 o'clock, already impatient to see me fly. Nearly three hundred dollars worth of tickets had been sold.

Mother and dad were in the tent. They did not realize how bad the air-currents were, but they were terribly worried. I remember wishing we had had more time to rebuild that plane, so I would feel quite sure of it.

There was a great cheer when we brought out the machine. It looked odd, with the two wings so different in color, but the crowd was enthusiastic just the same. They cheered and shouted impatiently for me to start.

"You're sure it's all right, Art? We don't want you hurt," dad said. I went back to shake hands with him and told him it was all right, sure. We never were a demonstrative family, but mother looked so worried that day I gave her a good hug before I started.

The clouds were racing across the sky, and even on the ground the wind was blowing in bad gusts. The minute the machine was in the air I felt them catching the aeroplane.

I flew low at first, trying to get the plane under control. There was space in the driving park to make a wide circle, about fifteen feet high, but I knew I would have to go higher to satisfy the crowd. I remembered all I could of the things the Curtiss flyers had told me about the dangerous upper air-currents.

Then I pulled the wheel back, and went upward.

It was my first experience with the whirlpools in the upper air. They are exactly like whirlpools in bad rapids in a river. They swirled all around me as I flew upward, catching first one plane and then the other and tipping it dangerously.

When one plane tips downward too much it can sometimes be righted by flying in a curve, with the tipping plane on the outside. The curving has a tendency to throw the outer plane higher. But in bad whirlpools this does little good, because another swirl in the air catches the wings again.

I went higher, hoping for a chance to get the machine around and come safely down. My hands felt numb and almost frozen, holding the wheel. I was about three hundred feet high, when a terrific wind caught me.

It tipped my right wing upward. I felt the machine going. Desperately I swung to the right. My left plane rose. The machine righted itself. The planes were rocking.

Then the wind caught the left plane and flung it up. The machine stood on edge. I fell, sheer.

CHAPTER XIII.

NOTHING but my mother's prayer saved me.

I know there are people who do not believe in God. They have never had a mother like mine, or they have never been aviators. I play a game with Death every day, up there in the sky—a game whose cards are God's own great, clean forces—gravitation, momentum, the keen, strong winds of the upper air—and I believe in Him.

When my mother saw me falling she screamed once. Then she fell on her knees and cried to God to save me.

I fell straight, the machine edgewise. It gave no resistance to the air; it fell with all the weight of its half-ton of wood and metal.

There was no time for thinking. I threw every ounce of my weight against the controls and fought those planes madly. Twenty feet from the ground they gave way, fluttered, straightened out. They caught the air again.

I landed two hundred feet farther down the field, safe.

Mother ran across the field and caught me. She fainted with her arms around my neck.

Dad came, too, as fast as he could. Aimee and Al got there, and some of the others. We got mother into the tent and revived her, while the crowd shouted itself hoarse. Then I shook hands with dad for five minutes, I guess.

"Well, dad, I guess that note's paid all right," I kept saying. I felt rather shaky myself.

Thinking it over afterward, I realized just how the aeroplane had acted. I use the same principle every day, now, in my sidewise roll. When the aeroplane falls sidewise, the only thing which gives any resistance to the air is the rudder. In straight-away flying the rudder is vertical. When the machine is on edge the rudder is horizontal. The

body of the machine, then, falls faster than the rudder. That little bit of canvas, holding the air, falls slower. It pulls back until the body of the machine is directly under it. Then a quick, hard lifting on the planes pulls them up again, just as it does in a vertical dip. The planes catch the air, and the machine is right side up again.

I did not think, that day, that I would ever be repeating that terrible fall daily, as a matter of course. I refused to fly again that afternoon. The crowd was satisfied, they cheered again and again before they left the park.

The next day the air was still choppy, but I made two short flights and came down safely. The gate receipts were $589.50. I remember just how Mr. Streetor's check looked.

Monday morning I walked into the bank with all the feeling of a millionaire. Dad paid the note. I felt like playing leap-frog over that solemn banker's own desk.

Everyone who met me on the street had to stop and congratulate me, now that I had succeeded in really flying. They said they had known all the time that I would be a great success. I went to all the boys who had been lending me a little money now and then and paid them. I gave dad and mother some money they needed. I sent a check to New York to get material to rebuild that left wing properly, and to get a new wheel for the aeroplane.

When it was all done there were only a few dollars left. I wanted to give them to Al, but he refused. He said he would go back to work again, now that the machine was finished and I was flying in it.

"Well, anyway, you need clothes," I told him. "You've worn out everything you have. I'm going to buy you a new pair of pants, anyhow." So we went downtown and bought him a pair. That was all he would take from me for the splendid, unselfish work of all those months.

I have never been able to get him to take anything for it since. The only way I have persuaded him to take any help from me at all has been on the same basis I took his services in those days, because we are friends, and he needed help to realize his own ambition.

I felt then that I was successful. I thought all my struggles were over, that the rest would be easy. I would win some of those aviation prizes, take dad to the best oculists, buy back the old home, marry Aimee —there was nothing I did not imagine was within reach, right then. Everyone was clapping me on the back and saying that "Fort Wayne's bird-boy was a credit to the whole State."

The next spring I had to begin all over again, against worse discouragements than before.

The week after the benefit a man came out to the house to see me. I had put the machine in the barn for the winter. The weather was too bad to risk any more flights. I meant to work in Mr. Weatherhogg's office

for a few months and go over the machine in my spare time, to have it all ready for flying in the spring.

We were eating breakfast when the man called. He was from the Mills Aviators in Chicago. He said they had heard of my spectacular flying, and wanted to book me for a series of flights in Texas that winter.

"There's big money in it, big money!" he said, enthusiastically. He was a fat, well-dressed man, with a diamond in his tie, and diamond rings. He said he had bookings for Bay City and Bryan, Texas, which I could fill immediately, and that he would give me a year's contract with Mills Aviators which would make me thousands of dollars. The two flights already arranged should make me at least $2,500, he said.

It looked big. I would be learning more about flying all the time, too. I thought it would be a good idea to go. Dad and I said we would think it over and let him know that night.

That afternoon I went to see Aimee. Her father and mother were there. It was cold; the whole family was in the sitting-room by the fire. They had a large, beautifully furnished house. Mr. Cour, Aimee's father, was with a Chicago firm and had a large income. Aimee and her sisters always had all the pretty clothes and spending money they wanted.

Mr. Cour was very pleasant to me that day. He spoke about my flights and said he was glad to see I had succeeded with them. Then he began to talk about the dangers of aviation and how precarious it is. He said the same amount of thought and effort would make me very successful in some other business. He urged me to give it up and do something else.

"You make friends easily, everyone likes you, Art," he said. "But your friends wish you would give up this foolish idea of yours about flying. Come into my own line of work, or go back to architecture. You could make money, and have a nice little home after awhile, right here in Fort Wayne." I knew he meant that he would not object to my going with Aimee, if I would give up flying.

"I can make better money flying, Mr. Cour," I said. I told him about the offer from the Mills Aviators. He seemed disappointed, and did not say much more. I knew it would be no use telling him I meant to fly because I wanted to fly. It did sound foolish to say.

They gave me no chance to talk to Aimee alone that afternoon. I said to myself that when I came home in the spring with a big bank account they would think differently about my flying. That night, after talking it over with dad, I signed the contract with the Mills Aviators.

Next day I began taking the machine down for shipment. I was to fly in Bay City, Texas, three weeks from that day.

I had removed only a bolt or two when the whole machine collapsed. All those small accidents while I was learning to fly had been too much for it. The whole framework went to pieces before my eyes.

CHAPTER XIV.

DAD came out when he heard the crash of the collapsing machine, and we went over it. No wonder the framework had gone to pieces. Some of it had been rebuilt more than thirty times. The wing-bars had been spliced at almost every strut-connection. Every one of those small accidents while I had been practicing flying that summer had left some patch, or splice, or minor repair on the machine.

I knew I could make thousands of dollars flying that winter. I had signed the contract. To give it up and begin all over again to build a new machine seemed impossible to me then. I felt I was on the verge of a big success; I wanted to prove to Aimee's father that I could succeed.

I meant to fly if I could make the machine hold together long enough to get it off the ground.

I finished taking the machine apart, and then, piece by piece, I spliced and patched it. I strengthened it as well as I could, with new bits here and there.

I started for Texas three weeks later, with the machine in as good condition as I could make it. My first contract was in Bay City; I was to get $1350 for four flights there. If the machine would hold together to make them I could get some new parts then.

Aimee came down to the train with mother and dad to tell me good-by. I had seen her as often as I could in those weeks, and she was confident that when I came back triumphant in the spring her father would see things differently. I told her I would buy her an engagement ring with the Bay City money. She said she did not mind about the ring, but I knew she would like one.

I had been obliged to figure so closely on time, because of repairing the machine, that I reached Bay City on the morning of the day set for my first flight. The carnival had already begun. All Bay City was in a flutter of excitement. Most of the people had never seen an aeroplane. No arrangements had been made for setting up the machine. I got it out to the fair grounds and tried to put it together.

The crowd kept crushing in on me, and some of them tried to carry away parts of the machine for souvenirs. It was hot. The wind blew sand in my eyes, and caught at the wings of the machine as I worked. The crowd hindered me. I worked from early in the morning until 3 o'clock, with no time for luncheon.

I was on the program to fly at 2:30. It was an hour later before I could make a start.

My flight lasted about two minutes. A high wind was blowing; I could feel it straining at the wings before I got off the ground. The minute I was in the air I knew I could not make a flight. The extra weight of the spliced and patched parts was too much for the engine; the machine could not make any headway in that wind.

I was forty feet in the air when I felt the aeroplane sinking. There was nothing I could do. The machine came down with a crash, just missing the park fence. The chassis was badly broken. I leaped clear of the wreck just in time to escape being hurt.

Fortunately, my contract called for a guarantee payment of $350 in advance. The management of the carnival paid it, on my promise to fly next day. I ransacked Bay City to find material to repair the chassis; I worked all night on it, by lamp light, in a barn.

Just at dawn I finished. It was raining.

It rained all that day. I could not possibly fly. It rained the next day, all day. The next morning it cleared for a few minutes. I got the machine out to the grounds. The wheels sank into the ground three or four inches, but I meant to fly if I could possibly make a start. Before I had time even to try the rain began again. It poured all that day.

There was nothing to do but ship the machine to Bryan, Texas, where I was booked next. My hope of the Bay City money was gone.

At Bryan I was to receive one-half of the gate receipts up to $1200. Everyone said that I would find there the finest aviation field in Texas. The park managers had booked aviators before; everything would be ready.

I felt hopeful as the train neared Bryan. All that country was one vast level prairie, the finest possible country for flying. It was clear, sunny weather, and all along the way I saw great bills advertising my flights. "Birdboy Art Smith, the Indiana Wonder," the bills described me. I guess I spent that $1,200 a dozen times, in my mind.

I was in high spirits when I got to Bryan and started for that fine aviation field. When I saw it I felt different. It was a half-mile track, and the only twenty trees in the whole country were growing on it. If they had been set out to prevent an aeroplane flight they could not have been arranged any better for the purpose.

On one side of the track was a small lake, on the other a high fence. There was nothing to do but start, somehow, among those trees. I would

have to drive the machine zigzag around them and make a speed of fifty miles an hour, to get off the ground. I set out large pieces of white paper at the curves, to show me where to turn.

There were to be two flights, one on Saturday and one on Sunday. Saturday morning was clear, with a steady wind. The machine was all ready, I thought I might make a flight all right. I needed that $1,200.

The attitude of the crowd puzzled me that day. There was a large one, but they did not seem enthusiastic. They only half-cheered.

I started on time. The machine whizzed around those trees safely, and rose. The engine was working all right. I got up to about 250 feet safely. Then I struck a heavy downward current of air, and sank.

The machine was too heavy. I could not make the engine hold it up against that current. I sank slowly, fighting all the time. About fifty feet in the air the machine suddenly let go and dropped. It came down flat.

When I was able to pull myself together and look it over, I knew it was completely wrecked. Every part of it was smashed, the wings lay flat on the ground. Only the engine was left. The crowd was jeering and hooting.

I got the engine out, boxed it up and sent for a wagon to take it to the freight office. Then I stood there looking at the wreck. It was the last of my machine.

