

How Robert Goddard Helped Lead America Into Space

19 April 2005

(MUSIC)

VOICE ONE:

This is Steve Ember.

VOICE TWO:

And this is Shirley Griffith with the VOA Special English program, EXPLORATIONS. Today, we report on some of the early research in the development of rockets. We tell the story of American physicist and rocket scientist Robert Hutchings Goddard.

(MUSIC)

VOICE ONE:

Robert Goddard once said that the dream of yesterday is the hope of today and the reality of tomorrow. It was his scientific work that gave hope to many of our dreams about space...and then turned them into reality.

Robert Goddard's many studies and tests in the early Nineteen-Hundreds led to the first modern rocket. Then he developed rockets with more than one engine. Each engine pushed the rocket higher and higher out of Earth's atmosphere. His ideas are still used today. So, in a way, every rocket that flies today is a Goddard rocket.

VOICE TWO:

Robert Goddard was far ahead of his time. Orville and Wilbur Wright made the first controlled airplane flight at Kitty Hawk, North Carolina, in Nineteen-Oh-Three. Other scientists and inventors after that experimented with planes. But Robert Goddard wanted to make a machine that flew in a different way from a plane. He called his first two designs, "rocket apparatus."



Robert Goddard working on a rocket. Goddard developed and flew many rockets that got their power from solid fuels -- chemicals made hard. Then, in Nineteen-Twenty-Five, he made and tested the first rocket engine using a soft chemical fuel. In Nineteen-Twenty-Six, he successfully fired the world's first liquid-fuel rocket.

Many historians consider that rocket flight as important as the first airplane flight by the Wright brothers. Goddard's work proved that machines could travel out of Earth's atmosphere, into space.

(MUSIC)

VOICE ONE:

Robert Hutchings Goddard was born in Worcester, in the state of Massachusetts, in Eighteen-Eighty-Two. His father knew a lot about machines. When Robert was a child, his family moved to Boston, Massachusetts. There his father became a part owner of a business that made knives for different machines.

Robert was the only child. His mother suffered from the lung disease tuberculosis. She was sick and weak, because at that time, there were no medicines to treat tuberculosis successfully.

Robert, too, was often sick. He could not keep up with his school work. His family moved back to Worcester when he was seventeen. He was almost too old to remain in high school. Yet he was behind other children his age. He was not a good student.

He hated mathematics. This subject, of course, was what would help make him famous later.

VOICE TWO:

One beautiful autumn day, Robert was sitting in a tree in the back of his house. He was reading a book by British author H. G. Wells. The book was called "War of the Worlds." Something strange happened to him. He later thought that perhaps Wells's book had something to do with it.

"As I looked toward the fields in the east," he said, "I imagined how wonderful it would be to make something that could rise to the planet Mars. I imagined how this thing, in a small size, would look if sent up from the ground at my feet. I was a different boy when I came down from that tree. For, at last, my life seemed to have some purpose."

VOICE ONE:

Robert Goddard never talked much about what happened to him up in the tree on that day, October Nineteenth. But he celebrated October Nineteenth as a

holiday for the rest of his life. On that day, he had formed the idea of making something that would go higher than anything had ever gone before.

He felt this was the whole purpose of his life. He was not troubled that many people thought he was foolish. He was sure he could do it.

"I know," he said, "the first thing I must do is to get an education, especially in mathematics. Yes, I must become an expert in mathematics, even if I hate it."

VOICE TWO:

Two years passed before Robert was healthy enough to go back to school. He entered South High School in Worcester. He worked and worked until he no longer hated mathematics.

Robert's father spent all his money to care for his sick wife. He did not have enough to pay for Robert's education after high school. Robert got financial help from others so he could go to a technical school in Worcester.

There he had very good teachers. They helped him become an expert in mathematics and physics.

VOICE ONE:

Robert completed his studies at the Worcester Polytechnic Institute and became a teacher of physics there. He also continued his studies at Clark University.

He began to develop the idea of multiple-stage rockets. These were rockets with more than one engine. Each engine would push the rocket higher and higher. The power for the rockets would come from burning two gases, hydrogen and oxygen.

After one year at Clark University, Robert went to Princeton College in New Jersey to do more studies on rockets.

VOICE TWO:

"Often," he said, "I worked all through the night. At last I learned how to send a rocket higher than anything had ever gone before. But the work was too much for me. I was feeling sick again. I had to stop my work and go to a doctor.

"X-rays showed that, like my mother, I was very sick with tuberculosis. The doctor said I had just two weeks to live. He put me in bed for a long rest. But I meant to live. I told myself I could not die. I had work to do."

VOICE ONE:

At the end of two weeks, Robert Goddard was still alive. In time, he started to work again.

In October, Nineteen-Thirteen, Goddard completed plans for his first rocket. In May of the next year, he completed plans for another rocket. These two plans are the first ever made for a rocket that would carry people into space. In Nineteen-Fourteen, he received two patents from the United States government to protect his rights to his inventions.

(MUSIC)

VOICE TWO:

Robert Goddard received money from the Smithsonian Institution to help him continue his work. In Nineteen-Nineteen, the Smithsonian published several of his reports explaining his research. The publication was called "A Method of Reaching Extreme Altitudes." It told about his search for methods of raising weather-recording instruments higher than balloons could go. It told about how he developed the mathematical theories of rockets.

In the report, Goddard also noted the possibility of a rocket reaching the moon. There was a big dispute in the press about the possibility of this. Many people thought he was foolish for suggesting such an impossible thing.

VOICE ONE:

Goddard continued to need money to continue his research. The world famous pilot Charles Lindbergh helped him get money from the Guggenheim Foundation.

Goddard quickly began to work on plans for bigger rockets. During the Nineteen-Thirties, he tested his rockets at a research center in Roswell, New Mexico. He tested the first rocket controlled by electricity. The control equipment was three-hundred meters from the place of launching. He also tested the first rocket controlled by a gyroscope. Gyroscopes help keep rockets aimed in the right direction.

VOICE TWO:

Goddard did all his work in the United States, yet his work became known around the world. Scientists in Germany used his ideas to help build the V-Two rocket that was used in World War Two.

During World War Two, Goddard helped the United States Navy develop some rocket motors and ways to launch jet planes. He continued work he had begun at the end of World War One that led to the bazooka, a weapon that fires small rockets.

VOICE ONE:

Robert Goddard died in Ninety-Forty-Five of cancer. He was sixty-three years old. He had been sick most of his life, but he died a happy man. He received many honors for his work. He believed his life had been a full one. He felt lucky

that the great dream that came to him, out of nowhere when he was only seventeen years old, had become real.

VOICE TWO:

Robert Goddard received a special honor many years after his death. In Nineteen-Fifty-Nine, the United States established the Goddard Space Flight Center in Greenbelt, Maryland, near Washington, D.C. It was the government's first major scientific laboratory used completely for space science.

The Goddard Space Flight Center honors the man whose work proved that machines could travel out of Earth's atmosphere, into space.

(MUSIC)

VOICE ONE:

This is Steve Ember.

VOICE TWO:

And this is Shirley Griffith. Listen again next week at this time to the Special English program, EXPLORATIONS, on the Voice of America.