THE ELMER A. SPERRY AWARD FOR 1964

THE ELMER A. SPERRY AWARD MEDAL

In the words of Edmondo Quattrocchi, the sculptor of the medal . . .

"This Sperry medal symbolizes the struggle of man's mind against the forces of nature. The horse represents the primitive state of uncontrolled power. This, as suggested by the clouds and celestial fragments, is essentially the same in all the elements. The Gyroscope, superimposed on these, represents the bringing of this power under control of man's purposes."

Presentation of the

THE ELMER A. SPERRY AWARD FOR 1964

to

IGOR I. SIKORSKY

and

MICHAEL E. GLUHAREFF

With Citation to

THE SIKORSKY ENGINEERING DEPARTMENT

by

The Board of Award

UNDER THE SPONSORSHIP OF

The American Society of Mechanical Engineers
Institute of Electrical and Electronics Engineers
Society of Automotive Engineers
The Society of Naval Architects and Marine Engineers
American Institute of Aeronautics and Astronautics

At the

Honors Convocation and Reception

January 26, 1965

New York Hilton

New York, N.Y.

Purpose of the Award

The Elmer A. Sperry Award shall be given in recognition of—

"A distinguished engineering contribution which, through application, proved in actual service, has advanced the art of transportation whether by land, sea or air."

1964 Board of Award

GLENN B. WARREN, *Chairman* — WILLIAM LITTLEWOOD
The American Society of Mechanical Engineers

RICHARD L. KIMBALL — H. N. ZELLEY
Institute of Electrical and Electronics Engineers

A. G. MUMMA — HARRY W. PIERCE
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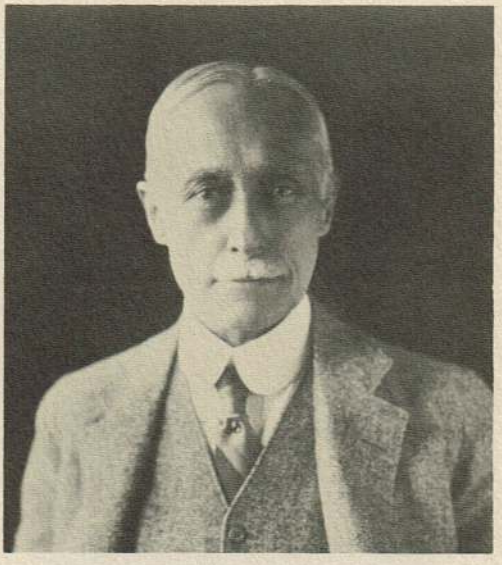
LEONARD RAYMOND — ROY P. TROWBRIDGE
Society of Automotive Engineers

ELMER A. SPERRY, JR. — PRESTON R. BASSETT
American Institute of Aeronautics and Astronautics



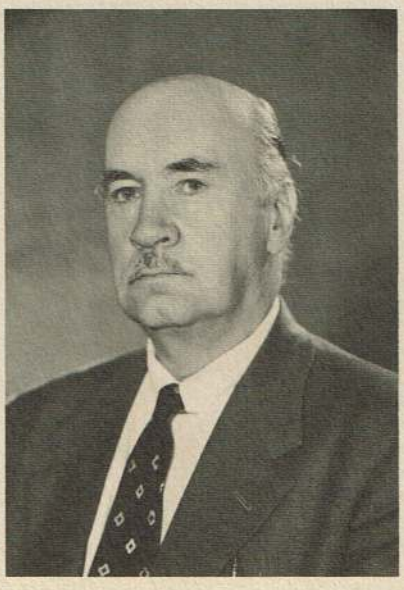
ELMER AMBROSE SPERRY

1860-1930

Founding of the Award

THE SPERRY AWARD commemorates the life and achievements of Dr. Elmer A. Sperry (1860-1930) by seeking to encourage progress in the engineering of transportation. Much of the great scope of the inventiveness of Dr. Sperry contributed either directly or indirectly to advancement of the art of transportation. His contributions have been factors in improvement of movement of men and goods by land, by sea and by air.

The award was established in 1955 by Dr. Sperry's daughter, Mrs. Robert Brooke Lea and his son Elmer A. Jr., and is presented annually.

