

Golden Anniversary
Observance
of
Man's First Successful
Powered Flight

PROCEEDINGS

at the

Exercises Held at Wright Brothers National Memorial
December 14-17, 1953

In Commemoration of the Fiftieth Anniversary
of the First Flight of an Airplane Made by
Wilbur and Orville Wright

UNITED STATES
GOVERNMENT PRINTING OFFICE
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1903

Powered flight was achieved at 10:35 a. m., Thursday, December 17, 1903, when Orville Wright made the first successful flight in a powered airplane from the base of Kill Devil Hill, near Kitty Hawk, North Carolina. The flight lasted for about 12 seconds, reached an altitude of 10 feet, and covered a distance of 120 feet. The speed was between 7 and 8 miles per hour. Three more successful flights were made this same morning, with Orville and Wilbur Wright alternating as pilot.

This historic achievement, which went almost unnoticed at the time, has since been recognized as one of the astounding accomplishments in the history of man. As a means of transportation, the airplane has brought the farthest spots on earth within hours in travel time. As a medium of defense, airpower has become the greatest deterrent to aggression.

1953

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House Resolution 429

[83D CONGRESS, 2D SESSION]

[REPORT NO. 2234]

[SUBMITTED BY MR. BONNER]

Resolved, That the proceedings conducted at *Kill Devil Hills*, North Carolina, on December 15, 16, and 17, 1953, and at Washington, District of Columbia, on December 17, 1953, celebrating the fiftieth anniversary of controlled-powered flight, by Wilbur and Orville Wright shall be printed as a House document.

Amend the title so as to read: "Resolution authorizing the printing as a House document of the proceedings at Kill Devil Hills, North Carolina, and at Washington, District of Columbia, celebrating the fiftieth anniversary year of controlled-powered flight."

Preface

At 4 o'clock, the afternoon of Thursday, December 17, twelve Civil Air Patrol planes dipped their wings over the Wright Monument atop Kill Devil Hill, ringing down the curtain on a 4-day celebration at Kitty Hawk, N. C., commemorating the golden anniversary of powered flight. The greatest tribute ever paid Orville and Wilbur Wright came to a close and a wintry silence settled on the historic site.

A 4-day celebration, international in scope, had been staged at a place without an airport, 58 miles from the nearest airline, and 15 miles from the nearest telegraph office. Every telephone call had to be long distance, when the lines worked. The area was a summer resort, but the celebration took place in mid-December, nearly 3 months after the hotels and restaurants had closed for the season. Only two buses passed the site each day.

In spite of all this, thousands of persons visited the 317-acre memorial park to watch aerial demonstrations by more than 200 planes, hear speeches by scores of aviation leaders, and attend daily memorial services honoring the pioneering Wright brothers. Millions more had received firsthand accounts of the celebration from 84 newsmen and women.

Two events turned back time to the beginnings of aviation. Replicas of the Wright brothers' 1903 hangar and living quarters were built and furnished in the form of the originals, and on their original location, under the supervision of the National Park Service. And the first flight was reenacted by a 1912 pusher plane, flown over the original course at the exact 50th anniversary moment by Billy Parker of the Phillips Petroleum Co., Bartlesville, Okla.

Six F-86 Sabrejets dramatized the progress made in plane speeds by rocking the historic site with sonic booms, as they dived from 43,000 feet. Speed and range of today's planes were demonstrated by the arrival of an RAF Canberra jet bomber, flown by Flight Lieutenants R. L. Burton and D. H. Gannon, 50 seconds ahead of schedule on a flight that left England after breakfast on the morning of December 17 and arrived at Kitty Hawk in time for lunch the same day. A shiny new Douglas DC-7, owned by National Airlines, dipped a wing as it zipped past the reviewing stand at nearly 400 miles an hour. It had set a new transcontinental speed record for airliners the night before.

The flying ability of today's pilots was demonstrated in an almost unbelievable fashion by the United States Air Force's aerobatic team, the Thunderbirds. For 15 minutes, Maj. Dick Catledge, and Capts. Bill and Buck Pattillo, and Bob McCormick flew their four F-84 Thunderjets no more than 5 feet apart as the 10,000 spectators watched in silence.

The peaceful role of the airplane was stressed by displaying three flags—the United States, United Nations, and International Goodwill—from poles atop Kill Devil Hill. The flags had been flown around the world in less than 6 days, a distance of over 23,000 miles, by Pan American World Airways and Trans World Airlines.

James H. Doolittle, chairman of the National Committee to Observe the 50th Anniversary of Powered Flight, and Representative Carl Hinshaw, chairman of the Joint Congressional Committee for the 50th Anniversary, headed the speaking program. Other speakers included Alfred L. Wolf, secretary, Aircraft Owners and Pilots Association; Joseph T. Geuting, Jr., manager, Utility Airplane Council; Edward O. Rodgers, assistant to the president, Air Transport Association; Adm. DeWitt C. Ramsey, president, Aircraft Industries Association; George C. Kenney, president, Air Force Association; Donald A. Quarles, Assistant Secretary of Defense; and Conrad L. Wirth, Director, National Park Service. Elbert Cox, regional director, National Park Service, dedicated the reconstructed 1903 camp site.

The whole affair began when four groups united under a joint committee to plan, arrange, and stage the celebration. They were the Kill Devil Hills Memorial Society, National Park Service, North Carolina 50th Anniversary Commission, and Air Force Association. Miles L. Clark of Elizabeth City, N. C., chairman of the board of the Memorial Society, headed a five-man steering committee. Other members were S. Wade Marr, representing the Memorial Society; Elbert Cox, Park Service; Carl Goerch, North Carolina Commission; and Ralph V. Whitenor, Air Force Association.

Each organization had specific duties and responsibilities. The Memorial Society was responsible for local arrangements and participation. The Park Service was in charge of rebuilding and refurbishing the 1903 Wright camp. The North Carolina Commission was responsible for arrangements and participation by the state. National arrangements and participation, and celebration operations were assigned to the Air Force Association.

Charts were drawn and duties defined. It looked rather simple on paper. It would have been simple almost anywhere except isolated Kitty Hawk.

Events were given priority status, with the reconstruction of the original site at the top of the list. Letters went to 532 individuals and firms across the Nation, soliciting contributions to finance the construction. Returns were slow. So the Air Force Association advanced the Park Service \$500 to begin collecting the furnishings for the buildings. The first \$3,000 collected went for lumber for the sheds. Actual construction didn't begin until late November.

Aircraft were the second priority. Seven meetings were held with representatives of the military services before the final decision was made. USAF's Air Proving Ground Command at Eglin Air Force Base, Fla., was assigned the responsibility for service participation. Also, letters and telephone calls went out to aircraft manufacturers and private flyers to take part in the celebration.

Participating aircraft had to be controlled and visiting planes needed landing and fueling facilities. The USAF 3d AACS Squadron, under Capt. E. J. Lange, built two radio control centers. One was a homing beacon, 6 miles north of Kill Devil Hill, for last-minute checks on a pilot's course and timing. The other was an aircraft control tower, inside the park.

At Manteo Airport, 15 miles from Kill Devil Hill, Manager W. M. Henderson prepared his small field for parking more than 100 planes a day. One runway had lights—the only landing aid. W. Robert Elder and other Civil Aeronautics Administration representatives installed and

operated a mobile control tower. The United States Navy sent a crash truck and crew from Norfolk.

Weather is the chief concern of any flyer. The United States Weather Service in Washington furnished two top meteorologists and forecasters. At the Manteo Airport, they installed a teletype machine that clicked off weather information 24 hours a day, set up a pilot briefing room, and fed hourly forecasts into the celebration operations office.

Next on the list was a central point from which the entire celebration could be directed. The Carolinian Hotel at Nags Head was selected. A six-room cottage next to the hotel was turned into an operations office. One of the four ground-floor rooms became a committee office for the sponsors, another served as military headquarters, the third became a transportation office, and the fourth was a briefing room for participants. Key personnel slept upstairs.

Activities were now centered in three places—Kill Devil Hill, Manteo Airport, and the Carolinian Hotel. This triple location presented a communications problem. Limited telephone facilities were too uncertain. CAA and the North Carolina Highway Patrol got together. CAA had the Federal Communications Commission clear a radio channel and install a receiver and transmitter at the Carolinian. A/IC Ray Keeney, from Bolling Air Force Base, operated the equipment. Thus officials could be in radio contact with the Manteo tower, Kitty Hawk Control, and participating aircraft.

The Highway Patrol installed a radio station in Park Superintendent Horace Dough's yard. One patrol car was stationed at the Manteo Airport, another on the roadway circling Kill Devil Hill, and a third outside operations at the Carolinian. Celebration officials then had instant contact with all points of activity.

From an operations standpoint, Kitty Hawk was ready for its biggest aviation event since 1903. But there were still more headaches. The biggest show in the world would be a flop without an audience. The population in and around Kitty Hawk could be numbered in the hundreds. Advance news stories were sent to newspapers, radio and television stations across the Nation. Interest began to mount. Early predictions set the attendance at as high as 5,000. As attendance predictions mounted, so did the problems. Where would everyone eat and sleep? The Nags Head Chamber of Commerce set up a housing office. Summer hotels and restaurants were asked to reopen. Lloyd Griffin, a professional concessionaire in Goldsboro, agreed to operate a food stand at Kill Devil Hill.

There were two ways to reach Kitty Hawk—by air and automobile. One two-lane highway connects the narrow strip of beach with the mainland. Traffic jams seemed inevitable. Here again, the North Carolina Highway Patrol came to the rescue. Thirty-five hand-picked patrolmen were assigned to the job. Thirty-two acres of parking space were cleared. There were no traffic jams.

How would those who would arrive by air get from the airport, 15 miles away, to the celebration site? Norman K. Haig of General Motors sent down 16 new cars from Detroit. Igor Sikorsky sent his personal helicopter. Two buses were chartered. The United States Navy and Coast Guard Air Stations at Weeksville and Elizabeth City provided volunteer drivers. David S. Jamieson and Donald Steele, officials of the American Automobile Association in Washington and active members of the Air Force Association, voluntarily took 5 days off to operate the motor pool.

