

Program: 50 Years Since the Moon Landing

Speaker: Chris Edwards, EdD, teacher, author; curriculum developer, facilitator of Sciencetech Summer Institute

Introduced by: Jeff Rasley

Attendance: 125

Guests: Frank Alan, Ray Chin, Jo Davis, Jackie King, Carol Miller, Kristine Tennant

Scribe: Hank Wolfla

Editor: Carl Warner

Chris Edwards, EdD, has had his scholarship and teaching methodology published in journals produced by both the National Council for History Education and the National Council for Social Studies. He is a frequent contributor on such topics as law, logic, and theoretical physics to the science and philosophy journals *Skeptic* and *Free Inquiry*. He proudly teaches world history and Advanced Placement world history at a public high school in Indiana. Dr. Edwards introduced his talk with a slide of his recent book called *All About the Moon Landing*, a paperback for children published by Blue River Press.

Chris started his talk with what the space program was all about as it related to history. It started with the three great powers of Germany, Russia, and the US looking for advantages in military equipment. The major key to this movement was the division of Europe by Russia and their high quality tank force. In 1938, Otto Hahn (with Lise Meitner) discovered nuclear fission with uranium. In May 1941, University of Kyoto physicist Takutaro Hagiwara delivered a speech in which he postulated a thermonuclear fusion reaction between hydrogen atoms could be triggered by the explosive fission of uranium-235. In November 1952, the US exploded the first hydrogen bomb.

These early scientists and leaders saw the potential of a nuclear device in a rocket. Germany was the first to lead this endeavor with the V-2 rocket development during WWII. Captured German POW Werner Von Braun led the US's rocket development effort as he had led the German V-2 program. His Russian counterpart was Sergei Korolev. The Cold War was off and running. Weapons development and delivery remained the primary driver, but aircraft remained the main deterrent initially.

The 1957 Russian launch of the 'aluminum basketball' called Sputnik shocked the world. A hit to international prestige, Eisenhower sees the need for rockets and space and forms NASA in 1958. Soviet success with Luna 1 and Luna 2 moon missions in 1959 ramped up the pressure. In 1961 man reaches space with Russian Yuri Gagarin's orbital flight -beating out the comparable US effort by nearly a year. The famous speech of John Kennedy saying that the US will put a man on the moon by the end of the decade came in September 1962. This new goal came at the right time for the USA which was suffering from the divisive problems of Vietnam and Civil Rights. Space Race pressures continued with Luna 9's soft Moon landing in early 1966 and the Apollo 1 fire in early 1967.

The old rockets on both sides used kerosene as a fuel. Von Braun had earlier realized that a more powerful fuel was needed for the manned lunar missions. The massive Saturn V did use kerosene on the first stage, but second and third stages were powered by liquid hydrogen. The Russian approach was to retain the kerosene fuel and build ever larger rockets. The increased complexity, coupled with minimal testing, lead to some spectacular and fatal failures.

On July 20, 1969, two of Apollo 11's crew landed on the moon. Neil Armstrong, Buss Aldrin, and Michael Collins were the crew of that famous flight, who all safely returned to earth. The legacy of

this is five more moon landings, but also the loss of crews and shuttles Challenger in 1986 and Columbia in 2003.

Chris, like the scribe, believes that the future of landing men on the Mars may not happen because of the distance, the harsh space environment, the current national/international political environment, and the magnitude of this expense to the US economy.



Chris Edwards responding to the members' questions