"I'll make a good bonfire of it, anyhow," I said to myself, and poured gasoline on it. The crowd had gone home, only a few small boys were standing around. Just as I started to strike a match one of them came up and stopped me. He was a red-headed youngster, with freckles.

"Mister, us boys—we're making glides. I wish you'd leave us all that canvass and things," he said.

"Sure I will," I said. The boys gave a little cheer, the only one I got in Bryan.

I walked up to the hotel and ate dinner. Then I went over to the freight office and shipped the engine to Fort Wayne. I had barely money enough for my fare home. The Texas trip had failed. All I had left was the engine.

When I was coming up from the station I met that red-headed youngster again. He was frightfully excited.

"You'd better beat it quick before the crowd gets hold of you—they're going to rotten-egg you. They say you're another one of them fakes they've been having at the park," he said. I laughed at the idea, and went up to the hotel to get my baggage.

On my way I saw big new bills posted, saying that I would fly, as scheduled, the next day at the park, "Everybody Come. Everyone I passed looked at me in a way I did not like. When the clerk looked at me that way, too, and asked if it was true I had shipped my engine home I began to think the small boy was right.

CHAPTER XV.

I DID not wait for the passenger train that night. The atmosphere of Bryan was altogether too threatening. I left on the first train through. It was a freight, but it got me away before the Bryan crowd had quite turned into a mob.

I got no money at Bryan. All I received in Bay City had gone for repairs and expenses. I had no money even to buy food the last day on the train. I reached Fort Wayne without a cent. My aeroplane was gone; only the engine was left.

I had wired dad that I was safe and coming home, so that he and mother would not worry. It was night when I reached Fort Wayne, and I got off on the wrong side of the train and hurried home without meeting anyone I knew. I did not want them to ask me about the Texas trip just then.

On the way I remembered I passed Aimee's house. The windows were all lighted. I saw her father sitting inside reading his paper. I wanted to see Aimee, but I did not go in. I knew I was going to make a success of flying yet, but I did not feel like talking about it.

It certainly seemed good to get home and see dad and mother. They did not ask any questions about the trip. They merely said they were glad I was back safe, and mother hurried to get me a good supper. While I ate it I told them about the smashup.

No boy ever had better parents than I have. They took the news just right, without making any fuss over it. It must have been as discouraging for them as it was for me. Mother kept hurrying around getting more for me to eat. She said the machine did not matter, so long as I was well and safe; I would get another machine somehow.

Dad sat across the table, trying to see me. He could see nothing clearly now, but he kept trying.

"You know you can raise money on those lots," he said.

"I don't think I will have to do that. Surely someone will lend me enough to get started again," I said. Everyone had been so enthusiastic about my flying before I left Fort Wayne.

I went down town next day with half a dozen schemes in my mind. I was sure that among all the men who had praised me so much I could find someone to help me.

I went to them all, one by one. None of them would lend me a dollar for another aeroplane. They said they were sorry about my machine, but money was very tight. Aeroplanes were too risky, they said. They thought it would be better for me to give up flying.

I tried for weeks to raise that money. Al lent me enough to get the engine hauled out to the barn. He offered to give me part of his salary as long as I needed it. He could not do any more, and I would not take that from him. He had a girl, and he wanted to get ahead in his own work.

I talked to every business man in town, one by one. I offered any amount of interest for a loan of two or three hundred dollars. I tried to get the Commercial Club interested in backing me as an advertisement for Fort Wayne. I tried to get up a stock company. I started a subscription list. Every plan failed.

The only persons in Fort Wayne who believed in me at all were dad and mother and Aimee.

Of course you'll succeed," Aimee said every time I saw her. She laughed about the engagement ring; she said she did not care for one at all; all she cared about was my flying. That was what I wanted, so that was what she wanted, too.

At last I had to fall back on dad's lots again. I hated to, but it seemed my only hope. That failed. Everyone remembered that I had paid the other note only at the last moment. The banks said they did not think it was a safe loan. I tried all the business men again. I used every argument I could. It was no use.

"You had better give up this notion of flying," they all said. I would not do that.

One day I thought of Senator Fleming—Steve Fleming everyone in Fort Wayne called him. He is one of the biggest men in Fort Wayne, a millionaire many times over. He was a good sportsman, kept a whole flock of racing automobiles and raced them himself. As a last forlorn hope I called at his office and told him my situation. I offered dad's lots as security and any interest he wanted if he would lend me enough to rebuild the machine. I told him I knew I could make good.

He listened to every word I said in silence. I remember just how he tapped his pencil on his desk. At last he nodded.

"All right, bring in the papers tomorrow and I'll lend you the money you need," he said. "I'd better make it a long time loan. Take it for a year, or two, if you like."

I almost broke down right there in his office. I cannot even think of him to this day without the deepest gratitude. He was a prince, in the way he treated me.

That week I left for Chicago with my engine. The Mills aviators had agreed to let me use their factory while I was rebuilding the aeroplane.

It was over two years since I had started out, full of hope, thinking I would be rich and famous in a few weeks. All I had was an old engine and a $600 debt. I didn't say anything to mother this time, but I made up my mind I would not come back to Fort Wayne again without money enough to take dad to the Chicago oculists and to make life a little easier for mother.

The Mills aviators had booked me for a flight in Stirling, Ill., in three weeks. I promised them I would have the new machine ready in time.

I was hard at work on it the first thing in the morning. I worked hard all day and late at night. It was fine to be able to use the tools of a real factory, after all those months in the tent. I broke all records getting that aeroplane together.

Every dollar I got from Senator Fleming went into that machine. Living did not cost me much. I did not eat breakfast; for luncheon and dinner I usually had a ten-cent plate of beef stew. There is a great deal of good food in a plate of beef stew when you are hungry.

I had the machine finished in time. The day before I started for Stirling I counted the money I had left. There was almost thirty dollars. Subtracting my expenses to Stirling I would have enough to get a new suit. I had not had any new clothes for over two years; my only suit looked bad.

I thought it over for a long time. At Stirling my percentage of the gate receipts would be two hundred dollars at least. I really did need a new suit. Finally I decided to get one.

I picked out a checked Norfolk. It looked so good when I got it on that I spent 25 cents to get a colored photograph of myself in it, for Aimee. It was the first gift I had given her in two years. She still has it.

At Stirling I met Didier Masson, an aviator from California. We were both booked for a series of exhibition flights under the management of Leon and Max Friedman of San Francisco.

I felt proud that day, with my new machine and that Norfolk suit. There was a big crowd, and it looked as though we would make good money.

The engine was working fine; every part of the machine was in splendid condition. The crowd was shouting and cheering. I felt like cheering, too, as I got into my seat and took hold of the wheel.

I zipped down the track and lifted the machine into the air. It rose beautifully. The air was calm. I drove up to about sixty feet. Then I

struck a smooth, strong current. The minute I felt it on the planes I knew what would happen; my engine would not carry me against it.

That air-current rolled the machine over, slowly and easily, and dropped it edgewise.

The left wing caught the force of the fall and smashed like an egg shell. I went out through the front of the machine, taking the steering wheel with me. I landed in the next field.

CHAPTER XVI.

I LANDED in a deep, soft mudhole. There was great excitement; the crowd thought the fall had killed me. Half a dozen men pulled me out of the mud. When I recovered consciousness they were all standing around wanting to know if I was hurt.

"Hurt? No, I'm muddy," I said, disgusted. My new suit was ruined.

The left wing of the machine was a total wreck. There was nothing to do but ship the machine back to Chicago and repair it. I could not fly again at that exhibition.

My share of the gate recepts was just $52.70, barely enough for repairs. I felt pretty discouraged. When I got back to the hotel I went over the list of bookings again. All but one paid on the basis of gate receipts. Beresford, South Dakota, offered me $750 flat for a flight on the Fourth of July. It was then early in March.

The Friedman brothers had a whole string of automobiles and motorcycles, as well as the two aeroplanes. The gate receipts were divided among us all. I would have to fly successfully every day of the exhibitions to make any money.

To do that I needed a new engine, one with more power. The old one was too weak for the weight of the machine, but I had to make a successful flight with it to get money for a new one. The situation looked difficult.

I took the machine back to Chicago and rebuilt the left wing. My next booking was at Mattoon, Ill. I was determined this time to get enough money for the first payment on a new engine.

There was an enormous crowd out in Mattoon and the managers were delighted. As soon as I saw that infield, though, I felt doubtful. It was too small and full of trees. The air was bad, too—choppy, with little bursts of wind. I had to fly, however, whether it looked possible or not. I was down to my last cent, and I needed that new engine.

I made a quick, fast drive to get off the ground in the small space. I barely cleared a tree and got into the air when the wind caught me. I turned the machine sharply, about fifteen feet in the air, to keep my balance. Right ahead of me was a bunch of trees and the fence. I pulled back on the wheel to lift the machine over them, and the engine failed.

It was a choice between the trees and the fence. The machine was coming down fast. I took a chance on the fence. The machine plowed right through it. It wiped that fence completely off the map. I got out of the wreck with a dislocated shoulder and a smashed machine. My share of the gate receipts was $27.

Masson flew for me at the next exhibition. I was back in Chicago repairing my machine with material advanced by the Mills aviators.

It was a discouraging spring. Every time I tried to fly I had another accident. I smashed the machine in every possible way and got battered up myself. I made barely enough money for repairs, but I kept on trying. I was looking forward to that Beresford flight in July. Seven hundred and fifty dollars looked bigger to me every day.

On the 25th of June I was booked for a flight at Muncie, Ind. It looked more promising than any of the other bookings I had tried to fill that spring. The managers were enthusiastic about the prospects. I was glad to fly there, too, because it was near home. I felt quite hopeful when I started to Muncie.

When I looked at the field where the managers expected me to fly I was angry and disappointed. It was full of trees. I went over it, and it seemed impossible either to start or to land there. People told me that no aviator had ever succeeded in flying from that field.

I hunted up the managers and refused even to attempt a flight. They insisted. The danger made no difference to them. Then they compromised by begging me at least to set up the machine so the crowd could see it. They promised to announce that I would not fly. They said they would give me my share of the gate receipts anyway if I would only set up the machine. Finally I agreed to do that.

On the day of the exhibition great crowds came out. The grandstand was crowded; people were standing up. The managers gave them automobile races. They raced those machines in every possible way, against time, against each other, against the motorcycles. The crowd kept calling for the aeroplane.

The managers announced more automobile races. They had slow races, races on three cylinders, races against time again, against other automobiles, against motorcycles. By this time the crowd was hooting and howling for the aeroplane. When another race against time was announced they began to throw things.

The managers were frantic. They used every argument they could to get me to fly. I told them it was too dangerous. Besides those

trees there was a strong wind blowing down the track. I would have to start with the wind; that would mean getting up a tremendous speed on the ground to reach a sufficient speed in the air to raise the machine. There was not room enough to do it safely.

I stuck by my refusal to fly. I would not risk my machine in that field, with the Beresford flight so near. Finally the managers announced that the aeroplane was out of order.

When they heard that the crowd gave a howl and poured out of the grandstand in one mad mob. The managers ran and left me alone in the field. The only reason I stayed was to save the machine.

The crowd threw pop bottles and bricks as they came. I stood up on a box and tried to tell that it was impossible to fly in that field; it would probably kill me to try it. They yelled that I was a coward. They jammed around me and the machine and shouted insults at me. Someone struck at me, and I did not hit back for fear they would wreck the aeroplane if I did.

Then somebody yelled, "Let's wreck his old machine! It's a fake!" They jumped at it.

I could not stand that. When I saw them tear at the machine I guess I went mad, too. I jumped on the seat and shouted that I would fly. It was all I could do. As soon as they understood they stopped tearing at the machine.

"Fly!" they yelled. "We'll make you fly!"

I got into the seat. I told them I would fly to save the aeroplane, but if I was killed I wanted every one of them to feel he had murdered me. Then I started.

I drove the machine with every ounce of skill I had. I lifted it into the air just in time to clear a tree. The wheels tore at the branches as I went over it. I missed the fence by less than a foot. The engine was pulling hard.

Just outside the fence there was a hill with a sand pit in one side. I pulled back on the wheel as hard as I could. The machine was headed straight for that sand pit. I barely cleared it, got over the hill and away.