There was no auditorium or stadium at Kill Devil Hill—only sand and grass-covered hills. The National Seating Co. brought 1,800 bleacher seats from Washington to Kitty Hawk. Even so, 13,000 visitors had to stand on the final day.

So the crowds could hear the speakers the Taylor Radio & Electrical Co. blanketed the area with microphones and speaker horns. The spectators could even hear pilots talking from 8 miles up.

The rest of the world had to be reached through newspapers, newsreels, radio, and television stations.

A news room was set up in the Carolinian Hotel. A. W. Drinkwater, famous telegrapher of early news stories about the Wright flights, and Aycock Brown, free-lance newsman and manager of the Dare County Tourist Bureau, asked Western Union for equipment. Two machines were installed and a four-man Western Union team, headed by District Manager E. A. Stroupe, filed copy. Stroupe's official report said that the newsmen filed 75,609 words during the 4 days.

A Civil Air Patrol plane flew newsreel and television film footage to Norfolk, Va., daily, connecting with National Airlines' New York flight. On the final day, a special plane flew film nonstop from Kitty Hawk to New York's LaGuardia Field, in time to hit the weekly newsreel makeup and 6 p. m. TV newscasts.

In adding up the results, the record shows that 14,900 persons witnessed the \$21,000 celebration. Newspapers from Kitty Hawk to Brisbane, Australia, carried front-page articles on it. Hundreds of theaters flashed it on their screens. And every national radio and television network broadcast it to millions of persons. Two great Americans had been honored for one of man's greatest achievements.

I am proud of the way in which the people of North Carolina, my home State, rallied to this great cause. We are deeply grateful to the Air Force Association, the Kill Devil Hills Memorial Society, to Secretary Douglas McKay, United States Department of the Interior, and to Conrad L. Wirth, Director of the National Park Service, for their invaluable assistance in making this historic observance a great success.

Sincerely,

HERBERT C. BONNER,
*First Congressional District,
State of North Carolina.*

Sponsors

KILL DEVIL HILLS MEMORIAL SOCIETY

The Kill Devil Hills Memorial Society, formerly an association, was organized on August 16, 1927. The Society's objectives are: to preserve and foster the memory of the historic achievements of Orville and Wilbur Wright; to sponsor, cosponsor, or otherwise arrange an appropriate observance each year at the site and on the anniversary date of man's first successful powered flight; and to promote public understanding of aviation. Its membership is open to all air-minded citizens. Post Office Box 24, Kill Devil Hills, N. C.

AIR FORCE ASSOCIATION

The Air Force Association was formed on February 6, 1946, as an independent nonprofit airpower organization. Its objectives are: to assist in obtaining and maintaining adequate airpower for national security and world peace; to keep its members and the public abreast of developments in the field of aviation; and to preserve and foster the spirit of fellowship among former and present members of the USAF. Its membership is open to all air-minded citizens—either as active, service, or associate members. Its headquarters is located in Washington, D. C.

NATIONAL PARK SERVICE

The National Park Service is a bureau of the Department of the Interior. It was established by act of Congress in 1916, to maintain custody of federally owned historic, scenic, and scientific areas, including the Wright Brothers National Memorial. Mr. Conrad L. Wirth is Director of the National Park Service. The Honorable Douglas McKay is Secretary of the Interior.

NORTH CAROLINA 50TH ANNIVERSARY COMMISSION

The North Carolina Commission of the 50th Anniversary of Powered Flight was appointed by the Governor of North Carolina on June 18, 1953, on authority of the General Assembly, to assist, cooperate, and participate in the appropriate observance of the historic occasion throughout the State of North Carolina.

Celebration Committee for Plans and Operations

MILES L. CLARK, Chairman
Kill Devil Hills Memorial Society

S. WADE MARR
Kill Devil Hills Memorial Society

ELBERT COX
National Park Service

RALPH V. WHITENER
Air Force Association

CARL GOERCH
*North Carolina 50th Anniversary
Commission*

AYCOCK BROWN
Local Liaison

Department of Defense Senior Liaison Officer
MAJ. GEN. PATRICK W. TIMBERLAKE
Commander, Air Proving Ground Command, USAF

Senior Military Project Officer
COLONEL JACK D. DALE, JR., USAF



North Carolina 50th Anniversary Commission

CARL GOERCH, *Chairman*

C. C. CRITTENDEN, Raleigh
HERBERT C. BONNER, Washington
THOMAS H. DAVIS, Winston-Salem
HUGH MORTON, Wilmington

GEORGE D. WASHBURN, Shelby
HENRY VANN, Clinton
FRANK THOMPSON, Raleigh
AYCOCK BROWN, Manteo

LINDSAY C. WARREN, *Honorary Member*

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Reenactment of the flight by Billy Parker.

PIONEERS & PRIVATE FLYERS DAY MONDAY, DECEMBER 14

Sponsored by

Dare County and Aircraft Owners and Pilots Association

MEMORIAL CEREMONY

Wright Monument, Kill Devil Hill

PRESIDING—LAWRENCE L. SWAIN, *Member, Dare County Board of Commissioners*

- 10:00 A. M. PROCESSION TO TOP OF KILL DEVIL HILL
10:10 A. M. NATIONAL ANTHEM
10:12 A. M. WELCOME—Frank P. Lahm, President, Kill Devil Hills Memorial Society
10:15 A. M. INTRODUCTIONS
10:25 A. M. PLACING OF WREATHS
Dare County—Margaret Pearce and Janie Etheridge
AOPA—J. B. Hartranft, Jr., President
10:31 A. M. BENEDICTION—Rev. W. B. Gregory, Kitty Hawk Methodist Church
10:33 A. M. TAPS—
10:35 A. M. MEMORIAL FLIGHT—Civil Air Patrol
10:37 A. M. PROCESSION TO RECONSTRUCTED WRIGHT BUILDINGS
-

SITE DEDICATION CEREMONY

PRESIDING—CARL GOERCH, *Chairman, North Carolina 50th Anniversary Commission*

- 11:00 A. M. INTRODUCTIONS
11:05 A. M. DEDICATION—Elbert Cox, Regional Director, National Park Service
11:15 A. M. WRIGHT BUILDINGS OPENED TO PUBLIC
11:30 A. M. GLIDER SALUTE—Soaring Society of America
-
- 12:30 P. M. PIONEERS & PRIVATE FLYERS LUNCHEON—Carolinian Hotel, Nags Head
Speakers: Alfred L. Wolf, Secretary, AOPA
Joseph T. Geuting, Jr., Manager, Utility Airplane Council
-

- 2:45 P. M. PILGRIMAGE TO WRIGHT BROTHERS' 1900-1901 GLIDER CAMP SITE
Note: One-fourth mile south of Kitty Hawk Road
3:00 P. M. FLAG AND WREATH CEREMONY—Soaring Society of America
-

SUNRISE AND SUNSET PATROLS—9 A. M. and 4 P. M.—Civil Air Patrol

INDUSTRY DAY • TUESDAY, DECEMBER 15

Sponsored by

Aircraft Industries Association & Air Transport Association

MEMORIAL CEREMONY

Wright Monument, Kill Devil Hill

PRESIDING—CARL GOERCH, *Chairman, North Carolina 50th Anniversary Commission*

- 10:00 A. M. PROCESSION TO TOP OF KILL DEVIL HILL
10:10 A. M. NATIONAL ANTHEM—Princess Anne County of Virginia High School Band,
James A. Cantwell, Director
10:12 A. M. WELCOME—Miles L. Clark, Chairman, Celebration Committee
10:15 A. M. INTRODUCTIONS
10:25 A. M. PLACING OF WREATHS
Air Transport Association—Edward O. Rodgers, Assistant to the President
Aircraft Industries Association—Adm. DeWitt C. Ramsey, President
10:31 A. M. BENEDICTION—Rev. H. R. Ashmore, Manteo Methodist Church
10:33 A. M. TAPS—Princess Anne County of Virginia High School Band
10:35 A. M. MEMORIAL FLIGHT—United States Marine Corps
10:37 A. M. WORLD FLAG RAISING
United States Flag—Brig. Gen. Frank P. Lahm, KDHMS
United Nations Flag—Adm. DeWitt C. Ramsey, AIA
International Goodwill Flag—Edward O. Rodgers, ATA
10:47 A. M. PROCESSION TO RECONSTRUCTED WRIGHT BUILDINGS
11:00 A. M. TOUR OF RECONSTRUCTED SITE
11:15 A. M. GLIDER SALUTE—Soaring Society of America
-

- 12:30 P. M. INDUSTRY LUNCHEON—Carolinian Hotel, Nags Head
Speakers: Edward O. Rodgers, Air Transport Association
Adm. DeWitt C. Ramsey, Aircraft Industries Association
-

SUNRISE AND SUNSET PATROLS—9 A. M. and 4 P. M.—Civil Air Patrol

DEFENSE DAY • WEDNESDAY, DECEMBER 16

Sponsored by

Chamber of Commerce of Elizabeth City, N. C.

