Address by Mr. James C. Elms

Representing the U. S. Government

Mr. President, Ladies and Gentlemen,

It is indeed an honor to address this distinguished group even if only with very brief opening remarks. A possible explanation for my having this honor is that I am perhaps the only man in the United States who can be called an official of both the leading civilian aeronautical agencies in this country. I am at this moment the Director of a NASA research center which next Wednesday will become the Transportation System Center – and I am the Director-Designee of that new organization. Therefore for a few days, I represent both the National Aeronautics and Space Administration and the U. S. Department of Transportation of which the Federal Aviation Administration is a major part. Both NASA and the Department of Transportation are concerned with the development of aircraft and with improving aeronautical technology and operation. Both agencies appreciate the importance of the OSTIV Congresses and of the contributions that you gentlemen have made to this technology.

As a pilot, I come with only the modest skills of a neophyte. Paul Bikle took me for one ride in a 2–32 last August at El Mirage. Three months later I was equipped with a license, a 1 – 26, unbounded enthusiasm and little else.

As a technologist, I come not as a teacher but as a student. I have very little specific knowledge – only a great interest in learning more about the technical future of sailplanes. As a student often does in such a case, I have tried to learn a bit about past contributions attributable to motorless flight in order to get a feel for the shape of things to come.

Indeed, aeronautics has come a long way – from the early gliders of Lilienthal and Chanute to supersonic transports. It is a far cry from the exciting and romantic roar of an unmuffled internal combustion engine in open biplanes to the current search for quiet engines and quiet aircraft. Incidentally, I wish more of those who are concerned with the noise produced by air travel planned to be in Marfa for the next few days. The sailplanes you have designed and built have indeed achieved the ultimate in quiet flight. In the United States we have come from early wind tunnel measurement of airfoil characteristics at NACA's Langley Research Center to design competition for a reusable space shuttle by NASA, the successor to NACA. We have come from the «every man for himself» traffic patterns of the early barnstormer to the prospect of fully automatic air traffic control systems.

In his classic 1938 book «The Art of Soaring Flight», Wolf Hirth said that the very earliest pioneers had visualized in modern soaring the solution of the problem of flight.

He said «The strength of the human body had proved inadequate to maintain flight, and light engines did not then exist. Yet, as some birds apparently had no difficulty in flying long distances at high altitudes, it was thought that the secret of their flight must lie in the air itself. All the first soaring theorists believed in the truth of this, and among them was Lilienthal, who became not only the first actually to fly in 1891, but also the first to succeed in soaring, by allowing himself to be borne aloft by a breeze blowing up a hill.»

While speaking of those distant early days, I cannot resist mentioning my home, New England, and its contribution to motorless flight. The first instance of organized slope soaring in America was the establishment in 1928 of the Cape Cod Gliding School in Massachusetts. Sand dune soaring, as first practiced by Parker Leonard on Cape Cod, gave the sport a popularity that never waned thereafter. You will be interested to know that soaring is still going on at Cape Cod. I made my maiden contest attempt there a few weeks ago. A 1939 issue of «Appalachia», the magazine of the famed Appalachian Mountain Club, contained an article entitled «White Mountain Soaring». It was written by Lewin B. Barringer, the manager of the Soaring Society of America. Though Lew Barringer didn't fully realize it at the time, during that flight over Mt. Washington in New Hampshire he encountered a montain wave and performed the first wave soaring in America. Mt. Washington is now the site of an annual wave soaring contest that attracts pilots from all over the U. S. and Canada. Enough of provincial pride! We shall return to our main topic – the contribution of gliding and soaring to aeronautics and aviation science.

Motorless flight has been a prime innovator from the days of the primitive hang glider, which my friend Ernst Steinhoff flew in the twenties, to the wingless lifting bodies that Paul Bikle is now concerned with. Motorless flight has been the source of countless development that were adopted for powered aircraft. An excellent catalog of these innovations was produced by Dr. Wolfgang B. Klemperer in a talk in 1962 on the occasion of the dedication of the Gold and Diamond Soaring Plaques in the National Air and Space Museum at Washington. I quote: «The contribution of motorless flight to the sciences of aviation and meteorology and to aeronautical engineering are too manifold to enumerate . . . Gliders were flown and the rudimentary skills of piloting were thus acquired during the decade which preceded the first successful motor-driven airplanes. Thus the early pioneers learned with gliders about the need for efficient elevators and ailerons, the merits of cambered wings, dihedral, sweepback, and wingtip washout.»

It is of great significance to note that the Wright Brothers flew their gliders thousands of times and by means of these flights developed their control theory and perfected their airplane – without an engine. Here indeed ist the best example of the contribution which glider technology has made to the fundamental design and development of powered aircraft.

World War I brought about remarkable engineering development in the powered airplane and a tremendous increase in its performance. Yeat it was the sailplanes of the twenties which demonstrated the value of high aspect ratio, elimination of wing-cutout and wing-fuselage interference, streamlined and eventually retractable landing gears.

The period since World War II to which the people in this room have made so many contributions has been one of great refinement and sophistication par excellence. We will hear over the next six days of the latest innovations which have been demonstrated and of concepts for the future. Speaking both for NASA and DOT, I want to congratulate you and encourage you to keep up the good work.