The engine kept missing fire. I flew low, looking for a place to land. Finally I found one, a smooth meadow, and came down. Just as the wheels touched the ground the engine stopped.

With the engine running it is possible to steer an aeroplane on the ground. The propeller draft on the rudder gives it power enough to turn the machine. With the engine stopped there is no way whatever to steer. The aeroplane raced across the meadow, jumped a ditch and went head on into the fence.

I had not saved the machine after all, and the Beresford flight was only a week away. I pulled myself out of the wreck feeling pretty well shaken up. I sat on the ground quite a while, planning what to do.

CHAPTER XVII.

THAT night I hunted up the managers of the exhibition and talked them into giving me $50 of the gate receipts. It would just pay my expenses to Beresford; I would have to get material for rebuilding the machine from the Mills aviators, if possible. Then I got the wreck of the aeroplane crated and shipped to Chicago. I was going to rebuild it in time for that Beresford flight if it took twenty-four hours' work every day.

Muncie is only fifty miles from Fort Wayne, where Aimee was. I found that by riding all night I could have half an hour with her and still reach Chicago early in the morning.

She was sitting on the porch all alone when I got there. It was a beautiful warm summer evening. All the boys and girls were out walking in couples. She could not be with me, so she staid at home; she said she wanted me to know she was not thinking about anyone else; she was just waiting for me and for my success in flying. We walked up and down in front of her house and talked. It was a wonderful half hour. I started back to Chicago, confident that I was going to make the Beresford flight successfully.

I argued the Mills aviators into advancing me more material— struts, wing beams, ribs and linen for the planes. Then I went to work. I worked twenty hours a day that week; the last two days I worked straight through without stopping. Even then I had to ship the machine to Beresford with some of the braces still to be put on.

There was a chance to get some sleep in the day coach on that trip. I had just enough money for fare, and had to go light on food, but I got to Beresford late on the third of July, with time to finish the machine and set it up for the flight next day.

The chairman of the finance committee met me at the train. He was a tall, thin fellow, with a very dry manner. He went over the contract

with me and reminded me that it called for two flights of fifteen minutes each. Then he took me out to the field.

I had never seen such a crowd in my life. Like all middle-western prairie towns, Beresford was built with very wide streets, but from sidewalk to sidewalk they were jammed with one mass of people. The normal population was 7,000; that day more than 25,000 people were crowded into the town to see me fly. It was almost impossible to get through the streets.

I felt relieved when I saw the field. It was a big, level grain field on the edge of town, surrounded by level country. They had very kindly sent out a mowing machine to cut the grain, so I could start more easily, and they had provided a tent for the aeroplane.

The only thing wrong was the wind. It was blowing hard, but I hoped, on account of the level country, it might be a steady gale, and not choppy. I was worried about the engine, too; I couldn't get it to run smoothly. I had carefully gone over the magneto and carbureter, but the motor still skipped.

The whole 25,000 people were out in the morning to see my first flight. The wind was blowing harder every minute, but it seemed steady. I went over my engine again and started. The speed of the wind was so great that the aeroplane lifted into the air while it was still going no faster than a boy would run. It rose perfectly; the wind was smooth. I made a low flight, testing the wind, and then I went upward. At about 200 feet the wind buffed me around a little; I curved carefully, edging into the wind again, and made a complete circle. My engine was missing badly—so badly that I had to come down. I landed without accident. The crowd went wild with enthusiasm.

The chairman of the finance committee was standing by the tent with his watch in his hand.

"Only three minutes in the air," he said. "But it was a great flight, a great flight!" He shook my hand warmly, but I was worried about that fifteen-minute clause in the contract.

I worked on the engine until time for the afternoon flight. By 4:30 the wind had gone down a little, and was coming in puffs. I got off the ground all right, and drove upward, looking for a steady current. The wind kept catching my planes as I flew. I was nursing the engine carefully, and whenever a hard puff of wind struck me, I felt it pull hard and almost stop.

At 300 feet, just as I was making my second curve, turning head on into the wind, the motor failed altogether. The same second a puff of wind caught me. It turned the machine on edge and dropped it. I fell.

I fought the controls with all my strength. They would not turn. I was falling, helpless.

Mother was not there to pray for me this time. I thought of that,

and then, still struggling with the controls, I knew I would have to pray for myself. I cried: "O, God, save me!"

Less than five feet from the ground I felt the machine right itself. I pulled back on the wheel with the whole force of my body. The machine leveled and with one great swoop rose high into the air.

I would have been killed that day if the field had been level where I dropped. It sloped gently down to a little creek in the center. It was just above the creek that I fell. My wheels touched the water as the machine lifted.

The terrific speed of my fall lifted that aeroplane into the air as no engine could have done. With one great swoop upward it rose 100 feet. I saw beneath me the field from which I had started. The wind was wrong for a landing; I should have made a half circle before I tried it, but I didn't. I just nosed the machine over and came down.

When I felt solid ground under the wheels again I let go and just sat there, happy. The machine raced across the field, veered, and tore off a wheel. I got out, looked at he smashed chassis and laughed a joyous laugh. I was safe.

The men on the field were white as dead men. The whole crowd thought I had been killed. When they saw me safe they yelled and shouted for fifteen minutes. When the enthusiasm had died down a little the chairman of the finance committee looked at his watch and mentioned that I had been in the air just five minutes. Then he told me to come to his office at noon next day and settle up.

I had been in the air eight minutes in all; my contract called for thirty. I tried to figure out what proportion of $750 he might try to give me, on that basis. I meant to make a fight for the whole amount.

Next morning Beresford was deserted. Everyone had left town, or gone to bed. There was nothing on the streets but banana peelings and peanut shells. They were a foot deep. I walked up and down in them for hours, waiting for noon. I was at the finance committee's office early. The chairman came in, yawning and rubbing his eyes.

"How do you want the money?" he asked.

How did I want the money!

"Please give me currency," I managed to say.

"Better make it a draft," he said. "You don't mean you want to go back to Chicago with all that money?"

"If you don't mind, I would like to, yes," I said.

He gave it to me—one fifty dollar bill, all the rest in twenties. Seven hundred and fifty dollars.

That night, for the first time in my life, I slept in a Pullman berth. I slept hard, for I was tired, but I woke as soon as it was light enough to see that money again. I spread it out on the blankets and looked at it. For months I knew the name of every bank that had issued one of those bills, and the name of its cashier. Seven hundred and fifty dollars!

CHAPTER XVIII.

AT last I had earned real money with my flying. Now dad's eyes might be saved; I could make the first payment on a new engine; perhaps there was enough for Aimee's ring. I felt as if I could buy the whole world with that $750. Best of all was the prospect of taking dad to the finest oculist in Chicago. As soon as I got to Chicago I wired dad to come up immediately.

I knew he would understand what I meant by that wire. We had never spoken of his approaching blindness since it first came upon him. He was so determined to see in spite of it. Little by little he must have been losing hope, but he stuck to that determination. It was terrible to watch him. He would look so intently at me, and I knew he was trying to see me clearly, and could not do it.

From the first time I came to Chicago I had been inquiring about oculists. I had decided which one was best. I made an appointment with him, so that when dad came everything would be arranged. I guess I was the happiest boy in Chicago that day.

While I was waiting for dad to arrive I got my engine out to the factory and took it apart. I was booked for a flight at Elkhart, Ind., on July 12, and the machine must be in good shape for that.

Then I found the reason why the engine had caused me so much trouble. It was a two-cycle motor. I had been using it continuously for two years, and the main bearings were so badly worn that the gas leaked from the crank shaft instead of being forced into the cylinders. The mechanics who saw it could not believe that I had been making flights with it all summer.

That day a new six-cylinder, four-cycle Kirkham engine had arrived at the factory for the Mills aviators. Its price wah $1,650. It was a beautiful engine. I wanted it. I looked it over a dozen times, imagining the happiness of flying with an engine like that. There would be none of

that sickening, sinking sensation I felt all the time with my old weak motor.

While I was looking at it the president of the Mills aviators came in. I asked him if he would not lend me the new engine for the Elkhart flight. I pointed out that he must have someone to fly at Elkhart, and I was the only one he could send, because all his other aviators were in hospitals or tied up with wrecked machines. I showed him that it would be impossible for me to use my old engine.

He refused to lend it to me. He said, however, that he would sell it for $700 down and the rest on time. That would mean I would have no money left to pay the oculist.

I wanted that engine so desperately that I would not give up. I hung on, and argued the matter with him all that day. Finally, I got him to consent to lend me the engine. I went back to the factory, unpacked that beautiful motor, and began to build it into my machine. I was so enthusiastic about it that I worked most of the night.

Next morning I went down to meet dad. Everything seemed to be coming my way at last. I remember I did little dance steps and whistled all the time I was waiting for the train.

Dad did not say much when he met me, but he looked as happy as I felt. It was a glorious day. I told him all about the Beresford flight, and showed him the roll of bills. He kept patting my shoulder and saying how proud he was, and glad I was succeeding with my ambitions. Neither of us said anything about his own hopes, but we were both thinking about them. He could go on with his business when his eyes were better. I remember we talked a lot about the different big buildings in Chicago, and figured the cost of their construction.

The appointment with the oculist was late that afternoon. I took dad up to his office half an hour too early. We did not say a word while we waited. Dad sat there, holding tight to the arm of his chair. I was too excited to keep still a minute.

I never knew time to go so slowly as it did while dad was with the oculist. I waited in the outer office, and it seemed hours before he came out. When he did, I could not tell a thing from his face. He walked very straight, and the oculist came out with him and shook hands. Then dad and I came away. I could not ask him a question.

"It's all right, Art. Don't feel bad. He says nothing can be done," dad said, at last.

I took him to the hotel and left him there, while I went back to see the oculist myself. I asked him if there was any chance he might have saved dad's eyes if I had been able to bring him up to Chicago sooner.

He said there had never been a chance. The sunstroke dad had suffered while he was working so hard had injured the nerves of the eyes. He would never be able to see again. Nothing could be done.

It seemed as if I could not go back and see dad. I walked up and down the hotel corridor a long time. After all, there is nothing one can do but face such things. I suppose everyone has to do that.

When I went in dad was sitting there quite serene. He said he would go back to Fort Wayne that night. Mother was waiting there, and he wanted to see her. We talked a long time about me and my flying. He said he was very glad and proud that I was succeeding with it. He did not say one word of complaint or self-pity that day, and has never said one since; but I know, because I have worked so hard to realize my own ambitions, what it meant to him to give up all hope of his.

Dad and mother are living now on a beautiful little ten-acre place near Fort Wayne. All I can spare of the money I earn by flying at the Exposition is going back there to improve the place and make dad as happy and comfortable as possible. It is all I can do for him.

I promised myself every day that week, while I built the new engine into my machine and got it ready to ship to Elkhart, that I would give dad all I possibly could, all the rest of my life.

I know that all I can do will never be as much to him as the one thing I wanted to give him, and never can.

CHAPTER XIX.

MOTHER and Aimee came to Elkhart to see my flights there. I met them at the train and took them straight out to see the new engine, all installed in my machine. Neither of them had ever seen me make a real exhibition flight; we were all excited at the prospect. We had a great time that evening; I had real money in my pocket, and I took them to the best hotel in town.

Next day there were large crowds at the exhibition. The air was steady, my new motor was in fine shape. When I started it, ran down the field, and pulled back on the controls, the machine fairly leaped into the air.

It was then I first knew what real flying was. With sixty good horsepower working, the machine responded readily to every touch on the controls. I pulled back, she rose like a bird. I turned the rudder and she wheeled around on one corner instantly. I nosed her over, and she dived.

There is no sensation in the world like flying. It is free, swift movement, with nothing but space and clean, fresh winds around you. That day it was glorious. I stayed in the air over half an hour, swinging around in great curves, flying up higher and higher into the sky, and swooping down in long, smooth glides.

At last I came down. The minute the machine touched the ground I saw I had made a mistake in the landing. I was not used to such speed as that new motor gave me. It ran the machine across the field and smashed it into the fence.

There was no playing with mother and Aimee that evening. I worked all night repairing the machine to have it ready for next day's flight.