MEMORIAL CEREMONY

Wright Monument, Kill Devil Hill

PRESIDING—N. ELTON AYDLETT, *Mayor of Elizabeth City*

- 10:00 A. M. PROCESSION TO TOP OF KILL DEVIL HILL
10:10 A. M. NATIONAL ANTHEM—Edenton, N. C. High School Band, Ernest Gentile,
Director
10:12 A. M. WELCOME—S. Wade Marr, Member, Celebration Committee
10:15 A. M. INTRODUCTIONS
10:25 A. M. PLACING OF WREATHS
Elizabeth City—Harold Foreman, President, Chamber of Commerce
Air Veterans—George C. Kenney, President, Air Force Association
10:31 A. M. BENEDICTION—Rev. G. F. Hill, Rector, Christ Episcopal Church
10:33 A. M. TAPS—Edenton High School Band
10:35 A. M. MEMORIAL FLIGHT—United States Air Force
10:37 A. M. PROCESSION TO FIRST FLIGHT REVIEWING STAND

AERIAL REVIEW

First Flight Reviewing Stand

- PRESIDING—CARL GOERCH, Chairman, North Carolina 50th Anniversary Commission
10:45 A. M. AIR RESCUE MISSION—Elizabeth City Coast Guard Air Station
11:00 A. M. AIRPOWER FLY-BY—United States Marine Corps
United States Army
United States Air Force
12:00 N. FLIGHT PERFECTION—USAF Thunderbirds
12:15 P. M. JET HELICOPTER TEST—Bensen Aircraft, Raleigh, N. C.

-
- 1:00 P. M. DEFENSE LUNCHEON—Carolinian Hotel, Nags Head
Speakers: George C. Kenny, President, Air Force Association
Hon. Donald A. Quarles, Assistant Secretary of Defense

SUNRISE AND SUNSET PATROLS—9 A. M. and 4 P. M.—Civil Air Patrol

ANNIVERSARY DAY • THURSDAY, DECEMBER 17

ANNIVERSARY CEREMONY

First Flight Reviewing Stand

PRESIDING—CARL GOERCH, *Chairman, North Carolina 50th Anniversary Commission*

- 9:45 A. M. NATIONAL ANTHEM—Elizabeth City High School Band, Scott Callaway, Director
- 9:47 A. M. WELCOME—Frank P. Lahm, President, Kill Devil Hills Memorial Society
- 9:50 A. M. REMARKS—Hon. Luther H. Hodges, Lieutenant Governor of North Carolina
Conrad L. Wirth, Director of the National Park Service
George C. Kenney, President, Air Force Association
- 10:05 A. M. WREATH FLIGHT—United States Coast Guard
City of Dayton Wreath—Miss Anne Rochelle, Chief Majorette, ECHSB
Kitty Hawk Wreath—Elijah Baum, first to welcome Wilbur Wright
- 10:12 A. M. BENEDICTION—Rev. H. R. Ashmore, Manteo Methodist Church
- 10:15 A. M. TAPS—Elizabeth City High School Band
- 10:17 A. M. MEMORIAL FLIGHT—United States Navy
- 10:20 A. M. ADDRESS—James H. Doolittle, Chairman, National 50th Anniversary Committee
- 10:30 A. M. RE-ENACTMENT OF FIRST FLIGHT—Billy Parker, Phillips Petroleum Co.
- 10:38 A. M. LADY ESCORT—Betty Skelton, flying a Piper Pacer
- 10:40 A. M. INTRODUCTIONS
- 10:50 A. M. ADDRESS—Hon. Carl Hinshaw, Chairman, Joint Congressional Committee
- 11:00 A. M. AIRPOWER REVIEW—United States Marine Corps
United States Army
United States Air Force
- 12:00 N. FLIGHT PERFECTION—USAF Thunderbirds
- 12:15 P. M. ARRIVAL OF BRITISH CANBERRA JET BOMBER FROM LONDON, ENGLAND

-
- 12:30 P. M. WRIGHT MEMORIAL LUNCHEON—Carolinian Hotel, Nags Head
Speakers: James H. Doolittle, Chairman, National 50th Anniversary Committee
Hon. Carl Hinshaw, Chairman, Joint Congressional Committee

-
- 2:00 P. M. SKYWRITING—Capt. Rod Jocelyn, International Aerobatic Champion
- 2:15 P. M. JET HELICOPTER TEST—Bensen Aircraft Corp.
- 2:30 P. M. AIRPLANE SPRAYING AND DUSTING—Jack Reynolds Dusting-Spraying Service
- 3:00 P. M. AIR RESCUE MISSION—Elizabeth City Coast Guard Air Station

SUNRISE AND SUNSET PATROLS—9 A. M. and 4 P. M.—Civil Air Patrol

ADDRESS BY ELBERT COX, REGIONAL DIRECTOR, REGION ONE, NATIONAL PARK SERVICE, AT DEDICATION OF RECONSTRUCTED WRIGHT BROTHERS' CAMP, DECEMBER 14, 1953, KILL DEVIL HILL

Mr. Chairman, on behalf of the National Park Service, I want to welcome each of you here today. This is the beginning of a 4-day celebration of the 50th anniversary of the Wright brothers' first flight at Kill Devil Hill. As we begin this observance, I would like to express appreciation to all those who have contributed and will take part in the 4-day program. The National Park Service, as the permanent custodian of the Wright Brothers National Memorial, has more than a passing interest in these proceedings. We consider it a great honor to be associated with the State of North Carolina, the Air Force Association, and the Kill Devil Hills Memorial Society in sponsoring this celebration. I make grateful acknowledgment to each of these agencies and especially to their representatives on the celebration committee—Carl Goerch, Ralph Whitener, Wade Marr, and General Chairman Miles Clark—for the fine work each has done in making preparations for this event.

It was just 50 years ago that Orville Wright first rose into the air here at Kill Devil Hill. Today the airplane is taken for granted. The miracle at Kitty Hawk is almost a forgotten miracle.

We are here today to remind ourselves of that historic event and by this celebration to freshen in the minds of all Americans the memory of the Wright brothers.

The Nation has already given recognition to the accomplishments of the Wright brothers here at Kill Devil Hill. The memorial, which contains approximately 315 acres of land, was established by act of Congress, approved March 2, 1927. The beautiful memorial shaft atop the massive sand dune to our left is a tasteful and permanent reminder of their great achievement.

Many of you will recall the expressions of interest which have been voiced over the years in the establishment of a museum to the Wright brothers here at the scene of their first flight. In fact, a concentrated effort was made over a year ago to enlist interest in such an undertaking. With the advice and counsel of a special committee organized for the purpose, the National Park Service developed tentative plans for such a museum. At that time the project would have included a new building in which replicas of the original plane and other interesting displays could be exhibited. The complete undertaking was estimated to cost over \$1 million.

Efforts to obtain the necessary funds for this plan proved unsuccessful, so it became necessary to give up the idea for the time being. Many of us still feel very strongly that the project should not be abandoned and that renewed efforts in the years ahead should be made to obtain an appropriate memorial museum to the Wright brothers here at Kill Devil Hill.

When it became certain that the project for a memorial museum could not be realized in time for the 50th anniversary celebration, those who were planning the program began to think about other things that

could be done to focus attention on the event and on this historic site. It was finally decided to rebuild the small structures in which the Wright brothers lived and worked during their experiment here 50 years ago.

They had two buildings. As nearly as our research can determine, these stood on the site where you see them—reconstructed today.

The larger one was the hangar, or "hand-car," as Orville once jokingly called it. The smaller one was used as quarters, and he called it the "summer house." An effort has been made to refurnish the interiors much like they looked 50 years ago when they were occupied and lived in by the Wright brothers.

In addition to the buildings, we have also rebuilt the flight track. The early records and photographs gave very complete information about the track as well as the buildings. For instance, the track was 56 feet long. It was made of 2 by 4's set on cross-tie strips of wood. A strip of scrap iron was fastened to the upper edge. The whole affair was portable so that it could be easily transported from one sandy spot to another.

Since these structures were originally very simple and temporary in nature, no attempt has been made to reproduce them in any other fashion. Consequently they are temporary exhibits, erected at relatively low cost for the celebration period and it will not be possible to retain them permanently.

I call attention to the markers which have been erected to indicate the four historic flights. Against the performances of today's airplane which can fly 16 miles high, twice the speed of sound, across country without stopping, and around the world in 4 days, these were indeed "infant steps"—the first flight by Orville, 120 feet; the second by Wilbur, 175 feet; the third by Orville, 200 feet; and the fourth by Wilbur, 852 feet. Before they could try again, a sudden gust of wind overturned their plane, damaging it so badly they could not fly it again until it was repaired.

Our job in preparing these exhibits has been made much easier because the Wright brothers, in addition to being scientifically minded, were also historically minded. They took lots of photographs. Orville kept a good diary. Both brothers wrote long descriptive letters to their father, Bishop Milton Wright, and to sister Katherine at home in Dayton, Ohio, and to that other great air pioneer, Octave Chanute, who was a great help to them in their work.

According to these records, the buildings were put up in very short order. The hangar took just 3 days, but then they had to go out in the middle of a high wind and batten down the roof. Orville described with great realism in one of his letters the picture of brother Wilbur, hammer in hand, being blown past the open end of the hangar. Repairs had to be made each year as they reoccupied their camp.

These buildings have been put up to help illustrate the meager materials and equipment which the Wright brothers used for their successful experiments. But in a sense they typify the spirit of Orville and Wilbur Wright. We think of these men as great geniuses, but the records prove that they did a prodigious amount of hard work. Someone has said that genius consists of 2 percent inspiration and 98 percent perspiration. The Wright brothers would certainly qualify under such a formula.

They did things for themselves. They used their heads and they were not afraid of hard work. If they needed a new water supply, they drove a new well. If the quarters got too cold, they improvised a stove out of a carbide can and a few pieces of scrap iron. If cots weren't comfortable,

they improvised their own patent beds on the rafters over the kitchen. When they got back to camp to find their buildings wrecked by storms of the previous winter, they set to and built them better.

For a plane-launching device they used a simple track made out of 2 by 4's at a total cost of \$4. For the truck on which the plane rode down the track, they borrowed some bicycle hubs. Most graphic of all, when their glider experiments of 1900 and 1901 seemed to prove that existing tables of air pressures were wrong, they set out to make their own tables as the result of tireless experiments in a home-made wind tunnel.

In all of this the Wright brothers were typically American. American in their scientific inquisitiveness and ingenuity, their reliance on their hands, their willingness to work hard, and, above all, in their daring.

There was much of the spirit of the early American pioneer in Wilbur and Orville Wright, setting out to conquer the air as the early settlers had set out across uncharted seas to find homes for themselves in a new, strange land.

