

Dr. James G. Baker
Inducted 2002



Dr. James G. Baker is a pioneer in the development of optical components for the Air Force's earliest space surveillance systems and for airborne and space-based photoreconnaissance programs. With involvement by the United States in World War II still a year away, Baker began his participation in photoreconnaissance programs in late 1940 while a graduate student at the Harvard College Observatory. In 1942, he would receive his doctorate in astronomy and astrophysics. Recruited to assist the work of the Army Air Corps Photographic Laboratory at Wright Field, his efforts at the observatory focused on designing, fabricating, and calibrating lenses for aerial cameras used in photoreconnaissance and mapping. By the time the United States entered the war in December 1941, Baker directed a small team at Harvard known as the Observatory Optical Project. This group, which became a major component of the National Defense Research Committee's Division 16 under the wartime Office of Scientific Research and Development, produced a number of unique aerial cameras and lenses used by the U.S. Army and Navy during the war and during the postwar period. In 1945 Major George Goddard, director of the Army's Photographic Laboratory, in a letter to General Henry H. Arnold, Commander of the Army Air Forces, described Baker as "the most versatile optical designer known to this command."

Following the war, Baker continued to consult for the Air Force Photographic Laboratory, Perkin-Elmer Corporation, Eastman Kodak, and the Boston University Optical Research Laboratory (BUORL), which had absorbed the personnel of the wartime Observatory Optical Research Laboratory. In 1952, he contributed to the Air Force's seminal Beacon Hill Study that charted the course for future, high altitude, overhead reconnaissance systems to meet the needs of Cold War intelligence. By the mid-1950s, Baker designed optical systems appeared in almost all of the cameras employed in American photoreconnaissance aircraft. Also at this time, while serving on the Air Force Scientific Advisory Board's reconnaissance panel and on the

Technological Capabilities Panel's intelligence committee, he was instrumental in securing President Dwight D. Eisenhower's approval of Project AQUATONE, the acquisition of the U-2. Subsequently, he designed the lenses and much of the camera systems employed in the U-2. His later work in the photoreconnaissance field included the design of lenses and camera systems employed in the CIA and Air Force A-12/SR-71 Blackbird as well as in the Eastman Kodak E-1 camera developed for the Air Force Samos satellite program. During 1966-1967 NASA used a modified version of the Samos camera to photo-map virtually the entire surface of the Moon including select Apollo landing sites.

Dr. Baker's contributions to astronomical projects were equally distinguished. Over the course of his career, he authored numerous papers on astronomical and space-related topics and participated in the design and development of numerous major optical systems including the Super Schmidt Meteor Camera, the transverse panoramic aerial camera, the Schmidt-Cassegrain astronomical telescope, and the Baker-Nunn satellite tracking camera. In his work on the last of these, he was the first to use a computer in optical design. Developed by the Smithsonian Astrophysical Observatory to support United States participation in the International Geophysical year, the Baker-Nunn camera subsequently became the cornerstone of the Air Force's early satellite tracking and space surveillance networks. In October 1957, the camera provided some of the first tracking data on the Soviet Union's Sputnik I satellite. An extremely precise instrument, for over three decades the Air Force's network of five Baker-Nunn cameras provided tracking data on both near earth space objects as well as those traveling in the most distant orbits. Its reliability and longevity were attributes reflective of the skill and craftsmanship invested in the camera's design and production by its namesakes, Dr. James G. Baker and Joseph Nunn.

Baker continued his involvement in intelligence and photoreconnaissance programs during the Cold War period. He served on the President's Foreign Intelligence Advisory Board and for many years on the Land Panel that advised the Director of Central Intelligence and the Director of Science and Technology. Dr. Baker died in June 2005.