Next day the crowds were immense. Word of my flight the day before had gone out, and people came from all the country around Elkhart. I made two flights that day and enjoyed every minute of them. My share of the gate receipts for the two days was $145.75, and

I felt like a millionaire. When Aimee and mother started home that day I tucked a roll of bills into mother's purse and told her not to worry about money any more. I thought all my money difficulties were over.

I shipped the machine direct to Hillsdale, Michigan, where I was booked for two flights the next week. Both days I made good flights; it was such fun swooping and gliding with the new motor that when I got into the air I hated to come down. The first day the crowd was large; the second day it was enormous. They were wildly enthusiastic.

That night, as I was taking the machine apart, the managers came and asked me to stay another day. I told them I could not possibly do it. I was to fly that week at Adrian, a town fifty miles away. They urged me; they offered a bonus if I would stay one more day. Then I had an inspiration. I told them I would stay, and that instead of shipping my machine I would fly to Adrian. Flying would get me there in time.

I made early flights next day, so that I would have time for the trip. The machine was working beautifully; I went over it carefully and saw that the gasoline tank was full. The crowd all waited to see me start. Such a trip had never been heard of before. The editor of the Hillsdale paper, full of journalistic enterprise, asked me to deliver his papers to the neighboring towns. I agreed, and he appeared with a great armful and tied them to the machine.

When everything was ready I started the engine, raced down the field, and the machine leaped into the air. I circled once around the field, and started for Adrian.

Then I first knew the similarity of air and water. The country was hilly, and the air-currents ran over it just as water would, eddying in the valley and rippling over the hills like a river over rocks. Once in a while the planes would flutter with the swirling pull of the eddies.

I rose higher, and came into a smooth, steady current. The machine flew evenly in it. I passed over woods and fields and now and then a little town, where I tried to remember to drop a bundle of papers. It was intoxicating, that swift, smooth going. As soon as I had disposed of the papers I forgot everything but the fun of the flight and nosed the machine higher and higher.

It was a bright day, clear and sunny. The sky looked tempting. I drove the machine still higher, and then I decided to make a real altitude flight. I pulled back on the controls still more, and went up.

When I passed four thousand feet I began to feel chilly. Down on the earth it was a hot July day. Up there it grew cooler and cooler as I went. I passed forty-five hundred feet, and still kept lifting the machine higher. It was glorious.

At five thousand feet I looked at the earth and saw a curious thing. The earth was not flat now; it curved up at the edges. I could see it,

a sort of gray-green bowl, with patches of color here and there, curving up around me on all sides. If I went only ten feet higher, I was sure I could see over the edge.

I lifted the machine up, and then up again. I passed 5,500 feet. The edges of the bowl were still curving up around me. Only a few feet higher—I found myself craning my neck, trying to see over the rim of it, and still the higher I went the deeper the bowl grew.

I was very cold by this time, chilled through. My hands were numb on the wheel. I pushed the machine a little higher; the edges of the earth curved upward a little more.

Then I realized that I must come down. My gasoline would not hold out much longer. I could not risk volplaning from that height into unknown country. I nosed the machine over, and descended in long, smooth swoops. When I looked at the earth again it lay flat beneath me. I could see the hills and rivers and little towns, and the swirling currents of the air rippling over them caught my planes.

I reached Adrian and came down to it in wide circles. The machine stopped safely, and I got out in the midst of a sweltering crowd in the hot July sun. I was chilled to the bone.

I know now the reason why the earth apparently curves upward about an aviator. The density of the air is greatest at the surface of the earth. Light waves, entering this denser medium, are deflected by it just as they are in entering water. Everyone has noticed how a spoon or a flower-stem seems bent where it enters the water, if you look at it from the right angle. The earth seems bent in the same way when an aviator looks down at it, except that the density of the air, increasing gradually, gives a curved effect, instead of a sharp angle.

Just the same, it seems uncanny the first time an aviator sees the earth turned into a bowl, rising all around him.

I found the manager of the Mills aviators waiting to see me at Adrian. He had a contract at Deadwood, South Dakota, for $1,250. He wanted me to fill this contract, and to rent the new motor for the purpose. I did not care to rent the motor. He wanted a very large rental, and it would make a great difference in my profits, if I should fill the engagement successfully. We argued it for some time, and finally he agreed to take $700 as a first payment, and sell me the motor.

Seven hundred dollars was almost every dollar I had, but I gave it to him. I counted on my Adrian flights to make me a couple of hundred dollars at least.

I got less than fifty dollars at Adrian. Both days of the exhibition it rained. I made one short flight the first day to a small crowd. The second day the weather was so bad the flight was called off.

I had barely enough money to get myself and my machine to Deadwood. I did not take a Pullman, either. When the train pulled into Deadwood I had less than four dollars.

CHAPTER XX.

MY contract at Deadwood called for six flights of ten minutes each; if I could make them I would leave the Black Hills with $1,250 in cash, enough to finish paying for my new motor and get me to my next engagement.

When I reached Deadwood the carnival preparations had already begun, and colored flags and bunting were fluttering in every direction. As I stepped from the car I noticed that apparently some important person had come in on the same train. There was a large crowd of expectant people and a big touring car, full of dignified-looking men, was waiting.

I crossed the platform, looking for some member of the club which had booked me for the flight. But no one appeared to be waiting for me, so after a minute I went ly to the ticket window and asked the way to the Business Men's Club.

The ticket seller was looking eagerly up and down the platform for someone. When I asked that question he stared down at me in amazement. He asked if I was Art Smith, and when I said yes he fairly leaped with surprise and excitement. Then I found that I was the important person they were all waiting for.

Mr. Franklin, mayor of Deadwood and president of the Business Men's Club, had come himself to meet me, with a dozen of the biggest men in the city. They put me in the big luxurious car, and for an hour drove me over the mountain roads, showing me the majestic scenery of the Black Hills. They brought me back to Deadwood's best hotel and entertained me at an elaborate luncheon. Then we got into the car again, and they took me to the aviation field.

I was so carried off my feet by this intoxicating reception that I said at once that I would fly there. It was a small field, about half a mile long, but level enough. I ordered the machine sent out, and started to set it up for the next day's flight.

Then, as I worked, it dawned on me that it would be practically impossible to fly from that field. On every side it was surrounded by great

steep mountains. I could get off the ground with the machine, but there was no room to turn. I could not avoid flying directly into one of the mountains. I learned that two of Curtiss' most famous flyers had been booked there, and had refused to fly.

More and more it looked to me as if I would have to refuse, too. There was no opening anywhere in that ring of mountains; they were like a rough wall around the field. There was not a chance in the world that I could fly there.

I sat on a box and thought over the situation. The sun set over the mountain ranges and it grew cold and dark. I did not have money enough to get out of town. The only way I could get more money was by flying. I could not fly.

Late that night I got up courage to go to the Business Men's Club and tell them I could not attempt a flight. I found a number of the most prominent members in the club rooms. When I told them my decision they were stunned by it. The carnival had begun; we could hear the music outside, and the crowd shouting and laughing.

"See here, you simply can't refuse now. It's impossible," Mr. Franklin said. "After getting the crowd here twice before—do you know what this means to us? I will have to sell my business and leave Deadwood."

Several of the others said the same thing. It would absolutely ruin them if they disappointed the people for the third time. They urged me, with every sort of argument, to attempt a flight.

We talked for hours. I told them it would be suicide to take the machine off the ground in that field. I would not try to fly there. Finally they gave up, and I went over to the hotel and went to bed. I counted my money first—I had just $1.90.

Two hours later, at 3 o'clock in the morning, the telephone rang. I was awake; I jumped to answer it. Mr. Franklin was on the wire; he said he was waiting downstairs with his automobile; he wanted me to come at once and look for an aviation field that I could use. I leaped into my clothes and hurried downstairs.

It was a beautiful moonlight night. The car plunged up the steep mountain roads and raced along the very edge of precipices, so close that I looked over the fenders into canyons hundreds of feet deep. Every time we zipped around a corner I expected the car to go over. The men with me were desperately intent on just one thing—finding an aviation field before morning.

Just as the sky was turning pink in the east we found one I thought would do. It was a small plateau, three miles from Deadwood. It was half a mile long, fairly level, and on all sides the ground fell away, sheer, to depths of hundreds of feet. If I could get the machine into the air before it raced over the edge there would be room to turn before I struck a mountain. I told the men that I would fly there.

The machine was sent out on one of the big carnival wagons, and I set it up. My first flight was scheduled for 4:30 o'clock that afternoon. I had the machine ready in time. Thousands of people climbed the mountains to the field; the rest of the population of the county edged the sky-line in all directions.

Promptly on time I started the engine and raced across the plateau. Just as I started the wind turned and blew hard in the same direction I was going. An aeroplane should start against the wind in order to make enough speed to lift it. The plateau was small; I crossed it in a second. Just as I was about to pitch over the edge the planes caught the air.

The machine climbed very slowly and heavily on account of the high altitude—about 5,000 feet. I pulled back on the controls little by little, and got up to eight hundred feet.

The air was very bad—uneven, and tangled around the mountains and into canyons in dozens of cross-currents. The currents over the Exposition are the same—the only air condition I have ever found similar to that at Deadwood. A steady stream of air rushes in through the Golden Gate, strikes dozens of smaller currents, coming around Tamalpais, down from San Pablo bay, and over the San Francisco hills, and all these currents are complicated again by the domes and towers of the Exposition, and by the bay breeze. Every day that I fly at the Fair I think of the Deadwood experience.

Flying carefully, struggling with those currents, I made one complete circle without striking any of the mountains. I was flying over the main valley, and could see the tree tops far below. It would be impossible to land anywhere except on the small plateau, and it began to look as if that would be hard to do safely. I brought the machine around again, with the gusts catching at the planes.

Then I struck my first air-hole.

Strictly speaking, of course, there are no holes in the air. An "air-hole" is a strong downward current of air, almost a gale. Flying into it gives the same sensation as plunging into a deep hole. Suddenly there is no support under the planes.

I fell. All the power of my engine would not pull me across to steady air. I tried desperately to catch the air with my planes. It was as though there were none there.

Just above the plateau the downward current which had caught me spread out. It cushioned my fall with solid air again. It gave me support just in time for my engine to carry me above the plateau. I landed not ten feet from the edge.

Every mountain peak for miles was echoing applause. The people were wild. I had given them not only a flight, but the most spectacular one imaginable. That was the first applause I ever got which did not interest me. I was feeling pretty shaky, and there were five more flights on my contract.

CHAPTER XXI.

MR. FRANKLIN and the other men were radiant. I had been in air only eight minutes, but I had flown. I had actually been off the ground in an aeroplane. It was marvelous to the Black Hills people.

I examined the machine carefully and found it was all right. Then I staked it firmly to the ground, so that the wind would not blow it off the plateau in the night. We left a man to watch it, and raced down to Deadwood as fast as Mr. Franklin's car could take us. I went straight to the telegraph office and sent a telegram to Aimee.

All Deadwood celebrated that night; it was the biggest carnival in the history of the town. The crowds gave me an ovation whenever I appeared in the streets. I went to bed early. My second flight was to take place next morning, and I felt I needed a good sleep.

In the morning the streets were packed. Word of my flight had gone out, and everyone who could come to Deadwood was there to see me fly. It was a cloudy morning, which worried me a little, but I saw by watching the clouds that the upper air-currents were steady. The clouds are an aviator's danger signals; if there are no clouds he watches every curl of smoke or wisp of fog in the sky. Until the air-sea is thoroughly charted these things must be our only warning of treacherous currents.

When we reached the plateau the clouds were swirling away over the mountain tops and the sun was shining. I looked at every bolt and nut in the machine, and saw that the engine was in perfect order. Then I got into the seat, started the engine and was off on my second flight.

The machine lifted perfectly this time. The air-current was flowing steadily down the valley. I flew up to a thousand feet and made two circles and a short glide. I enjoyed the flight; the engine worked beautifully and the planes were steady. I descended to a level for landing,

and just as I circled down the valley to the plateau I saw before me an enormous cloud.

It looked as solid as a rock. There was not time to swerve; the machine was headed straight into it. I caught my breath. In that second I expected the aeroplane to crash into pieces against the gray mass. Then everything was blotted out.