Here, we think of Sir Walter Raleigh and his ill-fated attempts to establish an English colony at nearby Fort Raleigh, and of those hardy souls who succeeded at Jamestown Island in Virginia a few years later.

In a little less than two centuries after the first settlement at Jamestown, these pioneers of a new continent had gained their independence as a nation; they had spread from the Atlantic to the Pacific in their endless quest for new land.

Just 10 years before the first flight, one famous American historian had developed the thesis that there was no longer an American frontier. He speculated as to what would happen to the national character, now that the open frontier and the era of free land would no longer act together as a great national force, shaping that character.

Orville and Wilbur Wright, in part at least, gave the answer here at Kill Devil Hill. Acting in the national character, acting as free men in an age of science, they opened a new frontier—a frontier of aviation which paved the way for untold changes in American life.

I shall not attempt to outline here today the great developments which are traceable to the developments in air transportation. The exhibits which you see here today and the programs which will be enacted during the next 3 days should graphically illustrate these great and powerful facts.

The epochal contribution of the Wright brothers is a historical milestone in world aviation leadership. From the simple beginning here in December 1903, the airplane has developed into one of mankind's most powerful economic tools, into a social force which has recast the earth, and into a most decisive element in the armor of the free world.

Let us hope that the memory of the Wright brothers and their achievements will grow and be increasingly cherished as science and native ingenuity bring ever greater wonders to pass. Let us hope that here at the Wright Brothers National Memorial there will always be inspiration for the pioneers of the future.

SUMMARY OF ADDRESS, FIFTY YEARS OF POWERED FLIGHT AND PERSONAL FLYING, BY ALFRED L. WOLF, SECRETARY AND GENERAL COUNSEL OF AIRCRAFT OWNERS AND PILOTS ASSOCIATION, MADE DECEMBER 14, 1953, AT KITTY HAWK

It is frightening to oppose the progress achieved by science and industry to that achieved by nature and society.

In 50 years of powered flight science has matured from the bare achievement of flying with fixed wings and minimal power to practical rotating wing aircraft, and more power than airframes can employ.

Presuming purposeful nature gave man the horse as a means of transport, nature seems content to leave it plodding, perhaps to relegate it to limbo except for the immortality its name achieves to designate the universal dimension "horsepower," and even that is challenged by "pounds per square inch" in the jet age. Today we find ourselves in a society which has more aircraft available for personal transport than horses. The aviation aspects of this society, however, has political and legal indigestion. It has been unable to consolidate this too, too speedy achievement of science and industry.

The Aircraft Owners and Pilots Association grew out of a need to cure areas of this indigestion. Other obvious areas have been discussed and handled by statesmen and philosophers who want to harness flight to peaceful progress, and to economists who want to put flight to work for beneficial international trade. The focus of the Aircraft Owners and Pilots Association is smaller but equally important. We doubt that cavemen plagued the horseback rider with speed laws, but we know that the fining squire plagues the automobilists with speed traps. A principal problem of personal flying is to remind the powers that rule political subdivisions that flight is conducted on a world basis—thus licensure at State level, harassing redtape at international borders, and discriminatory treatment by cities have to be fought.

The amount of personal flying has varied so regularly that the curve looks like a profile of a series of ocean waves. This is generally known, but less generally known is that the troughs are always mounting. In the periodic substantial rise and fall in the amount of personal flying there is a wholesome continuous growth of a solid core of people who do not, cannot, and should not abandon personal flying. In the last four decades of powered flight we have seen a repetition of many phenomena: cabin planes, amphibious planes, seaplanes, quiet planes, slow-flying planes, speedy planes, and many others. Reviewing the trade journal of any preceding decade, one reveals the similarity of patterns, but our attention is directed to those phenomena in this pattern which endure and deserve help.

Thus, more than ever today, we seek for safety, comfort, and utility, together with pleasure, in flying. Should a miracle be able to solve all flying problems, such as the invention of a multidirectional, self-energizing, all-weather elevator with built-in anticollision devices, etc., it is presumable that AOPA would find its task greatly simplified; but the great lesson we learned from the first 50 years of powered flight is that progress is a complex thing. It is only by meeting this complexity steadily on all fronts, and opposing the forces against progress by greater force for progress, that powered flight can benefit society. That is the field to which AOPA is dedicated and in which it will remain—thanks to the lessons learned from the examples set by the Wright brothers and the history of their gift to the world.

Mr. Jordan, Mrs. Arnold, General Lahm, contemporaries, friends of the Wright brothers, all of us here who are interested in aviation as evidenced by being here today and in memorializing this great celebration.

This is December 14, and the epic-making flight when man was able to first demonstrate that he could launch himself into the air with power and control himself while flying was actually the 17th. However, in some conversations which I had last week with the curator of the National Air Museum, Paul Garber, while I was going through some of the mementoes and some of the exhibit material that they have, I was told that they had actually planned their first attempt for today. Unfortunately, they apparently had some trouble with the launching rail and they had to postpone the flights until after they had completed their repairs, and wait again for favorable weather.

When we look back over those 50 years and think of the progress which has happened, it makes us feel that, actually, when we stop today to commemorate the golden jubilee of these great American inventors, it would not be fitting just to commemorate what they did then. But we should think in terms of the progress which has occurred since that time. Just think of the tremendous changes that have been brought about in our way of life because of their methodical approach to solving the problems of flight.

Mr. Garber told me another thing which I found rather interesting. He said that in assembling information to set up displays which will be in the Smithsonian Institute about now, he found that the Wright brothers actually did three things which most inventors do not do. One, they succeeded in inventing the airplane or, as inventors, they succeeded in the invention which they tried. Second, they were able to develop that invention. Actually they flew a number of aircraft and we will have on display at the Wright dinner in Washington on December 17, a series of pictures from 1901 to 1914—24 pictures showing 24 aircraft that they flew, that they built and flew. And third, in addition to inventing and developing what they had invented, they made it available to the world. All three of those things are accomplishments which few inventors have the opportunity or the temerity to do.

A friend of mine who is known to many of us here, who is the chairman of the 50th Anniversary Committee in Washington, Jennings Randolph, tells me of going back to his home State, West Virginia, when he was a Congressman, to attend the birthday celebration of an octogenarian constituent of his, and he found that this man who had lived and spanned in all his long lifetime all of the developments of the air age, had never been up in an airplane. But then literally millions of people have never been up in an airplane. He took the old man up in a small craft. He convinced him that he should fly and see what his countryside looked like in the air. When they landed, he said, "Well, how did you like it?" The old man replied, "Oh, I liked it fine, but I never did let my full weight down." I wonder, General Lahm, when you had your first flight, did you let your full weight down?

Ofttimes, the things we would like to say are better said in the words of others and I have picked out two quotations which I think are particularly fitting and which I have used on a number of occasions during this past year. One is a statement made by Dr. Leslie Bryan, who is the president of the Institute of Aviation at the Institute of Illinois, and

this year will be awarded the Brewer Trophy as having made the greatest contribution to aviation education in the past year. Dr. Bryan has defined the airplane as the most recent and, potentially, the most significant of transportation vehicles. He pointed out that a study of aviation influences illustrated two facts of general significance. First, that changes in society follow as a result of the impact of so significant an invention as the airplane, and second, that much time is required before social impacts can be developed into real social adjustments. Dr. Bryan observed that, had the social effects of the automobile been foreseen, social adjustments could have been made more readily and more logically. He opined that it was possible to look ahead with some confidence to the probable effect of aviation upon society and, consequently, bring about a more ready adjustment to the impacts of aviation than we were able to bring about with reference to the impact of the invention of the automobile. And, as I said before, relatively few people have still flown.

Now, another thing: Actually, Dr. Bryan said that, basically, the airplane is just transportation, greatly improved and faster than any other form, but still just transportation. But Dr. Bryan's simple definition has, in itself, a great significance, as the history of the progress of civilization is really a history of improved forms of transportation.

Now in this respect, Dr. Engleman (Dr. Finis Engleman, who is the State Commissioner of Education of Connecticut), has said, and I think this is a most interesting quotation—Dr. Engleman says:

The air age has brought quick and shocking change to the human race, forcing masses of men not to evolve, but to explode, from self-sufficiency to interdependence, from isolation to world neighborliness, from one culture to a galaxy of cultures. The coming of flight has released man and opened for him new creative doors. It has given him depth and distance to his vision and it has widened his visual and his imaginative horizons.

It is not enough to suggest that the air age has affected our lives and consequently education, says Dr. Engleman, who is an educator. He says it has rocked it to its very foundations.

Today, you are honoring some distinguished aviation pioneers as you open your celebration. You also call this "Private Flyers Day." I was asked to make some remarks for the aircraft industry on behalf of the industry which manufactures private planes. We don't like to use the word "private" any more. We don't like to speak of personal flying. It has a much broader connotation. The word "private" and the word "personal," we found, particularly during the early stages of the Korean war when we found it so difficult to get materials, that they had selfish meanings, and most people seem to think that kind of flying which is done in small planes, the kind of flying which was launched not so far from here 50 years ago, when the first real private flight was made, actually such flying is not private in that sense any more. It is really utilitarian and we like to speak of utility aviation. Similarly, we talk of general aviation to distinguish it from the flying done by the airlines.

Now I said that relatively few people have flown. This year is the 26th anniversary of the air transport industry—they had their silver jubilee last year. They anticipate that, before this year is over, they will have carried 30 million passengers. But many of those people are statistics many times. Few people realize that utility aviation, private flying, personal flying, whatever you may call it, is also growing. Our decade of growth is really just beginning. The Civil Aeronautics Administration, in statistical studies which they made last year, had de-

terminated that what we call general aviation—that is, all the flying which, civil flying I'm speaking of now, exclusive of that done by the airlines—that general aviation flew 8,200,000 hours. I have checked the statistics and I find that the domestic airlines flew, during that same period of time, 2,200,000 hours. We find that we have about 50,000 active light civil aircraft. The airline industry domestically operates about 1,250. We found that, out of the 8,200,000 hours of flying, less than 20 percent were attributable to what we might call personal or pleasurable flying. All of the balance was related to some business, industrial, or agricultural use of the airplane. Business flying accounted for 3 million hours, 1 million more hours than were flown by the airlines.