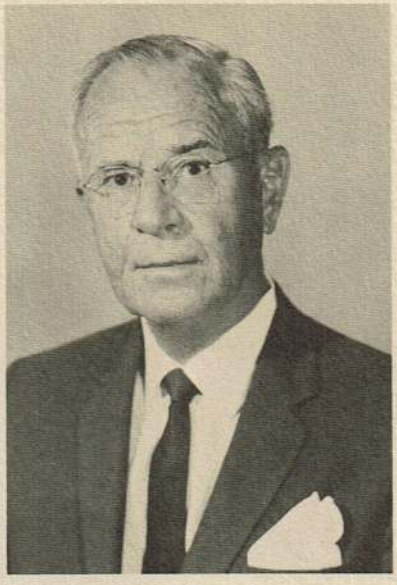


IGOR I. SIKORSKY

AWARD CITATION

for the Sperry Award for 1964

Helicopter Pioneer, for the concept and development of a new form of aerial transportation capable of carrying and placing large external loads over any terrain.



MICHAEL E. GLUHAREFF

AWARD CITATION

for the Sperry Award for 1964

For his engineering contributions and leadership as project engineer in the development of the multi-purpose helicopter, the first successful carrier capable of transporting and placing large external loads over any terrain.

CERTIFICATE OF CITATION

for the Sperry Award for 1964

to

THE SIKORSKY ENGINEERING DEPARTMENT

For their design and engineering contributions to the successful production of the multi-purpose helicopter, a new form of aerial transportation, capable of conveying and placing large external loads over any terrain.

THE SIKORSKY HELICOPTER

On Sept. 14, 1939, Igor I. Sikorsky lifted the wheels of his famous VS-300 just inches off the ground to record the first successful flight of a direct lift aircraft in the Western Hemisphere. This historic aeronautical occasion took place before a handful of mechanics and engineers in the factory yard of the Vought-Sikorsky plant in Stratford, Conn.

The Sikorsky VS-300 with Mr. Sikorsky at the controls.

The fledgling helicopter came of age quickly. The unique ability to rise and descend vertically, hover in mid-air, or move forward or backward and to either side gave it a wide variety of military missions and commercial passenger cargo and construction uses. It has had unmatched success as a rescue vehicle, saving thousands of lives both in battle areas and during civilian disasters and emergencies.

The increased reliability of helicopter components and the introduction of gas turbine engines, all-weather instrumentation and both crane and amphibious type fuselages are providing new efficiency and ever expanding applications.

Today, Sikorsky helicopters are in service in all parts of the world. Since the original VS-300, over 4,300 Sikorsky helicopters have been built.

Mr. Sikorsky had two successful aeronautical careers behind him when he threw his full efforts into helicopter development. He had pioneered the manufacture of multi-engine airplanes in his native Russia, and after coming to the United States following World War I produced a number of multi-engine land planes and a series of amphibians and flying boats. In 1929 the Sikorsky Aviation Corp. became a subsidiary of United Aircraft, developing and building outstanding trans-oceanic airplanes at a new factory in Stratford opposite the Municipal Airport.

The helicopter, however, had always retained a prominent place in Mr. Sikorsky's thoughts. The first aircraft he ever designed and built were helicopters. This was in 1909 and 1910, but lack of suitable engines and the embryonic state of the aeronautical art prompted him to turn to fixed wing airplanes for the next three decades.

In 1938, after 10 years of serious study and research work, Mr. Sikorsky received approval from the United Aircraft management to proceed with the construction of a direct lift aircraft.

The VS-300 was designed in the spring of 1939, built in the summer, and flown in the fall of that year. (The "VS" designation was used for several years when the Chance Vought and Sikorsky divisions of United Aircraft Corporation were combined). The VS-300 had a four-cylinder, 75-horsepower, aircooled engine, a three-bladed main rotor 28 feet in diameter, a welded tubular steel frame, a power transmission consisting of V-belts and bevel gears, a three-wheel landing gear and a completely open pilot's seat located in front. Its single main rotor and auxiliary tail rotor became a characteristic of all Sikorsky models.

By November, 1939, flights up to one and two minutes' duration were made. The VS-300 was kept close to the ground by men holding ropes attached to the landing gear struts. As sufficient confidence was gained, the ropes were dropped and the first free flight was made on May 13, 1940.

The VS-300 was able to remain in the air for 15 minutes under

reasonably satisfactory control by the middle of the summer of 1940. On May 6, 1941, with Mr. Sikorsky at the controls, the VS-300 established a world helicopter endurance record of one hour, 32 minutes and 26.1 seconds.