I could see nothing; I could not tell whether I was flying straight ahead or sidewise. It was like a nightmare. I pushed hard on the controls and hoped the machine would descend. I could not tell whether it did or not. I was lost in the gray haze. I expected any minute to strike the side of the mountain.

Then I came out into the blessed daylight again. I could see the canyon beneath me, and treetops. I gasped—unconsciously I had been holding my breath all that time. The plateau was beside me; I rose over it and landed gently, without a jar. Every echo in the mountain broke loose then; the crowd went wild.

That afternoon the clouds settled and covered the plateau, and my flight was called off. I was not sorry, though I knew it would cut down the money I was to receive. One flight a day in the Black Hills is enough for any aviator. After carefully going over conditions, I told Mr. Franklin to announce that next day I would fly down the canyon and land in Deadwood, on the field originally chosen for my flights. I thought I could land there successfully.

The following morning the clouds were still too thick for flying. Mr Franklin and a party of business men took me several miles into the mountains for a visit to the Trojan mine. We went a mile or two underground and they showed me every process of gold mining, from the ore to the smelters.

In the cyanide mill I saw a pan filled with a mass like black mush. I stirred it with my finger and asked what it was. They told me it was gold amalgam—thirty-eight thousand dollars' worth of gold, ready for smelting. I took my finger out, quick. I suppose I had twenty cent's worth under my finger nail.

"I would like to see some of that when it's smelted," I said.

"Maybe you will, sometime," Mr. Franklin said, and the others laughed.

That afternoon the weather was clear. I made a good start from the plateau and began my flight down the canyon, covered with pines, narrowed down to a mountain brook at the bottom. There was no possible landing place between the plateau and Deadwood. I would have to make the entire distance without a stop, no matter what happened.

The air currents swirled and rippled between the mountains like rapids in a river. They tipped the planes dangerously. Every ounce of my strength and skill could not hold the machine straight. I had to get higher, into a steadier air-current.

The machine climbed slowly, on account of the altitude. I worked it up, little by little, until I reached about a thousand feet. Then the great waves of air from the mountain range struck me. Half a dozen times I flew into a heavy downward current, an "air-hole," and the machine fell. When I struck the tangled currents lower down I caught the air with my planes again.

I fought my way down to Deadwood safely. I reached the little aviation field. Then I nosed the machine over for a long glide down to it. Eight hundred feet from the ground my engine stopped.

I set my teeth, and volplaned. Only one thing saved me—the air was steadier in that little pocket in the hills. I held the machine right side up. It landed ten feet from the sheer side of the mountain.

Deadwood went mad. Every whistle, every automobile horn, every bell in the place made an uproar for ten minutes. The crowd shouted itself hoarse. I just sat there in the machine. I was too tired to get out.

When I examined the engine it was all right. The trouble was in the gasoline intake. The pipe from the tank to the engine led from the rear of the tank. When I tipped the machine forward for the long glide the gasoline did not cover the outlet. The engine was starved of gasoline, and stopped.

That night I went down to the carnival. There I met Mr. Franklin, and he asked me to come up to the Business Men's Club. I went, deciding on the way to tell them I would be satisfied with half of the $1,250. I had been in the air only three times, less than half an hour in all.

When I got to the club rooms I found them crowded. The men all shook hands with me. Then someone took me into a corner to show me a picture. I was looking at it, when suddenly I noticed how still everyone was. I turned. They had lined up their chairs and were all seated, facing me. I felt queer.

Mr. Franklin came toward me and began to speak. I noticed he had a jewelers' box in his hand. My knees shook. He was making a presentation speech. I could hardly stand. Then he opened the box and pinned a gold medal on my coat.

Everyone cheered. They called, "Speech! Speech!" I could not say a word.

The medal was made from the gold I had seen in the Trojan mine. They had smelted it in a hurry, raced it down to a jeweler's, and had them working all night on it. It is a beauty; I wear it every day now. It is inscribed, "To the first aviator in the Black Hills. From the citizens of Deadwood."

Later they gave me a draft for $1,250. That night I sent Aimee a telegram a yard long.

CHAPTER XXII.

NEXT morning, before leaving Deadwood, I went to the jeweler who made my medal and bought a beautiful solid silver spoon for Aimee. I had it engraved with the name of the place and the date, put it in a little leather box, and mailed it to her. It was a great pleasure to do it; I felt that at last I was going to be able to give her little gifts like those which other boys gave their sweethearts.

I mailed a draft to the Mills aviators for the balance due on the new motor, and had nearly two hundred dollars left for my expenses to Wellman, Iowa, where I was booked for my next flight.

At noon that day I stood on the rear platform of the train when it pulled out of Deadwood. A great crowd was at the station to see me off. I will never forget the friends I left there, or the things Mr. Franklin and the others said to me that morning.

As the train pulled out of the Black Hills I saw nothing but success head of me—success and Aimee. I was sure that when I had proved that I could really fly, and had money enough to take care of her, Mr. Cour would not object to our marriage.

When I reached Wellman I found the town celebrating a Farmer's Home-coming. All the people in that part of Iowa were there. The field was good, air conditions were excellent, and my new motor was working beautifully. I made three fine flights there and earned $600. It started my first bank account.

From Wellman I sent Aimee another spoon. I had a long letter from her there, too. She asked me to send my letters to her in care of my mother. Her father as still strongly opposed to her marrying an aviator, and she did not want to antagonize him. She hoped he would feel differently by the time I came home.

From Wellman I went to Kansas City and gave an exhibition at Overland Park. There, for the first time, I used the skill I had learned in my

first flight to New Haven. I drove the machine up to 3,000 feet, shut off my engine and volplaned down. It made a great sensation. People there had never seen such a thing done, and when my engine stopped in the air there was fearful excitement. The crowd thought there would be a fatal accident, and they cheered for five minutes when I landed safely.

Kansas City was my last big engagement. All that summer I flew at county fairs and small carnivals. I flew at Beauregard, Mo., at Table Rock, Neb., at Clifton, Kas., at Clinton, Mo.—at a dozen other places.

I spent half the time catching trains, and the rest in struggling with small-town ideas of an aviator's needs. At Havelock, Neb., they took me to their aviation field and showed me a vacant lot, 50x100 feet, surrounded with buildings. It would have been a bad field for a hot-air balloon; it was impossible for an aeroplane. It took me half a day to find a place from which I could fly.

That was a long, hard summer, but I kept at work. I made two or three hundred dollars in every town, and my bank account was growing. The only extravagance I allowed myself was Aimee's spoons. I sent her one from every little town, and no one would believe the trouble I had getting them. Some of those small-town jewelers seemed never to have heard of a souvenir spoon, and when I finally found one and asked to have it engraved within a couple of days they looked at me as if they thought I was crazy. Sometimes I nearly was before I got the spoon. After awhile the first question I asked on reaching a place was "Where is the best jeweler?"

Early that fall there was an aviation meet in Chicago. All the greatest aviators were there, competing for the bg prizes. I wanted to go. I thought it over for weeks. If I went I would have to cancel an engagement at Corning, Iowa, which would pay me $850. It was a choice between the certainty of those dollars in the bank and the chance of winning a big prize.

My machine was old; by this time it had been in more than sixty accidents. If it failed me at Chicago I would have nothing. If I flew at Corning I would have the $850, and every dollar meant that I was that much nearer home and Aimee. I finally decided in favor of Corning. My big aviation work could come later.

At Corning I made several good flights. The weather was clear, and the air was steady. I was doing spirals by that time. Just as I started one, on my last flight, my engine began to skip badly. The power failed. I was about two thousand feet in the air in a strong current. The machine would not fly against it. There was nothing to do but glide. I nosed the machine over and came down. When I landed I found one of the valves of the engine broken.

From Corning I must make a long jump to Middleburn, W. Va. While I was waiting for a new valve there was time to go home for two days. I took the first train for Fort Wayne.

Mother and dad and Aimee met me at the station. Aimee looked so grown-up I hardly knew her. She was wearing long skirts, and her hair was done up. She as just the same girl, though, jolly and full of fun. We certainly were glad to see each other.

We had a fine supper that night. Mother had it all waiting when we got home. She kept bringing out jams and jellies—more than I could have eaten in a month. Dad sat there with his face beaming, and asked dozens of questions about my flights. I showed them my bankbook and my medal, and told them all about Deadwood.

Afterward I took Aimee home. It was a beautiful night, and we walked up and down a long time. I asked her to marry me that fall when I came back from Virginia. I had been terribly lonely for her that summer; I did not want to have to leave her in Fort Wayne when I went away again. She said she was lonely, too, but she did not want to displease her father. He had always been so good to her. I could not see him then because he was out of town. I hoped I could persuade him to consent when I came back to Fort Wayne. Aimee said that if I could she would marry me.

Next morning I went to a jeweler's shop and asked to see solitaire diamond rings. The clerk showed me one for thirty dollars. I asked him if he did not have anything better and he showed me one for forty-five dollars.

"Show me a tray of your very best ones," I said.

He put it out on the counter. I looked it over and picked out the biggest stone. I was wearing on my little finger a ring of Aimee's that she had given me long before. I handed it to the jeweler.

"Cut the diamond ring to that size, right away. I will go down to the bank and get you the money," I said. "How much is it?"

It was two hundred dollars. When I came back and laid the money on the counter, I was the proudest boy in Fort Wayne. I took the little box with the ring and started out to see Aimee. Just outside the jeweler's I met her.

"Oh, Aimee!" I said. "Here's the ring!" I handed her the box.

She gave me one look.

"Oh, Art! On Calhoun street!" she cried.

For a minute I thought she was going to cry. I did not know what to do. Then she laughed and put the box in her purse. But she would not look at the ring or let me put it on her finger. She said it was too unromantic. She kept saying, "Oh, no! Not on Calhoun street!" I did not mind where it was; any place looked romantic to me that day, but girls are different.

That evening, when I told her good-by, before starting for West Virginia, she let me put the ring on her finger. Then she took it off and put it on a ribbon around her neck. She said she would wear it that way until I had seen her father.

CHAPTER XXIII.

I HATED to leave Fort Wayne that time more than ever before. After all those months of hard work and loneliness it was good to be home. Worst of all was leaving Aimee, but I had to go. The Mills aviators were depending on me to fill the West Virginia engagement.

When I reached Middleburn I found that the flight was to take place at Sisterville, a little town ten miles back in the mountains. Middleburn was the nearest railway station. The aeroplane was hauled to Sisterville on a wagon, and I followed on horseback.

When I reached Sisterville I found that the only field from which I could fly was barely a third of a mile across. It lay on a sloping hillside, surrounded by wild mountain country. It was almost as bad as the Deadwood field.

People from all the country around had come to Sisterville to see me fly. Engaging a real aviator from Chicago was a big enterprise for that small town. I did not want to disappiont them if I could possibly help it.

Next day the air was steady and I decided to fly. I started from the highest point in the field, ran down the hill and rose just in time to clear the tops of the trees below. I flew up to a good height and came down in a spiral. Just as I was bringing the machine around in a circle over a mountain the engine began to skip. A valve had broken.

The weakened power would not drive the machine up. It sank into a ravine, with trees on both sides, and a brook in the bottom. There was no place to land. There was no room between the banks to turn. I had to fly straight ahead. Fortunately I was headed down hill. I pushed forward on the controls to escape the branches of the trees. Sometimes even then they brushed my planes. From every side birds flew out in

panic. I roared down through the gulch, curving and turning to follow it, and nursing my engine desperately.

At last I came out into the main valley. I was below Sisterville; to get back to the field I had to fly over the town. A yard at a time I worked the machine high enough, and barely skimmed over the roofs. I dodged a chimney by no more than a foot, swerved around the little church steeple, reached the field, and landed. I did not go up again.

Sisterville added another hundred dollars to my bank account and I left that night for Fort Wayne. I had no more engagements for that year; the season was over.

It was a great home-coming. I was successful at last, with money in the bank and good clothes. Everybody welcomed me. I paid my debt to Senator Fleming, with interest. I bought presents for mother and dad. I had enough money to take Aimee automobiling, and to shows.

One of the first things I did was to arrange with Mr. Streetor and Mr. Sprague to give an exhibition in their park, and pay them well. Then I went to the printers and to the newspapers which had helped me so splendidly with my benefit, and gave them big orders for printing and advertising space. It was a happy time.

