became project manager for Corporal, the first operational missile developed by JPL.

As JPL's director, Dr. Pickering was involved in U.S. Army proposals for Earth-satellite launchings, and in 1957–58 for the development and operation of the early Explorer satellites and Pioneer space probes. Following these projects, he lead JPL into the new National Aeronautics and Space Administration as a major contractor responsible for unmanned lunar and planetary flight projects and the supporting technology.

He has been professor of electrical engineering at Cal Tech since 1946; he was the first president of the American Institute of Aeronautics and Astronautics in 1963, and president of the International Astronautical Federation in 1965–66. He is a member of the National Academy of Sciences, the National Academy of Engineering, and the Royal Society of New Zealand, among others.

He is an advisor to the University of California, the University of Washington, and the University of Connecticut. He has been a member of the Army Scientific Advisory Panel and was a charter member of the Air Force Scientific Advisory Board. He has published a number of articles and technical papers in the field in which he is active, and has received NASA's Distinguished Service Medal, the Army's Distinguished Civilian Service Award, the British Interplanetary Society's Special Award, the Columbus Gold Medal of Italy, the James Wyld Memorial of the American Rocket Society, the Robert H. Goddard Memorial Trophy of the National Space Club, the Galabert Award of France and Italy's Order of Merit, among others.

He is married to the former Muriel Bowler; they have two children, William Balfour and Anne Elizabeth (Mrs. Wayne Mezitt).

STATEMENT OF DR. WILLIAM H. PICKERING, DIRECTOR, JET PROPULSION LABORATORY, CALIFORNIA INSTITUTE OF TECHNOLOGY

Your interest in the optimum utilization of Federal laboratories is particularly gratifying and reassuring to those of us who have been involved in Government-sponsored research and development activities. I am honored and pleased to be invited to testify before your committee today.

My remarks, Mr. Chairman, are made with reference to my experience as director of a mission-oriented laboratory sponsored by the Government but operated under contract to a university, and one which has worked for a number of agencies and experienced significant changes in primary objectives during the past 30 years.

The Jet Propulsion Laboratory was the first Government-sponsored rocket research group in the United States, originating on the campus at California Institute of Technology in 1939 as an outgrowth of the activities of the Guggenheim Aeronautical Laboratory. Headed by Dr. Theodore von Karman, JPL performed research and development on rocket propulsion devices for aircraft until 1940, when the Army Air Corps assumed sponsorship.

I might comment in passing that at that time the interest in the work was such that it grew beyond the scope of the university and the Aerojet Corp. was formed as a byproduct of our activities.

By 1941 the first successful jet-assisted aircraft takeoff units were developed, followed by pioneering liquid and solid propellant rocket systems and the basic concepts underlying modern telemetry systems. In 1944 JPL began a long association with the Army Ordnance Corps, during which it developed the first of the modern guided missile weapons systems, and, in the late 1950's, the first inertially guided, solid propellant missile system.