



The AMA History Project Presents: Biography of DR. ROBERT R. GILRUTH



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Collier Winner Credits Model Airplane

America's most prestigious aviation award, the famed Collier Trophy, was presented in 1972 for achievements every model builder and flyer can relate to. The trophy winner, in an exclusive story for the Academy of Model Aeronautics, credits his youth and background of model aircraft experimentation for the career development that led to his leadership of the effort to land men on the moon. Here's the story by Dr. Robert Gilruth as given to AMA Historian Willis C. Brown.

Since I was a very small boy, I have been fascinated by all kinds of high-speed vehicles, especially airplanes. At the age of five, I can recall seeing pictures of flying machines of World War I and of the German Zeppelins. I saw my first real airplane a year or so later when a barnstorming pilot reached Duluth, Minnesota and I saw him do aerobatics while carrying people at \$5 a ride.

My early airplane models were constructed of spruce and used strips of rubber cut from inner tubes of old tires for the power supply. I built flying models of the *NC-4*, the *SE-5 Scout*, the Curtiss *Hawk*, and many others of that vintage. From these early experiences, I learned that the center of gravity of the model had to be well forward on the wing if it were to fly in a stable fashion. This was difficult to achieve using rubber for a power plant without large amounts of ballast in the nose.

I remember the stimulus the *American Boy* magazine gave to my model building career when articles by Merrill Hamburg were published, giving plans and directions for building such delightful models as the *Baby ROG* (rise-off-ground) and others. I learned from those articles about balsa wood, piano wire, and Japanese tissue – materials that made model building a lot more fun.

About the same time, the *Duluth News Tribune* sponsored a model-building class and indoor contest. Mr. Rappold from Chicago led the group. We built identical models of a single-propeller tractor design. I placed second or third in the contest, but I learned a lot about model building techniques.

A year or so later, Colonel Lindbergh made his famous flight from New York to Paris. This event gave a great impetus to action the world over, and it was also effective in stimulating interest in airplane building. Of course, I built models of the *Spirit of St. Louis*. My main interest, however, was in the theory of flight and in devising better ways of designing and building models. I sent away to NACA for technical reports on wing sections. I can recall using the median line of airfoils, such as the Clark Y, as a basis for the camber on my model wings. I tried to find the best structural arrangements for my models by asking my high school science teachers difficult questions, and I invented items like feathering propellers to increase the glide endurance.

All my model building experience occurred before the introduction of gas-powered models. Rubber band motors were inexpensive and within the reach of all. Even a poor boy could build and fly model airplanes. It was also true that the models were simple enough so that a research-minded lad could try many types of wings, tail surfaces, and propellers to determine which were the best. I built many models, including twin pushers, single pushers, single tractors with and without landing gears, as well as model seaplanes.

Model building proved to be an inspiration to me in my studies and influenced me to major in aeronautical engineering at a time when most people said that airplanes would never be of much importance. Subjects like mathematics, physics, and mechanical drawing took on a new meaning because I felt that the subjects would be invaluable in designing full-sized airplanes. My ambition was to design and build superior aircraft – not just to fly them. After graduation from college, I did design work on several aircraft, the most notable one being the Laird *Watt Racer* of Roscoe Turner's with which he won the Thompson Trophy. I was not the chief designer of this airplane, but I did a large part of the aerodynamic design and much of the structural design. This experience was excellent preparation for the years I was to spend in flight research.

In those early days, I could not have believed that someday man would fly to the moon and that I would have a part in the design and flying of the lunar vehicles. However, it was the same driving interest in flight that guided me all through my early years in research with aircraft, then into the guided missiles, and finally on into space flight and the voyages to the moon.

Model airplane building has been important to others in the space program. Max Faget, who has contributed so much to the design and development of the Mercury and Apollo spacecraft, used to build and fly model airplanes. So did Caldwell Johnson, chief of the design department of the Manned Spacecraft Center. Hewitt Phillips, head of the Flight Dynamics Division at Langley Field, who has made many contributions to the spacecraft program, was a highly successful model builder as a boy and continues in the activity to this day.

In looking back to these early years, I cannot imagine any more fascinating or worthwhile activity than that spent in building and flying model airplanes.

Article Background

Three officers of the Academy of Model Aeronautics were guests of the National Aeronautic Association at the 1972 Collier Trophy presentation: Willis Brown, the first AMA president (1936) and current AMA historian; John Worth, 13th AMA president (1963) and current AMA executive director; and John Clemens, 18th and current AMA president.

The presentation, hosted jointly by the National Aeronautic Association and the National Aviation Club, was held at the Sheraton Park Hotel in Washington, D.C. with Vice President Agnew as featured speaker. Other notables present were many of the NASA astronauts, previous Collier Trophy winners, senators and congressmen, and aerospace industry leaders.

This was not the first time that AMA officers had been present at Collier Trophy presentations in honor of modeler recipients. In 1969 and 1970, former AMA members and astronauts Frank Borman and Neil Armstrong, respectively, had been presented the award – Borman for being the command pilot of the first crew to circle the moon and Armstrong for being command pilot of the first crew to land on the moon.

At the 1969 Collier event, Dr. Gilruth was a spectator, seated at the same table with Willis Brown and other AMA officers. From this association developed conversations and correspondence that led to the story presented here.

Collier Award Background

NASA's Dr. Robert R. Gilruth, who led the research team that began developing the program for the nation's first venture into manned spaceflight, and the Apollo 15 crew were designated as the recipients of the Robert J. Collier Trophy for significant achievement in aeronautics for 1971.

The Robert J. Collier Selection Committee, headed by Frederick B. Lee, Chairman of the Board of the National Aeronautic Association, while recognizing the superb skill and courage of the astronaut crew, honored Dr. Gilruth as representative of the engineering genius of the manned spaceflight team which culminated in Apollo 15, "Man's most prolonged and scientifically productive lunar mission."

The trophy was established in 1912 by Robert J. Collier, publisher and pioneer aviation enthusiast, as the Aero Club of America Trophy. In 1922, the Aero Club of America was incorporated as the National Aeronautic Association and now has aero clubs throughout the United States as chapters. NAA is the official U.S. representative of the Federation Aeronautique Internationale, the organization responsible for the authentication of all official aviation and space records on a worldwide basis, and is composed of more than 60 member nations.

In 1944, the association renamed the award the Robert J. Collier Trophy. It is awarded annually "for the greatest achievement in aeronautics or astronautics in America, with respect to improving the performance, efficiency, or safety of air or space vehicles, the value of which has been thoroughly demonstrated by actual use during the preceding year."

The first two awards went to Glenn H. Curtiss for development of the hydroaeroplane in 1911 and for development of the flying boat in 1912. The following year the recipient was Orville Wright for development of the automatic stabilizer. More recent recipients have included Vice Admiral William F. Raborn, James E. Webb, Hugh L. Dryden, James S. McDonnell, Lawrence Hyland, the Apollo 8 and 11 crews, and in 1971, the Boeing Company as leader of the industry-airline-government team which successfully introduced the 747 into commercial use.

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