The only thing that troubled me was Mr. Cour's attitude. I spent every afternoon and evening with Aimee, but when I suggested telling her father about our engagement she urged me to wait. She said she was afraid he would forbid her to see me at all, and then she would not know what to do. He had always been so good to her she did not want to hurt him. She begged me to leave things as they were for awhile.

I did not like to do that. I wanted her to marry me immediately, and I thought it would be better to talk to her father and tell him how things stood. Finally I said I would wait until after my exhibition flights. Then I meant to see him and settle the situation.

I was to fly two days, Saturday and Sunday. Every ticket was sold. I had advertised a sensational program—spirals, glides, volplaning and carrying a passenger. One of the boys was eager to make a flight with me, and I was confident I could take him safely.

Saturday was a clear, cool autumn day, and the air was steady. I started promptly on time and for two hours I kept the people sitting on the edge of their seats. I flew about in great circles, dropped from two thousand feet in swirling spirals, went up again, shut off my engine and volplaned. I enjoyed every minute of it. The engine was running smoothly, the air was just right and I knew that mother and Aimee were watching my work.

At last it was time to carry a passenger. When I looked for the boy who had wanted to fly with me he had disappeared. He said afterward that he was ill. I did not know what to do. The crowd was waiting, and I felt that it would spoil the day if I disappointed them. Several of the boys were on the field with mother and Aimee.

"Won't one of you boys be game enough to go up with me? I tell you it's perfectly safe," I said. No one answered. Then Aimee spoke up.

"I'll go with you," she said.

The extra seat was all built, ready. In a minute I had her comfortably in it. When the crowd saw what was happening they stood up and shouted applause. I got in my seat, the engine started, and we raced down the track. Just before we rose I saw Mr. Cour running across the field. I had not thought of him, but it was too late to stop then.

We had a beautiful flight. At about two hundred feet I glanced over my shoulder at Aimee, and she smiled at me. We flew up to five hundred feet, made a wide circle, and came down. The machine landed without a jar.

Mr. Cour was waiting, his face white. When the machine stopped he came over, took Aimee's arm without a word, and walked off the field with her. I saw then that I had made the worst possible mistake in taking her into the air with me.

As soon as the machine was put away I went out to Mr. Cour's house. Aimee came running when I knocked, but her father met me at the door.

"Come into the sitting-room, Art; I want to talk to you," he said. We went in, and he shut the door.

He was so angry he could hardly speak. I tried to apologize for taking Aimee on the flight without his permission. I wanted to explain that it was perfectly safe. He would not listen; he was furious. He tried to tell me what he thought of me for doing such a thing.

Then I said I cared as much for Aimee and her safety as he did. I said we were engaged, and I meant to marry her right away.

"Marry her! Great Scott, how old are you?" he asked.

I told him I was nineteen. I said we had been engaged a long time. I was flying now and making money, and we thought we should be married.

He said the idea was preposterous. We were too young. My work was too dangerous. He would not consider such a marriage for a minute.

"You can't marry Aimee now; that's final," he said. "Get into some other work, and come back in three years, and I may think about it."

Three years! He seemed to have no idea how long it was. There was no use arguing with him. I got up and went out.

CHAPTER XXIV.

AIMEE was waiting for me on the porch. She looked anxious and worried. At first I hardly knew what to say to her. We walked down the steps and out to the front gate.

"Your father says I can't marry you," I told her.

"Oh, Art! What on earth will we do?" she said, almost crying.

"We'll get married, anyway," I said.

Her father called her then, and she had to go into the house. I went home and thought it over.

Next day I was to fly again at the Driving Park. I went early to Aimee's house to take her to the exhibition. Her father was sitting on the porch reading the Sunday papers. We talked a long while. He was not angry this time, but he was firm. He said we were too young to be married; that in any case he would not allow Aimee to marry an aviator. He said I could not give her a home, that I might be killed any time, that she would never have a moment free from anxiety. He liked me very much, he said; he did not know anyone he would rather have Aimee marry if I would give up flying and wait three or four years. I could not get him to see my point of view. Finally I left and went out to the park alone. Mr. Cour said he would bring Aimee.

It was a beautiful day; the air was clear and steady. I flew for nearly two hours, doing spirals and dips and volplaning. The crowd was wild. When I dipped close enough to the park I could see them throwing hats into the air and leaping up and down. At last I landed for the final feat of carrying a passenger. They cheered steadily all the time I was on the ground. I saw Aimee waving at me from the grandstand, where she sat with her father.

Mother and dad were standing on the field, beaming with pride. This time I asked mother if she would fly with me.

"No," she said. "Take your father."

He was delighted. I led him over to the machine and got him comfortably fixed in the extra seat, showing him how to hold on. Then I got in and started.

The aeroplane carried the extra weight splendidly. We rose to about two hundred feet and circled over the field. Passing the grandstand I suddenly saw something fluttering by my shoulder. I looked back quickly. Dad was waving his hand at the crowd. He could not see them, but he knew where the grandstand was. His face was beaming; he certainly was enjoying the flight.

I flew higher and higher in circles. When I passed a thousand feet I glanced back at him. He looked happier than I had seen him for months. Then I nosed the machine over into a vertical dip and came down.

We had been in the air nearly ten minutes. Dad was enthusiastic. I never knew him to be more pleased; it was strange to see him so animated.

"It's great, Art! It's great!" he kept saying. "If I could I would build one myself and fly in it."

When I looked again for Aimee I saw her leaving with Mr. Cour. I was not going to have a chance to speak to her.

One of the Fort Wayne boys was helping me as a mechanician. When the crowd had gone I found him pushing the machine back into its tent.

"I suppose, now the season's over, you want the aeroplane taken down for the winter," he said to me.

"No," I said. "I may need it again."

I spent a couple of hours looking it over. I told the mechanician to put on new control wires and a new set of valves early Monday morning, and to fill it with oil and gasoline. I thought I might want it for a long flight.

That afternoon I tried to see Aimee again. Her mother said she had gone out with her sister and would not be back till late. Aimee's mother had always liked me, but I could see that she agreed with Mr. Cour about preventing our marriage.

That evening I stayed at home and talked to mother and dad. They had been married when mother was quite young, and in spite of dad's blindness and all the hard times they had gone through, I knew she was quite happy with him. I told them all sorts of little funny things that had happened to me that summer, and we discussed my winter plans. I had an offer from the Kirkham factory in Savona, N. Y., to teach aviation in a school they were starting. I did not know whether to accept it or to sign with the Mills Aviators for another season.

Late that evening I tried to telephone to Aimee. They told me she had gone to sleep. I had not had a chance to talk to her all day.

Some time in the night I heard the telephone ring. I hurried to answer it so it would not disturb mother and dad. I heard Aimee's voice.

"I'm talking low, so they won't hear me," she said. "Oh, Art, they're going to send me away!"

"Where? When?" I asked her.

She said her father meant to take her east to visit her aunt. She was to be gone all winter. Her parents thought it would be better to keep us apart for a while. They said they would not think of letting her marry anyone for three years. If we still wanted to be married when she was twenty-one they promised her they would consent.

"The only thing we can do is elope," I said. Aimee wanted to know how. We could not be married in Indiana without her father's consent. If we tried to elope she was sure he would catch us before we could get into another State.

"We'll elope in the aeroplane. Nothing can catch that," I said. "Aimee, are you game?"

She said she was. We would have to go that week. Next Saturday her father meant to take her east. I told her I would arrange everything and let her know.

Next morning early I was at work on the aeroplane, my plans all made. I put in a new set of valves and tested every part of it thoroughly. We would have to fly to Hillsdale, Mich., a seventy-mile trip. It was the nearest point where we could be married quickly, without her parents' consent.

All that week I worked on the machine. Thursday night I called to see Aimee. She came to the door when I knocked, and before anyone saw her she slipped out with me. We walked down the street, and I told her everything was ready. I asked her if she could get away and come to the field early next day, ready to fly to Hillsdale. She said she could. Her parents, she said, were watching the trains for fear we would elope, but they had not thought of the aeroplane. We had only a minute to talk before her mother called her, but the last thing she said was that she would surely be at the field on time.

Next mornng, testing the machine, I found something wrong with the propeller. I had to telephone her to wait till noon. The train for Hillsdale left at 11:30. I knew they would not watch her very closely after it had gone, and she could easily slip away. The mechanician and I worked at high speed, and by noon the propeller worked all right.

Aimee arrived at the field promptly on time. She as carrying a paper package with a new waist in it, and she insisted on taking it with her to Hillsdale. She said she did not mind eloping in an aeroplane, but she declared she would be married in that new waist. We fastened the package to one of the planes.

I put Aimee into the extra seat, bundled her up in a big red sweater of mine, and fastened her skirts around her ankles with tire tape.

Then I got in, started the engine, and we were off on my biggest flight.

CHAPTER XXV.

THE aeroplane, with Aimee and me in it, rose like a bird. The engine was running smoothly, with an even roar, and the air was steady. A few white clouds in the sky were almost motionless.

It was mellow fall weather, warm and sunny, with a haze over everything. The country spread out under us as we rose, and the view was beautiful. I drove the machine upward to about three hundred feet and then turned north toward Hillsdale.

I had made a kind of speaking tube for the occasion, hoping that Aimee and I would be able to talk to each other through it as we flew. It was four feet long, with an improvised megaphone attachment at each end. No one ever saw anything of the sort before or since, and my mechanician had been wild with curiosity about it all the week. As soon as I leveled the machine into straightaway flying I called to Aimee through this contrivance, but she could not hear a word. The roar of the engine made it impossible.

Holding the machine steady with one hand, I turned and looked at her. She smiled back, rosy and happy in the red sweater, and I leaned still farther back and kissed her.

I had planned to reach Hillsdale by one o'clock, and to be married before anyone in Fort Wayne had missed us, but we had been in the air only six minutes when the engine began to skip badly. I saw that I could not drive it any farther with safety.

There was a smooth meadow ahead. I nosed the machine over and landed. Testing the engine was a difficult job there, but Aimee was eager to help. Together we pushed the machine across the field and braced the front wheel against a fence so that the machine would not run away when I started the propeller. Then I tested the valves. One of them was broken.

Aimee and I looked at each other. I would not have blamed her if she had sat down and cried. It was a disappointing moment. We had started so confidently, and here we were, only fourteen miles from home, with a useless engine.

"Shall we leave the machine here and go on by train?" I asked her. She said certainly not. We had started by aeroplane, her father might overtake us if we did not go on in it. She was not going to quit because of an accident. There never was another girl like Aimee, game to the very core.

We walked to the nearest farm house and I telephoned to my mechanician to come at once with another new valve, and to say nothing to anyone. Then I telephoned to Al Wertman, who was married and living in Auburn, a little town nearby, and asked him to come over. I had not met him for a long time, and I felt I would like to see him on my wedding trip.

By this time we were both hungry. In the excitement neither of us had eaten breakfast, and it was then long past noon. We bought some milk and bread and apples from the farmer and went back to the meadow. I spread the red sweater on the grass in the shade of a big tree, and we ate lunch. It was such fun we did not mind the long wait.

Al and the mechanician arrived about half past two. Al was amazed to find Aimee with me, but in a minute he began to laugh.

"I bet you two are eloping to Hillsdale," was the first thing he said. We made him promise to keep the secret, and told him to bring his wife to Hillsdale that evening and have a wedding supper with us.

It took only a few minutes to install the new valve. Then we got into our seats and started again, with Al waving his hat from the meadow. We were afraid the delay had given Aimee's father time to be alarmed and to start to Hillsdale, but I knew that the great speed of the aeroplane would still beat the train.

We flew over the brilliant autumn woods and yellow farms, with the wind beating hard against our faces, and the engine eating up the miles. James Lake came over the horizon, a silver patch among the trees, and in a minute widened out beneath us. It was the lake where Aimee and I had been rowing the day I first thought of flying, and when we skimmed over it I saw a bird circling a hundred feet below us. I thought it might be the same bird we had watched that evening four years before. I pointed it out to Aimee, and we laughed.

The aeroplane was flying steadily, so I reached behind me and took Aimee's hand. I flew the rest of the way holding it.