These successes prompted the then Army Air Corps to award a contract to Sikorsky Aircraft for an experimental machine, the XR-4, which took to the air on its first flight Jan. 14, 1942. This machine was about twice the size and had twice the power (175 h.p. Warner R-500-3) of the VS-300.

With the helicopter potential rising rapidly, and with the urgency of war demanding stepped-up production, it was decided to separate the airplane and helicopter operations of Vought-Sikorsky Aircraft. Sikorsky Aircraft became a separate division again on Jan. 1, 1943, and moved from its original location near the airport in Stratford to separate quarters on South Avenue, Bridgeport. There, the world's first helicopter production line was set up and quantity production of the R-4 started.

In Aug. 1943 a larger machine, the R-5, took to the air, and in Oct. 1943 the improved R-6 was introduced.

More than 400 of these three models were built for military use in World War II, and they quickly proved the versatility of the helicopter as an all-round aerial workhorse.

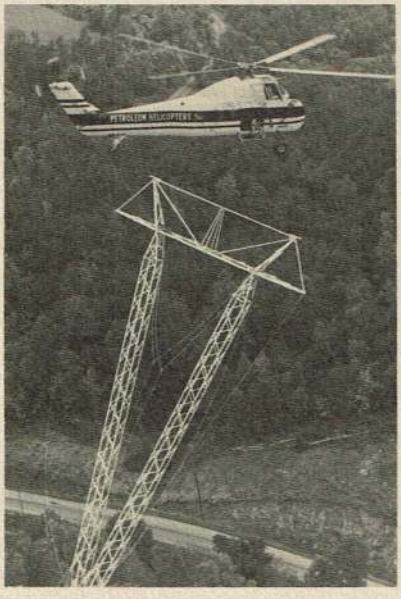
Meanwhile, with a basic design thoroughly tested by the military, Sikorsky engineers were concentrating on a commercial helicopter to answer the increasing demands of civilian transportation and commerce. Their efforts produced the four-place S-51, a commercial modification of the military R-5. The S-51 made its first flight Feb. 16, 1946.

The S-51 was soon put to a wide variety of commercial uses. In August, 1946, the first of three S-51s was delivered to Helicopter Air Transport, Inc., of Philadelphia, Pa., for charter work. This was the first sale of a commercial helicopter. By the end of 1947, Los Angeles Airways was flying five S-51s in the operation of the world's first official helicopter air mail routes.

As progressively bigger, faster and more powerful helicopters came into being, commercial operators benefited as well as the military. In the years to follow successive models of Sikorsky helicopters were to pioneer many firsts in vertical lift aviation.

In March, 1952, the Sikorsky S-55 was certificated by the CAA as the world's first commercial transport helicopter, and the following year it became the first helicopter to be certificated for scheduled passenger transportation.

Using S-55s, New York Airways began regularly scheduled helicopter mail service in Oct. 1952 and inaugurated the world's first helicopter passenger service in July, 1953. Sabena Belgian World Airlines opened the first international helicopter passenger service in the world with its S-55s in August, 1953, covering France, Germany, Holland and Luxembourg. The S-55 also was put into passenger service by Los Angeles Airways in Nov. 1954 and by Chicago Helicopter Airways in Nov. 1956.



Sikorsky S-58 carries aluminum transmission tower in powerline construction project.

In late 1957 and early 1958, several experiments were conducted to demonstrate the helicopter's potential as an aerial crane for industrial use. In less than two days, a Sikorsky S-58 planted 63 power line poles along a three-mile stretch of almost inaccessible canyons and slopes. With the conventional block and tackle and large force of manpower, the job would have taken more than two months, and at far more expense than with the 'copter. In contrast, the S-58 simply picked up the 30-foot poles, complete with cross arms and insulators, and dropped them neatly into holes that had been dug earlier.

In another experiment the helicopter carried almost two million pounds of steel for construction of high-tension towers, airlifting the steel from valley loading yards to construction sites in the mountains. The results, again, were savings in time and money and, in this case, elimination of the need to build roads.

Pouring cement from the air was another helicopter accomplishment in the construction of transmission towers in the California mountains. The helicopter carried crews into the mountains to dig holes for cement footing. Then the S-58 lifted 3,000-pound hoppers of wet cement to the tower sites, hovering as the cement poured into the holes. Finally, the helicopter carried the prefabricated tower sections, weighing 3,500 pounds each, and lowered them into place.