The significant thing to me, I find three matters which come as a great surprise to the average person, and I am frank to say, as a surprise to many people who are close to aviation. First, that general aviation flies 30 times more airplanes than do the airlines. Second, that general aviation flies 3½ times more hours than do the airlines. And third, that over 80 percent of the flying was attributable to some business, industrial, or agricultural use. So we are beginning to create a new industry which is vital and which will grow. I think that the decade ahead will see in our phase of aviation the type of phenomenal growth that the airlines saw in the last decade when they themselves grew almost four times in size.

Many things lie in the future. We are seeing the tremendous developments which are being brought about by military aviation as we arm ourselves. In fact, our industry is much dominated by military because almost 90 percent of our activity must, of necessity, be related to the rearming and the mobilization of our Nation. But as we make this progress, we can bring about a stabilized industry that is also going to have a salutary effect on the kind of flying which all of us are interested in doing ourselves. We are already flying small jet engines experimentally. We are experimenting with boundary-layer control, with laminar-flow wings, with rotating wings, and with convertiplanes. Who knows what the next decade will bring in progress? But, as Mr. Wolf so aptly put it, we know that there will be continuous progress.

I think it would be fitting for me to close my remarks again with a quotation. I was going through the section of a set of books by Mark Sullivan called *Our Times*. There is quite a commentary on the accomplishments of the Wright brothers there. And just as a byline, about the time that the Wrights first flew here at Kitty Hawk, Professor Langley, who at that time was perhaps one of the most distinguished scientists of that day, failed at his attempt to fly. The *New York Herald*, the predecessor of the *Herald Tribune*, had an editorial which was in regard to what flying was held then as compared to today. They opined that had Dr. Langley launched his airplane upside down, perhaps it would have flown into the air instead of into the water.

Now in 1901, Wilbur Wright—this was before they had actually flown with power and were in the process of conducting their glider experiments—in 1901 Wilbur Wright made a talk before the Western Society of Engineers. And he said:

Now there are two ways of learning how to ride a fractious horse. One is to get on him and learn by actual practice how each motion and kick may best be met. The other is to sit on the fence and watch the beast for a while and then retire to the house and at leisure figure out the best way to overcome his jumps and kicks. Now the latter system is safer, but the former, on the whole, turns out the larger proportions of riders. It is very much the same in learning to ride a flying machine. If you are looking for perfect safety, you will do well to sit on a fence and watch the birds. But if you wish to learn, you must mount the machine and become acquainted with its tricks by actual trial.

And may I express the hope that in the past 50 years, we have found that this flying machine is not merely so fractious as some of us still would have us think, and we want more and more people to mount it and let their full weight down. Thank you very much.

ADDRESS BY EDWARD O. RODGERS, ASSISTANT TO THE PRESIDENT OF AIR TRANSPORT ASSOCIATION, AT INDUSTRY LUNCHEON, DECEMBER 15, 1953, KITTY HAWK, N. C.

The air transport industry has much reason to participate in honoring the accomplishments of the Wright brothers. It is from these early efforts that the magnificent air transportation system of today has grown.

The world has been changed in an unbelievable fashion by the chain of events set in motion by the accomplishments of the Wright brothers here at Kitty Hawk. A person returning to this earth who had lived here before December 17, 1903, would scarcely believe what he found. He would find millions of his fellow men casually boarding airplanes to travel across continents and across oceans. He would find a world in which distance is no longer an important measurement of space between two given points, but one in which time is the gage. A world in which it is no longer so many miles to a place but so many—and not so many, at that—hours or minutes.

And even so we are only at the beginning. To think of today as the beginning when we have gone from the speed of the Wright brothers' flight, 31 miles an hour, to an officially admitted 1,238 miles per hour, and from the Wright brothers' flight at an altitude of 10 feet to flights at an altitude of over 80,000 feet may sound like not recognizing that a great deal of progress has been made. We know, of course, that there has been what seems to be almost miraculous progress, but while it is appropriate to look back and honor those who made that first flight, it seems well to look ahead. Some of you may recall that at the Wright Brothers Memorial Lecture in 1946, the distinguished jet propulsion expert, Dr. Roxbee-Cox, described what British scientists see in store for us two or three decades from now. He said that there are no physical laws now known that place any ultimate limit on the speeds planes may eventually attain. In research wind tunnels here and abroad, supersonic speeds up to 2,000 miles an hour are already being studied. That is over twice as fast as the earth revolves in these latitudes. Sooner or later, in a decade or two at most, we shall be able to travel faster than the sun travels overhead.

Dr. Roxbee-Cox went on to say that the limiting factor in future practicable speeds may prove to be the human digestive system. Project yourselves for the moment 20 years ahead. Suppose you have just finished a delicious lunch in Paris and then you step into a rocket plane bound for, say, Chicago. You will probably arrive in Chicago before the lunch hour, Chicago time. It is going to be frightfully hard on the human digestive system, eating two lunches the same day.

More recently, Dr. Hugh L. Dryden has made the following optimistic prediction, as reported by Alfred Steinberg in an article in this month's issue of *Nation's Business*:

The next 50 years of powered flight will make the last seem like slow motion.

Within the next half-century travel time to any place on earth will be negligible.

Even within 25 years, all long distance transport will be at supersonic speeds—at speeds greater than 700 miles an hour.

And travel to the moon is attainable.

Many others have expressed themselves on this subject, and, of course, the practical speed limit of flight is in the realm of speculation, influenced to a certain extent by such factors as cost, and the desires of the traveling public, as well as cold, scientific facts. What is not in the field of speculation is that the great speed of flight has shrunk the world to a point where we are, perforce, obliged to live in a world of neighbors.

Adm. Emory S. Land, president of the Air Transport Association, has recently written, in connection with survival in today's aeroatomic age:

If we are to survive in today's world, the social condition to which all others are basic is a free world community. The airplane makes such conditions mandatory, for it has ended the possibility of the isolation of national political units. The airplane also suggests that the alternative to a world community based on freedom of association is either the possibility of the destruction of civilization or the establishment of a world community based on conquest, exploitation and human slavery. Hence, it becomes the task of our social institutions—political, religious, and academic, i. e., education in its broadest sense—to develop the ideals, understanding, and the competence necessary to the achievement of a free world community, while maintaining the necessary military strength to defend democracy against the threat of totalitarian conquest.

Just as air transportation has helped to create this problem of survival in today's world, it can also help to solve it.

SPEECH BY ADM. DEWITT C. RAMSEY, USN (RET.), PRESIDENT, AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC., AT KITTY HAWK, N. C., DECEMBER 15, 1953

It is a pleasure to join with you today at this world-renowned site during this significant anniversary week. As the 50th anniversary of powered flight approaches, I can imagine no more appropriate place for the aviation fraternity to foregather than at this spot where the air age began only half a century ago.

Unquestionably, Orville and Wilbur Wright could not have foreseen the implications that their discoveries and inventions would have on the history of our Nation and, in fact, on the history of the nations of the world and their peoples.

Our diplomacy today is geared to the air age, as is our business, our transportation, our communications, our agriculture, and our science. In recent days, we have seen the leaders of three great nations of the free world gather in a matter of hours at a small island in the Atlantic—and return to their homelands with equal speed at the conclusion of their deliberations. The good-will tour of the Vice President of the United States has only been made possible by the availability of modern air transportation. The Queen of England is engaged in visits to the outposts of her empire, all of which lie within hours of the others—by air. Our State Department's pouches to American diplomats in 88 nations and dependencies are dispatched 95 percent of the time by air—reducing to about one-thirtieth the time required in 1903.

Next year, more than 50 million persons are expected to fly on the scheduled airlines of the world. I am sure it is a source of pride and satisfaction to us to know that 8 of every 10 airliners in use in this traffic were produced by the American aircraft industry.

It is, of course, impossible to estimate the value of the time that will be saved next year as 50 million persons use the airlines for transportation, instead of traveling by land or by sea. Last year, however, in this country alone, it is estimated that travelers saved the equivalent of almost 24,000 years of travel time by using the airlines instead of the

next fastest form of transportation. These same domestic airlines today are speeding the tempo of business and communication by carrying more than 1½ billion airmail letters annually—with airmail crossing the continent today in less than 11 hours.

Supplementing the air age contributions of the airlines is the Nation's fleet of 11,000 business planes, which bring fast and economical personal air transportation to thousands of key executives. There are the agricultural aircraft which have protected millions of acres of farmland by aerial spraying, and which have transformed the isolated farm into a suburb of metropolitan areas. And there are the hundreds of planes used for missions of patrol, mercy, and rescue.

The net value and total benefits of these aviation activities lie beyond our computation.

Today is Industry Day at Kitty Hawk. Fifty years ago, the aircraft industry in the United States consisted of three persons—Orville and Wilbur Wright, and their shop assistant, Charles E. Taylor. As near as I know, they did not have any subcontractors. Today, I speak as a representative of the AIA companies engaged in the manufacture of aircraft, and the industry's 750,000 employees who are applying themselves, in effect, to the furtherance of the art of aviation.

I will touch for only a moment on the events which took place here when the Wright brothers conducted their first successful experiments. Suffice to say, the flight which ushered in the new air age lasted only 12 seconds. In fact, the total flying life of the first Wright plane was probably less than 2 minutes. It was never flown after December 17, 1903.

That first flight of an airplane was the culmination of years of experimentation and research on the part of the Wrights, of trial and error, and of success and failure—the first example, in fact, of the long lead time necessary to design and build aircraft. As Orville Wright later said:

Wilbur and I did not take nearly so much pride in the fact that we were the first to fly as we did in the fact that we were the first to have the scientific data from which a flying machine could be built.