I remembered the country around Hillsdale very well because I had flown there the year before. To the east of the town was a little lake, and I watched the horizon for it. At last it appeared, a tiny flicker of silver fifteen miles away, and turned the machine toward it, and squeezed Aimee's hand so she would see it, too.

There was a large, smooth field on the edge of Hillsdale, part of the campus there. I had chosen it for a landing place. We came up a little to the west of it, and just as I leaned against the controls to swing the machine that way I found that my aerilions did not work. A flange of a pulley had broken, and the control wire was jammed tight. The aerilions were useless.

It was the most terrible moment I ever spent in an aeroplane. The aerilions are the small flaps which balance the machine. With them out of commission the gentlest puff of wind meant a wreck. The second I realized what had happened the planes tipped to the left. I swung to the right instantly and nosed the machine over and down, both hands gripping the wheel. On a curve the outside plane, flying faster, rises. The curve to the right threw the left plane up again. The machine righted itself, hesitated, and tipped to the right. I swung quickly to the left.

The swing leveled the planes for an instant, then they tipped over the other way. I curved back, desperately. There was no time to choose a landing place. There was one chance in a hundred that I could keep the machine right side up and land anywhere. The planes tipped again, and I caught them just in time with a curve in the opposite direction.

Under us was a bare field. It looked like hard earth, seen from above. I was swinging the machine in half circles over it. We were coming down fast. If I could keep the planes level till we reached the field we would be safe.

I swung the machine to the right, to the left, to the right—and we landed. The field was soft sand. The front wheels mired in it. The machine turned completely over and smashed.

They told us later that a driver for a furniture store, who was delivering mattresses, was first to see the wreck. He galloped over, calling for help as he came. They got Aimee and me on to mattresses and carried us to the hotel. They thought we were dead.

I recovered consciousness four hours later and asked for Aimee. Al was there, frantic. He said she was all right; I must lie still. Someone else said she had been conscious several times. I was in bed, wrapped in bandages from head to foot. I demanded to see Aimee; I thought she was dead and they were concealing it from me. I would not lie there; I said if they did not take me to her I would get up and walk.

Finally they put me in a rocking chair and pushed it down the hall to her room. She was conscious when I saw her, but white as her pillow. Even her lips were white, and there were bandages around her head and over her cheek. She smiled at me and said, "Hello, Art."

"Are you all right, Aimee?" I asked. She said she certainly was. Then someone in the room asked if we still wanted to be married right away.

"Do you, Aimee?" I asked her.

"Of course, if you do," she said, and held out her hand to me. Someone pushed me nearer, so I could take it, and the chair struck her bed. She screamed and fainted. I suppose the jar was too much for both of us, for I fainted, too.

I recovered consciousness again an hour later. I was lying on the bed beside Aimee. The room was full of people, and the minister was there. We do not know to this day who found the county clerk at that hour and got the license, or who paid for it. Aimee had recovered sooner than I, and someone had brought her papers to sign. That is all we know.

The minister asked us if we were ready, and we said we were. One of the doctors gently placed Aimee's hand in mine, and I held it while we were married.

CHAPTER XXVI.

I DID not hear much of the ceremony. I feared Aimee was dying. She was so white she scared me.

The minister had finished, and the doctors were urging everyone to go away, because Aimee must be kept quiet, when the door opened and in walked her father, her mother and my mother.

Mr. Cour went straight to Aimee and tried to ask how badly she was hurt. His voice shook so he could hardly speak.

"We're married, papa; don't be cross," Aimee said, and began to cry. I had never seen her cry before. I tried to sit up, but the doctor put his hand on my forehead and I couldn't.

"It's all right; it's all right, Aimee," her father said. "If only you are not badly hurt."

They had brought their family doctor with them. Mother and the Hillsdale doctors got me into the next room. Poor mother was terribly worried.

The doctors wanted to give me a hypodermic, but I feared it would put me to sleep. I didn't want to go to sleep until I had heard what the Fort Wayne doctors had to say about Aimee.

It took them a long time to come to a decision. Then one of them came in. "The muscles of the young lady's back are badly torn," he said. "She also has a sprained ankle and a dislocated shoulder, but she will get well."

He said it very sternly. He seemed reluctant to tell me she would get well. But I didn't care. Aimee would live. We were married, and no one could part us. I took the hypodermic and went to sleep.

When I woke up they told me that I was all right except for some bad bruises and a sprained ankle. I had just escaped a serious concussion of the brain.

We were laid up at the hotel three weeks. There was no hospital in Hillsdale, and had there been one it would not have been possible to move Aimee. I was up on crutches at the end of three weeks, and we put Aimee on a cot and took her back to Fort Wayne in the baggage car.

We went to her father's house. He was reconciled to the marriage by that time, and would not listen to our going anywhere else while we were in Fort Wayne. Since then he has never been altogether content with my being an aviator, but he has not actively opposed it except once —the winter I built my machine for fancy flying.

Two weeks after we returned to Fort Wayne one of the boys asked me to go down town with him. He said he wanted to show me something. I was still on crutches, but he was so insistent that I went. In front of the jewelry shop where I had bought Aimee's ring he stopped and pointed out something in the window. It was a beautiful diamond-set gold medal, engraved with an aeroplane. Then he told me that it was mine; the citizens of Fort Wayne had made up a subscription list and bought it. I was so overcome that I could hardly get home to tell Aimee about it.

A week later they presented it to me at a mass meeting in Temple Theater. I insisted on having Aimee there that night. We turned a taxicab into an ambulance and took her. The whole population of Fort Wayne was in the street cheering while we carried Aimee across the sidewalk. The crowd followed us into the theater and cheered again. We were in a box, Aimee surrounded by pillows, and I with my crutches, so pleased I did not know what to do. I knew I would have to make some sort of a speech, and all the week Aimee and I had been working on one. It was a fine speech, but when the city attorney came out on the stage and said I was a hero and my home city delighted to honor me, and then handed me the medal over the edge of the box, I forgot all I meant to say. I did make a kind of a speech, though, and managed to thank them all.

It was the proudest moment of my life, there in the box with my wife beside me, and all Fort Wayne proud of me because I had at last succeeded in flying. It was good to see dad's face, too, and mother's.

The medal is one of my most precious possessions to this day, though I have been given others since. Among the latter, the one that means most to me is the tiny button given me when I became a member of the United States Aviation Corps, pledged to use my skill in the air for my country if she ever needs me.

I hope the time will never come. I do not believe in war. With so many difficulties to conquer, with the whole air-sea still uncharted, why should we fight each other? The Russian government cabled me a request to join her forces; France honored me with a similar invitation. I have refused both offers. I shall continue to loop-the-loop in peaceful America. All I can do in aviation—and I hope it will be a great deal—belongs to her.

One other medal I treasure almost as much as the United States button. My fingers always tremble a little when I pin it on, partly because it was given me here in San Francisco, where I have done my best work, and partly because it was given me by Buffalo Bill.

I always greatly admired Colonel Cody. I suppose every American boy admires him, but he was my hero. While I was working on my first aeroplane, on the Buffalo Bill circus grounds, I used to think about him often. Every time I felt discouraged I remembered him and went to work harder. To me he stands for the men who have succeeded in spite of every difficulty.

A few weeks ago he was at the Exposition. When I went into the air that day I thought of him, and hoped I might have a chance to see him. I made a long, difficult flight and came down tired. When the aeroplane landed I saw a little group of people waiting at one end of the Marina. I was still sitting in the machine when they came up. One of them was Buffalo Bill.

I was so pleased I could hardly shake hands with him. Then he said that as an American he was proud of the work I was doing in the air. He took a pin from his coat. I found out later it was made from the first gold nugget he had ever found, and was fastened to a gold bar which had been presented to him by King Edward. He had worn it for twenty-five years.

"Here," he said, "I want to give this to you." Then he pinned it on my coat.

I was glad I was still strapped to my machine. I couldn't have stood up while that pin was being hung on me. That was one of the very finest tributes I have every received.

Fancy flying had begun to appeal to me about the time Aimee and I were married. Looping-the-loop had never been done in America at that time, but I was reading of the things that Pegoud was doing in France, and I was eager to experiment along the same line.

I talked it over with Aimee, but she was unwilling to have me do it that year. It was impossible, in my case, because I did not have the money to build the necessary type of machine. My old aeroplane had been completely wrecked in the elopement flight, and our expenses while we were hurt had eaten up most of my bank account. I had to make more money immediately, and I had attractive offers from booking agencies for straight flying.

Early next spring my new machine for straight flying was finished, and Aimee and I started out together on my second exhibition tour. But I had not given up the idea of fancy flying.

CHAPTER XXVII.

IT was a wounderful summer. Aimee and I traveled together through all the States in which I had flown the year before, and they certainly looked different when she was with me. Aimee is the jolliest of companions; things never look so blue that she can't find something to laugh about.

We went to little towns in Missouri, Nebraska, Arkansas and Texas. I flew at Kansas City again, and we lived in the best hotels; I flew in little towns no one ever heard of, and we roughed it together. One town I especially remember—Norden, Neb. It is twenty-five miles from a railroad, and we drove the whole distance in a buggy drawn by a poor, gaunt livery horse. In the twenty-five miles we passed just five little sod houses. Norden had offered $650 for my flights, and when we reached the town we could hardly believe our eyes. It boasted 105 inhabitants. All that night people poured into it, coming in farm wagons, hayracks, on horses and mules, and many of them on foot. Some came nearly 100 miles. Next morning there were more than 2,000 persons waiting to see me fly, and I gave them my best work.

From Norden we went to South Dakota, and I had time between engagements to take Aimee to Deadwood. No one was waiting at the train this time, but before we had gone three blocks someone recognized us, and after that the town was ours. My good friends there took us to every point of interest in the mountains around, and I showed Aimee the plateau from which I had flown, and the mine which had furnished the gold for my medal. We left town in a special train. Deadwood people arranged it, so that I would have more time with them before leaving for my next engagement.

In Carthage, Ill., I took Aimee in the aeroplane, for the first time since the great flight together. We were in the air fifteen minutes, and it

was such a beautiful flight I hoped she would be inclined to change her mind about my fancy flying. I still was reading everything I could find about it, and thinking a great deal. That night in the hotel I brought the subject up again.

I told her there was money enough in the bank to build a machine for fancy flying and to meet our bills until I could learn looping. I explained the principle which had saved me in my two sidewise falls, and told her that same principle would make aviation safe, when it was understood and recognized. I said I was sure it would always hold good; a principle of mechanics never changes; it can always be depended on.

Aimee only laughed and said she must be like a principle then, for she had not changed. She did not want me to risk fancy flying.

We went on through Illinois, down into Arkansas and then turned north. Late that fall I finished the season with an engagement in Durant, Okla. My desire to loop-the-loop was growing. In Durant I read that Lincoln Beachey was already looping-the-loop in America. After my flights that day I told Aimee about it. I did not ask her opinion again. I would not attempt fancy flying so long as she objected, and I knew she would tell me when she had changed her mind.

Sometime in the night she woke me and asked me how badly I wanted to do fancy flying. I told her I wanted it very much.

"And it's safe—you're sure of that?" she asked.

"I certainly am," I told her.

"Well, you always have done what you said you would. If you want so much to loop-the-loop, I am willing," she said.

We caught the first train for home; I could not waste a minute before beginning work on the new machine.

Right here I want to say that people have a wrong idea of fancy flyers. They think we are merely circus performers, risking our lives for money until something goes wrong and we are killed. We are more than that; we are doing real work in aviation. There is no value in breaking records—long-distance records, altitude records, speed records—until the aeroplane has been proved practical. What good does it do to fly up to 26,000 feet, if when you come down a gust of wind at 100 feet will wreck the machine? What is gained by making a speed of 125 miles an hour, so long as a disabled engine means death to the aviator?

It is the fancy flyers who are demonstrating that aviation is practical. Before we began work, a certain degree of tilt to the planes was dangerous two degrees farther and the aviator was gone. I am proving every time I fly at the Exposition that when the machine tilts those two more degrees it is possible to let it roll on over and still land safely. I am proving it not once, but hundreds of times, under all air conditions. I am proving that nothing—nothing—can happen to a sound aeroplane in the air which will kill the aviator if he keeps his head and handles his machine according to definite principles.