Lifting more than 100 tons of heating and ventilating equipment to the 13-acre roof of a new missile plant near San Diego was another industrial job done by the same S-58. The project, requiring about 70 quarter-mile flights was finished in six flying hours and, in the view of construction officials, saved thousands of dollars. The job normally would have taken a month. Hovering over the roof, the helicopter lowered the units precisely onto the spots where they were to be permanently installed.

These and other demonstrations led in 1959 to the first full-time use of a helicopter for power line construction. The pioneers were engineers of the Puerto Rico Water Resources Authority, and their new construction tool was an S-58. After ten months of operation they estimated that the savings in time and manpower equalled the purchase price of the helicopter.

Soon utility companies in the United States adopted the helicopter for construction of transmission towers in various powerline projects. And the success of these operations led other contractors to use the helicopters in a myriad of aerial construction tasks. Church steeples, ski-lifts, cross country pipelines, lighthouse foundations, and bridge sections are among the building jobs that helicopters have accomplished.

As the demand for Sikorsky helicopters increased, the Sikorsky

plant on South Avenue, Bridgeport, became inadequate to accommodate the expansion needed. A factory site was purchased in Stratford on the banks of the Housatonic River, and in 1955 a new 830,000 square foot modern plant was completed.

Two years later in 1957, Mr. Sikorsky reached retirement age. He retired as engineering manager of the company, but remained active in the company's affairs as engineering consultant.

Michael E. Gluhareff, with the Sikorsky organization since 1924, and its chief engineer from 1942 to 1957, succeeded Mr. Sikorsky as engineering manager and served in that capacity until his own retirement in 1960. Mr. Gluhareff is also retained as an engineering consultant.

In 1958, the company unveiled the S-62 helicopter, the forerunner of an entirely new generation of turbine-powered craft. Equipped with a flying boat hull and powered by a gas turbine engine, the S-62 brought new versatility to the helicopter—a vehicle that could operate from both land and water.

This model was followed, in 1959, by the twin-turbine amphibious S-61 series, one version of which is in service today as a 28-passenger helicopter airliner in several countries.

Los Angeles Airways S-61L helicopter airliner flies over downtown Los Angeles.

The S-64 Skycrane

Also in 1959, Sikorsky staged the first flight of its S-60 Skycrane which was constructed solely as a research vehicle to demonstrate the helicopter crane concept, one of Igor Sikorsky's most cherished dreams. This literal "Sky Hook" that man dreamed of for generations has proved to be one of the most exciting developments in the evolution of the helicopter. This research vehicle paved the way for the first production Skycrane, the turbine-powered S-64, which first flew in 1962.

In place of a conventional fuselage the Skycrane has a slender boom or backbone with a flat underside free from obstruction. By means of either a hoist or hard point attachments it can carry an almost limitless variety of external loads of virtually any size or shape. It has a payload capacity of over ten tons.

It all began with Igor Sikorsky's VS-300. Without his energy, zeal and imagination, and the dedicated support of men like Michael Gluhareff, the helicopter, which has been called "man's most versatile vehicle," might have been little more than an interesting novelty.

Previous Elmer A. Sperry Awards

1955 to WILLIAM FRANCIS GIBBS and his ASSOCIATES for development of the U.S.S. United States.

1956 to DONALD W. DOUGLAS and his ASSOCIATES for the DC series of air transport planes.

1957 to HAROLD L. HAMILTON, RICHARD M. DILWORTH and EUGENE W. KETTERING and Citation to their ASSOCIATES for the diesel-electric locomotive.

1958 to FERDINAND PORSCHE (in memoriam) and HEINZ NORDHOFF and Citation to their ASSOCIATES for development of the Volkswagen automobile.

1959 to SIR GEOFFREY DE HAVILLAND, MAJ. FRANK B. HALFORD (in memoriam) and CHARLES C. WALKER and Citation to their ASSOCIATES for the first jet-powered aircraft and engines.

1960 to FREDERICK DARCY BRADDON and Citation to the ENGINEERING DEPARTMENT of the MARINE DIVISION, SPERRY GYROSCOPE COMPANY, for the three axis gyroscopic navigational reference.

1961 to ROBERT GILMORE LETOURNEAU and Citation to the RESEARCH AND DEVELOPMENT DIVISION of the FIRESTONE TIRE AND RUBBER COMPANY for high speed, large capacity, earth moving equipment and giant size tires.

1962 to LLOYD J. HIBBARD for application of the ignition rectifier to railroad motive power.

1963 to EARL A. THOMPSON and Citation to his ASSOCIATES for design and development of the first notably successful automatic automobile transmission.