Since then, much of the effort of the aircraft industry has been expended in amassing the scientific data from which superior aircraft can be created.

Where has this led us?

Since the first plane was constructed, more than 496,000 aircraft have been produced in the United States.

One of the latest of these planes has flown at a speed of 1,327 miles per hour—more than twice the speed of sound, more than 22 miles per *minute*. In contrast, its ancestor, the Wright Flyer, averaged only about 10 miles per hour over the ground, in the face of a 20-mile wind.

Our longestranged planes have flown more than 494,000 times as far as that first 120-foot flight; and with aerial refuelling, they have flown around the world nonstop.

As pilotless flying machines have been developed, the frontiers of space have been probed by guided missiles flying at altitudes of 250 miles, and at speeds greater than 5,000 miles per hour.

It is typical, I believe, of the undiminished ambitions and goals of this modern age that we accept these achievements only as way stations on the path of air progress.

Beyond the spectacular advances of the aircraft themselves is the influence which aviation has had upon the economic life of this Nation.

The aviation industries have meant business for small-business men in every part of the country. Aircraft dollars find their way to the main streets of towns in every State—and play a major part in strengthening the national economy.

Each week, \$61 million is paid to the workers in the aircraft manufacturing industry alone. After their taxes are paid, and a part of their wages and salaries deposited in banks, these workers spend approximately \$50 million throughout the country each week.

But this \$50 million a week is only one aspect of the economic impact of aviation on America. Beyond it is another approximate \$110 million a week which the manufacturing companies themselves allocate for purchases of materials, parts and components, for production facilities and services, and for taxes.

And, of course, the basic aircraft manufacturing industry itself is but one part of aviation's economic contribution to the Nation. To get a more realistic picture, we must add the millions of dollars spent over the nation by the airlines and their 100,000 employees, by the estimated 300,000 additional employees of the manufacturing industry's subcontractors and suppliers, by the well over a million military personnel connected with aviation activities, by the thousands of Government and airport employees and airport suppliers all over the country, by the owners and operators of the some 54,000 civil aircraft now active in the United States, and by the Nation's 573,000 certificated pilots.

Surely, even the most conservative of us must admit that this economic impact is vast and far-reaching; and that the industry fathered here at Kitty Hawk by the Wright brothers has extended its influence to almost every inhabitant of the globe.

* * * * *

I have refrained, in my few remarks here today, from discussing the military implications of the airplane. We accept, I believe, Sir Winston Churchill's statement that, "For good or ill, air mastery is today the supreme expression of military power." We submit that Sir Winston should know. We accept, too, with the sense of grave responsibility, that we perforce must shoulder the fact that coupled with nuclear and thermonuclear weapons, air power holds the key to the very existence of civilization as we know it now.

Certainly the aircraft manufacturing industry, upholding the heritage of the Wright brothers, dedicates itself in this critical era and at this beginning of the second half-century of the airplane's existence, to the task of achieving and maintaining that leadership in the air which is essential to our survival as a nation.

And coupled with this immediate goal, we will apply ourselves to further conquests of the air and to the new challenges that lie beyond the horizon. In this effort, let us all join in the prayer that the fruits of our endeavors will bring hope, faith, tolerance, peace, and understanding to all the peoples of the world.

ADDRESS BY GEN. GEORGE C. KENNEY, PRESIDENT, AIR FORCE
ASSOCIATION, AT THE DEFENSE LUNCHEON, NAGS HEAD, N. C.,
DECEMBER 16, 1953

As a representative of the Air Force Association and as a citizen, I am privileged and proud to take part in these ceremonies commemorating the 50th anniversary of powered flight. I am sure all of us feel the same way but I would like to have us look upon these ceremonies as something more than commemorative. I hope that when we leave this spot we will dedicate ourselves to maintaining this country in the forefront of aviation. The Wright brothers put us there 50 years ago. If we sincerely wish to honor their memories, we will see to it that we stay on top.

In these critical days of peril to us and to civilization itself, we can afford nothing less than the strongest Air Force in the world. If we accept less than first place in this field, we will not only waste our money, but jeopardize our very existence as a nation. The power of decision in a war nowadays rests in air power. The nation with the strongest Air Force has the best deterrent against being made the victim of aggression and has the best guaranty against defeat if a war is forced upon it.

This air power that we are talking about must be air power in being and ready to go into action instantly when needed. The pace of modern war and the power of modern weapons will decide the outcome in the first few weeks or perhaps even in a matter of days. We cannot any longer depend upon our matchless production facilities to pull us out of defeat. If we are not ready to fight on the opening day of a future world war, we will quite probably not get a chance to fight at all and the United States as we now know it will cease to exist.

Fifty years ago there was only one airplane in the world. We had it. Aviationwise we were far better off then than today but the fact that other nations are in the race should spur us on to insure that every time we bring out an improved model, we again have the only one of its kind in the world. If we can maintain the position of preeminence that the Wright brothers gave us in the development of aviation and keep alert, we will have peace. If we fall behind in this race and ignore the forces of aggression now building up around the world, we are gambling with our own existence as a free nation.

I know of no better way to show our respect for those two pioneers who showed us the way, or a more fitting way to commemorate the 50th anniversary of flying, or a better way of guaranteeing the peace, than to dedicate ourselves to the maintenance of American aviation and American air power in first place.

ADDRESS BY DONALD A. QUARLES, ASSISTANT SECRETARY OF DEFENSE,
AT KITTY HAWK, N. C., DECEMBER 16, 1953

Secretary Wilson, who unfortunately had to be out of the country, has deputized me to represent the Department of Defense at these anniversary ceremonies, an honor which I deeply appreciate. It is most fitting that the Department of Defense should participate in commemorating the beginning, 50 years ago, of man's powered flight in a heavier-than-air craft. The subsequent development of the art of flight has not only revolutionized the art of war but it has completely changed the relationships of the nations of the world. One might say that it has transformed the military geography of the earth. With the possible

exception of gunpowder, no other breakthrough in technology has had such a profound effect on the military art. It remains to be seen whether the atomic bomb must be accorded the same preeminent position.

By these words I do not suggest that the art founded by Orville and Wilbur Wright was primarily military in character. Most great technological advances find wide application in peaceful as well as military pursuits and this is no exception. In fact, the impact of powered flight on the peacetime life and thought of man is at least comparable with the military revolution it has caused.

Many things have been said and written about the Wright brothers and their work. In addition to the Kitty Hawk Monument at the precise spot of their first successful experiment, the great Wright Materiel and Development Center of the Air Force near Dayton commemorates the site of much of their early study and model work. There is one aspect of this history that has special interest and deep significance today and that I should like to single out for brief mention. Without detracting from the accomplishment, I should like to focus attention on the method used by the Wrights in attacking their problem. The method led to success where others had failed.

First, we must realize that while the Wright brothers were, by modern standards, quite lacking in technical education, this was more apparent than real. From the start, they sought out the wisdom to be found in the technical literature on heavier-than-air flight and they showed true scientific spirit in their approach to their problems. They studied the available record of others who had worked in the field, and initially sought to build on the foundation others had laid. They perhaps would have failed, as the others had failed, if they had not been completely objective and open-minded in their experimentation. Their early work convinced them that there were serious errors in the existing scientific data; so, as they later wrote, they cast all aside and proceeded to rely on their own painstaking and quantitative observations. For this purpose they built their own wind tunnel, unbelievably crude by modern standards, and in it they measured the aerodynamic forces on their experimental models. Their results showed that the propulsive power per pound of available engines was inadequate to their needs so they designed and built their own engine to develop 12 horsepower with a weight of 170 pounds. They recognized the fundamentals of propeller design and tailored theirs to the need of their craft. They found after other problems were solved that aerodynamic control stood out as the one big problem. This they tackled and solved, at least in the elementary form required for their experiments, all in truly scientific fashion. No better example could be found of complete objectivity and dedication to the experimental method. As in so many other instances in the history of science, it was this completely objective approach, coupled with great energy, perseverance, and resourcefulness, that enabled them to unlock the door to one of nature's most carefully guarded secrets.

There is a story that Secretary Wilson likes to tell about the fundamentalist bishop father of the now famous Wright brothers. It seems that long before the events we are commemorating today, the good bishop had roundly condemned one of his parish preachers for the sinful prediction that man might one day fly. Be that as it may, it is all the more to the credit of Orville and Wilbur Wright that they developed such rare qualities of mind in spite of what must have been a distinctly unscientific, even though intellectually stimulating, home background. One can only speculate whether this was a rebellion against dogmatic funda-

mentalism or whether it was in some subtle way an outgrowth of this background, somewhat like the great Renaissance that sprang out of the Dark Ages.

In any event, in commemorating this great achievement of 50 years ago, let us not only pay tribute to Orville and Wilbur Wright and to their energy and resourcefulness, but let us also recognize, as I am sure they would have wished us to do, that the scientific method to which they were devoted contributed most importantly to their success.

We here are honored to commemorate the historic first flight of the Wright brothers. All the thousands who are now following in their pioneer footsteps are inspired by their accomplishments. Powered flight has drawn the people of the earth closer together and, we must believe, for the great ultimate good of mankind.

It is one of the strange quirks of history that the Defense Department, then the War Department, that was so painfully slow to realize and capitalize on the great potentialities of the Wrights' invention, is now pushing forward a multibillion dollar program of research and development to extend their art to its highest potentialities. Where the Wrights labored so hard to build a powered aircraft that would carry a man, we are now just completing the cycle by the perfection of guided missiles which will take the man out of the plane and leave him on the ground, a turn of events which even the farsighted Wright brothers probably had not foreseen, and almost surely would not have approved if they had.