I maintain that this is valuable work in serious aviation. With the principles established by fancy flyers we can now attack problems of speed and altitude with the knowledge that the aeroplane is practical and safe.

As soon as Aimee and I reached Fort Wayne I began work on the new machine. 1 undertook fancy flying just as I had first began aviation —I thought out every principle involved.

Mere determintion, hard work and perseverance are not enough. It takes hard thinking, besides, to make success.

The two perilous falls I had survived, at my first benefit and at Beresford, helped me. I figured out what had saved me on those terrible plunges, and how it had been done. In both of them I had literally fallen sidewise, with apparently nothing to save me, but before I struck the ground the machine had swung into a vertical dive. By pulling back on the controls then I had swung the aeroplane into safe flight. Those two narrow escapes gave me the key to safety in aviation—the rudder. It acts like the feathers on an arrow, and pulls the machine into a head-on fall.

I built the new machine, the same one I am now using at the Exposition, with that principle in mind. The rudder is twice the size normally used, and mounted fully three feet farther from the body of the machine, to give greater leverage. Every part of the machine is two or three times heavier and stronger than is usual, in order to withstand the greater strain. It is a fact, though I did not know it then, that when the aeroplane swings around in a loop the centrifugal force increases my weight upon the seat to nearly four hundred pounds. The strain upon the whole machine is proportionate.

I worked hard all winter, building the new machine. By the time I had it finished in the spring the bank account was running low. Aimee did not mind; she has always been glad to sacrifice everything else to my flying, but I saw I must earn money immediately with the new machine.

In May, when I was beginning trial flights, De Lloyd Thompson gave an exhibition in Fort Wayne. He had followed Lincoln Beachey in fancy flying in this country. I watched his work in the air, and saw looping for the first time. After his flights Thompson went with me to inspect my machine. He said positively that it would not do the work.

"You're wrong," I said. "She will not only do straight looping; she will do the sidewise roll." He said I was crazy; I would kill myself if I tried it.

My propeller was working badly, and I could not attempt fancy flying with it then. He left Fort Wayne still declaring that my theories would not work.

Next week, testing a new propeller, I climbed 2,000 feet in the air, and attempted my first loop.

CHAPTER XXVIII.

I TOLD in the first chapter of this story how I looped my first loop; how the engine stopped twice in the air and I dropped hundreds of feet almost in to the silvery mass of clouds under me, before I succeeded.

When for the first time I made the complete, end-over-end circle, I knew that my theories were good. I flew about in great curves in the clear air, and under the sunny sky. I was happy.

Then I dropped again into a vertical dip, pushed the controls over, and looped again and again. I turned the machine edgewise, and rolled it over and over, in sidewise curves, down through the clouds, to earth. I landed without a jar.

No one had known of my flight that day. Only Aimee had watched me go up. When she saw me come tumbling down from the sky and land safely she ran across the field to me, and we hugged each other like two kids. It is a great thing for an aviator to have a game wife like Aimee.

I was booked all through that summer for fancy flying. I tested my theories over and over again, in every possible air-condition. They proved good always. They are now so thoroughly established that no aviator need wreck his machine, no matter how bad the air may be, if he keeps his head and the control wires hold. An aeroplane will not fall more than three or four hundred feet before it comes into a position where skillful work will save it.

Aimee and I traveled together through the Middle West again. I bought her a little runabout, and often we motored from town to town, sending the aeroplane by train to meet us. That summer last year was the first time I felt free from pressing financial worry. I was able to buy dad and mother a comfortable home to replace the one they had

lost in helping me, and to give Aimee some of the things I wanted to buy for her.

Competing for the big prizes had to be postponed again. To build an aeroplane for altitude or speed work costs from $5,000 to $6,000, and because of its special construction it cannot be used for any other work with any degree of safety. The high-speed machines, for example, are built with planes of such small surface that they will hardly permit even volplaning. My work in those lines must come later.

I hate to think that today all records in that class of aeronautical work are held by foreigners. America produces men as resourceful and as daring, but because of the lack of governmental support we do not have the machines or money for our work. Other nations are developing the aeroplane because of its use in war. France, Germany, England, even China, are far in advance of the United States in aeronautics for that reason. But there are peaceful conquests for aeronautics far more valuable. There is a great new element to be won for the use of commerce and transportation.

People do not realize what that means. They are fond of comparing the aeroplane to the automobile. Why limit the aeroplane by that comparison? When we have the advance in aeroplane construction which we have in machines which stay on the ground such a comparison will seem foolish. Today they are comparing a motorcycle, which makes a speed of 100 miles an hour with a 15-horse-power motor, to the aeroplane which makes only 60 miles with 80 horsepower. The time will come, with better engines, with a propeller which will give greater traction effort, when we can reach in the air a proportion between speed and power similar to that of the motorcycle. The possibilities of aerial navigation can not even be imagined now.

I was discussing these things with Aimee one evening last fall. She sees the poetry and romance of things much quicker than I do, and she suggested the picture of the night sky, full of aeroplanes brightly lighted. The idea appealed to me. We were in Fort Wayne, and E. A. Moross was giving an exhibition there. Next day I met him, and we discussed night flying with an illuminated machine. He was enthusiastic about it, and I began working on the idea. I made several night flights with the machine outlined in lights, and then it occurred to me to use fireworks, which would leave a blazing trail of light across the sky.

I experimented with several methods of getting the effect I wanted, and found a Chicago firm which would make me a special brand of fireworks, suitable for the purpose. Using them, I first began the spectacular night flights which I am doing at the Exposition.

The narrowest escape I have ever had in the air was caused by this feature of my work on my first flight in San Francisco. The machine was wrecked that night. We managed at the time to conceal the facts,

and until now they have been known only to me and my manager, Billy Bastar.

Billy and I met last fall in Chicago. Charley Whitmer, who was sailing for Russia to teach the Czar's officers how to fly, suggested that I call at Billy's offices, and I did so. His stenographer took my card in, and said he would see me. When I walked in Billy glanced at me, and looked over my shoulder at the door.

"Where's Mr. Smith?" he asked. He had taken me for a messenger. I did not look old enough to fit his idea of Art Smith, the aviator. It was an awkward moment, but no one can help liking Billy Bastar. As soon as we were acquainted we were good friends, and he became my manager. He is as full of ideas about business as I am of plans for flying, and right away he suggested that I come to San Francisco.

It was impossible then. I was booked through the winter and spring, but Billy never gave up the idea of coming to the coast. Every once in awhile he spoke of it. After the accident which cost America one of her finest aviators—a loss that will be regretted always—Billy was more insistent than ever that we come to San Francisco. He finally made arrangements with the Exposition for two trial flights here. It was hard to convince the Exposition people by letter that I could do the things I claimed, but we were confident that my flights would be an irresistible argument.

I was to give a day flight on Saturday, April 3, and a night flight on Sunday. Billy and I reached San Francisco late Friday night, with the aeroplane. Saturday morning we discovered that the arrangements had been changed. The night flight was to take place that evening. My special fireworks had not arrived.

It was an anxious day. My staying on the coast depended on the flight that night. We must get fireworks. While the machine was being set up we scoured San Francisco for them. Late that day we found some among the Exposition supplies, exactly like those I use. We wired them to the aeroplane in great haste. I was concerned about air-conditions here, and spent most of the afternoon watching the clouds for indications of them.

The flight was to take place at 11:30 that night. When I reached the field a high wind was blowing. It looked like a bad night in the air. The machine was all ready, the fireworks connected. I looked it over carefully, and started.

CHAPTER XXIX.

I DROVE the machine down the Marina for the first time, and lifted it into the air. My success at the Exposition, the biggest opportunity I had ever had, depended upon that flight, and I drove the machine with all my skill.

Close to the surface the currents were swift and uncertain, but I flew through them, watching the machine carefully. I passed a thousand feet, fifteen hundred, two thousand. Then I encountered a curious thing —the air was warm. Just when I should have felt the first keen cold of the upper air; the wind against my face was almost hot. The air was still, too, with the close, oppressive stillness of a hot summer day on the ground.

I have found since that it is always so over San Francisco. The surface air, warmed by the sun, rises above the cold ocean breeze, and lies in a great calm lake, about two thousand feet from the earth. It is always still, not a current disturbs it. The surface winds over the sea do not reach so high.

I had never before encountered such an amazing thing. It seemed unreal, flying at two thousand feet in warm air. The machine was roaring steadily upward, and I kept every nerve alert for any trick of such unusual air-strata. I was flying directly over the spot where Lincoln Beachey had met his fatal accident, and I remembered the opinion still current among Eastern aviators, that the extraordinary air-currents above the Golden Gate had been responsible for his fall.

I had passed twenty-five hundred feet; neared three thousand. The time had come for the loops. I pressed the button which starts the white glare of the magnesium lights. They responded instantly, with the flare of the flashlight powder, and I dropped the machine into a vertical dip.

Two hundred feet below I pushed the controls over into the first loop, and touched the button for the trailing "comet tail." The aeroplane went end-over-end in a perfect circle, curving up through the propeller draft with a great jolt. I dropped again into the vertical dip and touched the second fireworks button.

Just as the machine fell forward into the second loop, and the engine stopped for the fraction of a second before picking up again, I heard a terrific explosion. The machine quivered with it. A piece of the framework hurtling through the air barely missed my cheek.

I threw all my strength on the controls. The machine responded. It swung around and up again. Just before it came right side up there was another explosion. I heard it above the roar of my engine. The fireworks were wrecking the aeroplane.

I nosed the machine over and down. I had to land quick. Right beside me I heard another sharp report. Fire blazed in my face; my coat was in flames.

I held the machine steady and came roaring down. I was wearing goggles; they protected my eyes from the fire. I held my breath. Ten feet from the Marina there was another explosion on the lower plane. The machine shook. I held it steady, and landed.

Billy Bastar came running, tearing off his overcoat. He flung it over the blazing machine and smothered the flames. I beat the fire from my clothes with my hands.

"Are you all right?" Billy gasped.

"Yes," I answered.

"Thank heavens! Quick, hide the machine! Don't let the papers get hold of this!" Billy said.

I nodded. A second accident, coming so soon after the terrible one a few weeks before, would kill my hopes of flying at the Exposition. Together we pushed the machine across the Marina and covered it with canvas before anyone else reached it.

The trailing edge of two planes was blown off clear to the windbeam. The supports were shattered. If all the fireworks had exploded nothing would have saved me.

I went home. I did not wait for the congratulations of the Exposition officials. Billy stayed to receive them. I was too angry with myself to speak.

I had gone into the air without testing the fireworks. Instead of the Roman-candle type which I use they were giant cannon-crackers, twelve inches long. Wired tight to the framework of the machine, they had exploded like bombs.

There was no excuse for such recklessness. An aviator should take no evidence but his own positive knowledge of every part of his machine. I had taken the word of another man for the safety of the fireworks.

They said I had make a spectacular flight. I knew I had made a criminal mistake, and an aviator should never make mistakes. All aviation has been made possible by the ability of each flyer to be sure of himself and his machine. An error means more than the individual wreck, it means an injury to aviation.

Three weeks later I celebrated my twenty-first birthday by signing my San Frncisco contract. It was just five years from the time I had watched the bird flying over James Lake. I am flying now over the domes and towers of the world's greatest Exposition.

My work in aviation is really just beginning. I want to do a big share in opening the great air-sea to the world's navigation. There is man's work in that. I have begun it now; some day I will be doing it.

For a few more years it must be a question of money. Aimee's comfort must be assured; dad and mother must have their comfortable home and an income which will care for them. Then I will build the aeroplanes I want. I will explore the great altitudes. I will work on transportation problems.

The world is carried forward by man's great dreams. The greatest dream of all is the conquest of the air. What it will mean to human life we know no more than Watt knew when he watched the lid of the kettle and dreamed of the first steam engine. Aerial navigation will mean, as the steam engine did, more than we can imagine now.

Big men are working on it. Big men will some day conquer all the difficulties which we are fighting.

We are only pioneers, but we are pioneers with a great idea. Some time in future centuries the whole world will be revolutionized by that idea. Then it will know the value of the hope and the thrill we feel as our aeroplanes rise from the earth, pass through the clouds, and fly high in the clear upper air.

(THE END.)

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