The record makes it clear, however, that the Wrights fully appreciated the military significance of their work. It was their hope that it would come to have such great deterrent power as to discourage any aggression and thereby prevent war. Some of the subsequent history surpasses their wildest dreams. The airplane which they pioneered has come to dominate the military scene. Air power is the key to military force. Unfortunately, the dream of these pioneers that it would be so potent that none would dare to wage war has not as yet been realized. It is still the dream—the hope and prayer—of all the freedom-loving followers in their footsteps that powered flight in drawing the people of the earth closer together will work for the great ultimate good of mankind.

ADDRESS BY CONRAD L. WIRTH, DIRECTOR, NATIONAL PARK SERVICE,
AT WRIGHT BROTHERS NATIONAL MEMORIAL, DECEMBER 17, 1953

Mr. Chairman, Lieutenant Governor Hodges, distinguished guests, ladies and gentlemen, it is indeed a pleasure for me, representing our distinguished Secretary of the Interior, the Honorable Douglas McKay, to meet with a group such as this, which is so vitally interested in commemorating the historic event which took place on the sands of Kill Devil Hill a half-century ago.

During the 4 days of this celebration we have heard much of the impact of air power on our civilization. So I should like to confine my remarks to the memorial itself and our hopes for its future development. Twenty-five years ago the cornerstone of the monument was laid and boundaries of the area established. Much has happened here in the past 50 years to affect the historic scene. When the Wright brothers came to Kill Devil in 1903, it was an isolated region with wide open spaces and few homes in the immediate vicinity. Now it has many summer homes and is readily accessible by automobile and, to some extent, by air. As you know, pro-

posals have been made to make it more accessible by building an airstrip on the memorial itself. The historic scene as the Wright brothers saw it is changing rapidly, and modern developments are encroaching on the very sites made famous by them on their epoch-making flights. It is urgent to acquire vitally needed land as soon as possible to protect this historic spot from irreparable damage. I am happy to report to you that the State of North Carolina, through Governor Umstead, and anonymous donors have contributed funds to help meet this critical situation. With donated funds we hope to purchase the landing site of the fourth and longest flight, which is now outside the memorial boundary, and also sufficient land to permit an appropriate and dignified entrance to the memorial.

With this additional land and with the help of air-minded enthusiasts, we hope to make the Wright Brothers National Memorial a truly great shrine to their outstanding achievements. In particular, we want to develop a museum that will illustrate the crude but successful beginnings of their conquest of the air; one that will show graphically, through objects, models, and dioramas, the almost unbelievable progress that has been made in this short span of 50 years. We ask the help of the aviation industry, all those interested in aviation and the progress of our great country, to help us accomplish this objective.

Recently this memorial was officially named the Wright Brothers National Memorial. We of the National Park Service are very happy that this has been done. When the act of Congress creating the national monument was passed in 1927 it did not provide a specific name for the memorial—now we have one.

This past year about 175,000 visitors came to the memorial. I am confident that in the years ahead this number will increase substantially as more people learn of the great achievements of the Wright brothers and are attracted to this part of the country by increased vacation facilities and greater ease of transportation. The creation of the Cape Hatteras Seashore Recreational Areas and the construction of a bridge to Roanoke Island will encourage more people to come here.

As we look back on the phenomenal strides made in the past 50 years in air travel, we can also look forward to the prospect of making many more Americans aware of the great work of Orville and Wilbur Wright. This 4-day celebration is focusing the attention of the world on the work of the bicycle mechanics from Dayton, Ohio.

I want to take this occasion to thank all of the organizations and individuals who have worked so hard to make this celebration a success. In particular I want to express my thanks to Mr. Ralph Whitener for the excellent job he has done as coordinator of the celebration.

Through continued cooperative efforts, I am confident that this historic landmark commemorating the achievements of the Wright brothers will become known and appreciated by every schoolchild throughout the land.

Fifty years ago today, on December 17, 1903, two inspired bicycle manufacturers, Orville and Wilbur Wright, from Dayton, Ohio, here on these sand dunes at Kitty Hawk showed mankind how to fly. They made the first powered, controlled heavier-than-air flight. The public paid very little attention to this flight at the time.

We are met here to pay tribute to those farsighted, persistent men. Celebrations honoring the Wright brothers are being held in communities all over the United States. Word is being spread by press, radio, and television. Many foreign nations are marking the anniversary. It is ironical that the 50th anniversary of powered flight has received considerably more attention than was originally paid to the flight it celebrates.

Yet despite the difference in the public notice of the two events, there is an important similarity between them.

The real meaning of the Wrights' first flight and the significance of this anniversary are not in the events themselves but in what they lead to—in what follows them. There was no immediate practical value in flying 120 feet. But there was immeasurable value in knowing how to do it, in proving, for the first time, that it could be done and in learning how to fly easier, better—farther and faster. There would be little value in this anniversary if it were nothing more than a backward glance. This anniversary celebration has real meaning insofar as it sharpens public interest in the problems, the potentialities, and the vital importance of aviation in the years ahead.

When the Wrights had finished their work in 1903 and had packed up their improbable-looking plane and closed camp to go back to Ohio, the air was no more buoyant than before, and the Atlantic was just as wide as ever. Yet because of the Wrights' work, the oceans have shrunk—in time—and the continents have been joined through the air. The wide places of the earth—the seas, the Arctic wastes, and the skies above them—that once stood as bulwarks against attack are now broad avenues of approach. They no longer protect us. Instead, they must be watched and defended.

In a few decades, aviation has changed our lives. With the aid of modern aircraft, we can transport ourselves, the goods of peace, and the instruments of war over great distances at high speeds. The airplane has greatly stimulated the growth of our economy, and it has been the vital element in assuring our security—in preserving our freedom. These things are generally known and accepted. It is good that aviation has gained so firm a place in the life of this Nation. It should be remembered that aviation has won its place because it has progressed so fast, adapted itself so well to the needs of the times, and anticipated so well the requirements of the future. This progress must be continued. It must be accelerated.

That is the challenge we face in lending true meaning to this anniversary. As intelligent men in a free society, we want freedom and peace and prosperity throughout the world so that mankind can move upward toward a better life. At this moment in history, as we mark the 50th anniversary of powered flight, we can make no greater contribution to that universal growth than by hastening the progress of man's mastery of the air. For in such progress, as in few other human endeavors, lies assurance of preserving our freedom and enriching our peace.

ADDRESS BY HON. CARL HINSHAW, A REPRESENTATIVE IN CONGRESS
FROM THE STATE OF CALIFORNIA

On the evening of December 17, 1903, Bishop Milton Wright of Dayton, Ohio, father of Orville and Wilbur Wright received the following telegram from Kitty Hawk, North Carolina:

Success four flights Thursday morning all against twenty-one mile wind started from level with engine power alone average speed through air thirty-one miles longest 57 seconds inform press home Christmas.

Signed: "Orville Wright."

That laconic message announced to this and succeeding generations the most important invention that has been made in thousands of years. That message announced also that the "ocean of the air," the common denominator of land and sea, a medium common to all points on the earth's surface, had at last been conquered. It was probably the most important invention since the wheel. Science tells us that life was created first in water, and then some early forms of living things moved gradually onto land. With the development of man came the conquering of both land and water as a medium of transportation but the air was left to other forms of living things.

Since the dawn of time, man has watched the bird in motion, marveled at the ease with which it soars and glides and flies through the air, and envied its grace. Many a man and boy has rebelled at being earthbound and, like the angels, has himself flown in his dreams. Many attempts had been made to fly and many contraptions had been built by others than the Wright brothers in attempts, frequently fatal to the builders, to find some mechanical aid or some vehicle that would produce free flight. Men had soared in ground-controlled, kitelike vehicles and had actually glided for a few feet in uncontrolled vehicles. Balloons had been built and flown for many years. But among all the attempts down the ages, it remained for Orville and Wilbur Wright to unlock the secrets of flight and build a vehicle that could actually sustain the weight of its operator, rise by its own power, sail forward, and land at a point as high as that from which it started.

Octave Chanute was a great engineer of that day, soon to become president of the Western Society of Engineers. Chanute had been experimenting with gliders, and had written for a number of publications of the time. In his first letter to Octave Chanute, dated May 13, 1900, Wilbur Wright wrote to him in part as follows:

For some years I have been afflicted with the belief that flight is possible to man. My disease has increased in severity and I feel that it will soon cost me an increased amount of money if not my life. I have been trying to arrange my affairs in such a way that I can devote my entire time for a few months to experiment in this field.

My general ideas of the subject are similar to those held by most practical experimenters, to wit: that what is chiefly needed is skill rather than machinery. The flight of the buzzard and similar sailers is a convincing demonstration of the value of skill, and the partial needlessness of motors. It is possible to fly without motors; but not without knowledge and skill.

And then later in the same letter, he says: "My observation of the flight of buzzards leads me to believe that they regain their lateral balance, when partly overturned by a gust of wind, by a torsion of the tips of the wings." And then later: "In the apparatus I intend to employ, I make use of the torsion principle." In that observation he discovered the one principle that others who had tried, had failed to find. It is what we now call the principle of the aileron.

The Wright brothers observed that by twisting a box, both ends of which were closed, a warping effect could be had and they applied that to wings of an airplane. They developed wing warping or "wing twisting," as they called it, as a means of maintaining lateral balance, the forerunner of the aileron. It was something that had not been discovered before, and yet it was a vital ingredient to success in flight. They applied that principle to first kites and then gliders, thus proving its effectiveness in maintaining lateral balance.

But in marveling at their accomplishment, most people overlook the other ingredients that went into the first successful powered flight. They overlook the tedious experimenting done by the Wright brothers in 1901 to find an aerofoil that would provide the greatest possible lift, and then to learn how to provide control of flight itself from the vehicle platform. They worked on elevators and rudders, and, while gliding they found the cause and how to control what we know now as the tail spin, a marvelous accomplishment in itself.

After finding the means of control and practicing with those means in glider flights, they attacked the only remaining problem, the design of propellers and an engine which together would furnish a powerplant sufficient to maintain forward motion, relative to the air, and the Wright brothers had the first practical airplane to fly. All this involved a tremendous amount of study and an enormous amount of really scientific experimenting.

Let me read to you a page from a letter by Orville Wright to George A. Spratt, under date of June 7, 1903. He says:

We had estimated that we would require a little over 8 horsepower to carry our weight of 625 pounds of machine and man. At this weight we would be limited to 200 pounds for our motor. Our motor on completion turned out a very pleasant surprise. Instead of the 8 horsepower, for which we hoped but hardly expected, it has given us 13 horsepower on the brake, with a weight of only 150 pounds in the motor. During the time the engine was building we were engaged in some very heated discussions on the principles of screw propellers. We had been unable to find anything of value in any of the works to which we had access, so that we worked out a theory of our own on the subject, and soon discovered, as we usually do, that all the propellers built heretofore are all wrong, and then built a pair of propellers $8\frac{1}{8}$ feet in diameter, based on our theory, which are all right (till we have a chance to test them down at Kitty Hawk and find out differently). * * *

It is interesting to note that in their Century Magazine article of 1908, the Wright brothers said: "Our tables made the design of wings an easy matter; and as screw propellers are simply wings traveling in a spiral course, we anticipated no trouble from this source." In that simple statement they showed remarkable insight and although they probably did not realize it at the time, they were announcing the principle of the helicopter, the rotary-winged airplane.

But these first birdmen had to teach themselves how to fly under power—how really to control their contraption in the air. It is easy to see why the first controlled powered flight was of but a few seconds duration. They were the fledgling birdmen fresh out of the nest. There was no one to show them by example or even tell them how to fly under power. Think of it—the thrill that must have come to them when first they flew—those sober, patient and persistent men, the brothers Wright!

Special Highlights

Under the supervision of the National Park Service, the hangar and living quarters used by the Wright brothers in 1903 were reconstructed and refurnished in their original form and at their original location north of Kill Devil Hill. The reconstruction was made possible through contributions by aviation firms and air-minded individuals. The buildings were dedicated on December 14 by Elbert Cox, regional director of the National Park Service.



During memorial services at the Wright Monument atop Kill Devil Hill, nine wreaths were placed in memory of Orville and Wilbur Wright by the following groups and organizations: Dare County (N. C.), Aircraft Owners and Pilots Association, Air Transport Association, Aircraft Industries Association, Air Force Association, Elizabeth City Chamber of Commerce, the city of Dayton, Ohio, the town of Kitty Hawk, North Carolina, and the Royal Air Force of Great Britain.



Progress in aircraft speeds and range was demonstrated during the celebration by the flight of a Royal Air Force Canberra jet bomber from London to Kitty Hawk on December 17. The plane was piloted by Flight Lt. R. L. Burton, with Flight Lt. D. H. Gannon, the navigator. The flight was made on the morning of December 17, with only one stop en route, at Goose Bay, Labrador.



Man's ability to grasp the technique of flying was demonstrated in a spectacular and dramatic fashion by the United States Air Force's jet aerobatic team, the "Thunderbirds." The team's 15-minute demonstration held the audience spellbound as they performed one delicate maneuver after another in formation.



Thousands of airmail cachets were carried on special flights during the celebration, the Canberra flight from London, an F-89 jet flight from Dayton, Ohio, to Kitty Hawk and return, a helicopter flight from Kitty Hawk to Elizabeth City, N. C., and return. Airmail cachets were also dropped by parachute from a United States Navy bomber. The airmail cachets were sponsored by the American Airmail Society.

Dignitaries in Attendance

AVIATION CELEBRITIES

Mrs. H. H. ARNOLD, widow of the late Gen. Hap Arnold
JAMES H. DOOLITTLE, chairman, National 50th Anniversary Committee
A. W. DRINKWATER, telegrapher of Wright brothers' flights
Mrs. JOHN H. JAMESON, niece of the Wright brothers
FRED C. KELLY, official Wright biographer
BLANCHE NOYES, pioneer flyer and CAA Air Marking Director
BILLY PARKER, past president of the Early Birds
IGOR SIKORSKY, engineering manager, Sikorsky Aircraft
BETTY SKELTON, triple international aerobatic champion
MAJ. AL WILLIAMS, speed and aerobatic pilot
RODERICK WRIGHT, Indiana State Legislature

CONGRESSIONAL

Senator JOHN W. BRICKER, Ohio
Senator ALTON E. LENNON, North Carolina
Representative HERBERT C. BONNER, North Carolina
Representative CARL HINSHAW, California
Representative JOSEPH P. O'HARA, Minnesota
Representative J. PERCY PRIEST, Tennessee
Representative ROBERT C. WILSON, California

FEDERAL GOVERNMENT

WILLIAM F. LAWRENCE, Civil Defense Administration
THEODORE HARDEEN, Jr., Defense Air Transport Administration
MARVIN W. McFARLAND, Library of Congress
CONRAD L. WIRTH, Director, National Park Service
HERBERT KAHLER, Chief Historian, National Park Service
ELBERT COX, Regional Director, National Park Service

MILITARY

Hon. DONALD A. QUARLES, Assistant Secretary of Defense
Gen. NATHAN F. TWINING, Chief of Staff, US Air Force
Gen. JOHN K. CANNON, Commander, Tactical Air Command, USAF
Brig. Gen. STYOTE O. ROSS, Commander, Headquarters Command, USAF
Brig. Gen. DANIEL S. CAMPBELL, Commander, Air Proving Ground Command, USAF
Lt. Gen. L. L. LEMNITZER, Deputy Chief of Staff, US Army
Vice Adm. R. A. OFSTIE, Deputy Chief of Naval Operations
Vice Adm. JOHN J. BALLENTINE, Commander, Air Force, Atlantic Fleet, USN
Maj. Gen. CLAYTON C. JEROME, CG, Aircraft, Fleet Marine Force, Atlantic
Rear Adm. R. E. WOOD, Commander, 5th Coast Guard District

DIPLOMATIC

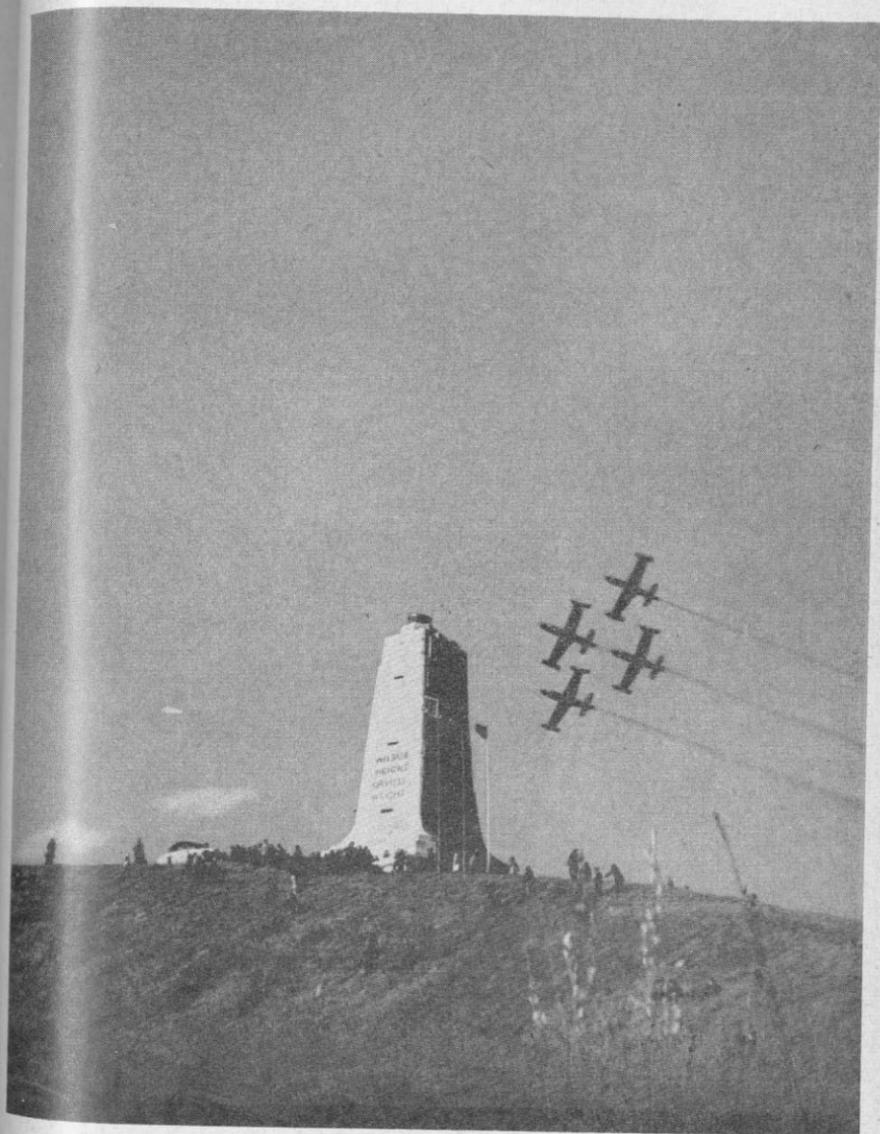
GROUP CAPTAIN PHILIP, RAF, Air Attaché to the United States.
WING COMMANDER H. E. BUFTON, RAF, British Joint Services Mission
AIR COMMODORE WALTER BENNETT, RCAF, Air Attaché to the United States

ORGANIZATIONS

ADM. DEWITT C. RAMSEY, president, Aircraft Industries Association
J. B. HARTRANFT, JR., president, Aircraft Owners & Pilots Association
GEN. GEORGE C. KENNEY, president, Air Force Association
EDWARD O. RODGERS, assistant to president, Air Transport Association
DR. RICHARD U. LIGHT, president, American Biographical Society
BRIG. GEN. FRANK P. LAHM, president, Kill Devil Hills Memorial Society
JOSEPH T. GEUTING, JR., manager, Utility Airplane Council

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The flight of the Thunderbirds over the Wright Memorial.

