THE first Honors Night Meeting of the Institute of the Aeronautical Sciences was held on December 17 as part of its program arranged for the commemoration of the first flights of the Wright brothers. Mr. Orville Wright attended as an Honorary Fellow of the Institute. This was the first aeronautical meeting Mr. Wright has attended in New York for over twenty years. Colonel Charles A. Lindbergh also attended as a Fellow of the Institute. About five hundred members and guests were present to hear the program.

Before the meeting a small dinner was given in honor of the guest speakers, the recipients of awards and honors, and the National Advisory Committee for Aeronautics. Each guest at the meeting was presented with a boutonniere, the flowers of which had been picked in California the day before and sent by airplane overnight to New York through the courtesy of the Air Express Division of the Railway Express Agency.

There follows a condensed transcript of the meeting. There has been no opportunity to submit the stenotype report to the speakers and therefore they should not be held responsible for the strict accuracy of their remarks. Formal salutations are omitted from all except the first two introductions.

PRESIDENT'S INTRODUCTION

Dr. Clark B. Millikan: Mr. Chairman, Distinguished Guests, Fellow Members of the Institute, Ladies, and Gentlemen: It gives me the greatest of pleasure to welcome you on behalf of the Institute of the Aeronautical Sciences to this, its first Honors Night.

The occasion has a threefold significance, which gives it a special timeliness and importance. First, it marks the thirty-fourth anniversary of the famous flight which ushered in the present aeronautical era and crowned the years of study and research of the Wright brothers.

It is a special honor and privilege to welcome Orville Wright in person and to have the opportunity of paying him the tribute with which we shall later close our evening.

Second, this is the first time at which the Daniel Guggenheim Medal, the Reed and Sperry Awards of the Institute of the Aeronautical Sciences, and the Honorary Memberships and Fellowships of the Institute have been formally presented on one occasion.

In this connection, I should like to express our appreciation to the Directors of the Daniel Guggenheim Medal Fund who, after attending the dinner in honor of Dr. Lewis last year, decided that in the future the medal would be presented on Honors Night.

Finally, this occasion furnishes an opportunity of extending our greetings and appreciation to the distinguished scientist, Professor B. Melvill Jones, who has come from England to deliver the initial Wright Brothers' Lecture, which many of you were fortunate to hear this afternoon.

Since the first two aspects of our evening will occupy most of the program, I should like to say just a word in connection with the inauguration of the annual Wright Brothers' Lecture. In spite of the ever increasing influence of aviation upon international affairs and of international developments on the technical progress of aviation, there has in the past been no regular function in this country to which distinguished foreigners were invited to discuss the aeronautical problems of their countries.

The annual Wright Brothers' Lecture now fills this gap and I feel sure is destined to play a role of fundamental importance in promoting international understanding.

The inaugural lecture, this afternoon, set a standard of excellence which will be hard to maintain in the future. We hope that the Wright Brothers' Lecture will attract a donor who will endow the lecture, as has been done with the Wilbur Wright Memorial Lecture in England. No one could make a greater contribution to the promotion of international understanding, to the disclosure of aeronautical knowledge and the honor of this anniversary, than by becoming a benefactor of the Wright Brothers' Lecture.

Again, the Institute is indebted to Mr. Guggenheim, who acted as Toastmaster last year, for agreeing to act as your Chairman this year. We honor him not because he is the son of that great benefactor of aviation, the late Daniel Guggenheim, but because of his own great and continuing interest in aeronautics.

CHAIRMAN'S INTRODUCTION

Hon. Harry F. Guggenheim: Dr. Millikan, thank you for this most gracious introduction.

Distinguished Guests, Ladies, and Gentlemen: Last year, when I had the honor of presiding at the Institute's meeting, I let you all behind the scenes so that you might look at Lester Gardner motiving the illustrious speakers and distinguished guests, like some intellectual Tony Sarg pulling the strings of his marionettes.

This year, when Lester Gardner again honored me by inviting me to preside at your meeting, I felt that it must be due to that insistence of his, that no member of the Institute ever be lost, and evidently, that no presiding officer pro tempore be lost.

The meeting tonight is one in which no friend of the Institute or in fact, no partisan of aeronautics could fail to feel a special honor in taking part. Thirty-four years ago on this day, the Wright brothers achieved for the first time, power-driven flight. Recognition was very slow in coming.

Yesterday at a meeting in Washington, Mr. Wright recounted a gem of an aeronautical anecdote that I am sure he would not mind my repeating to you.

He said that immediately after the flight, he and his brother drove a long distance to the nearest telegraph station and sent a telegram to their father telling him of their flights. The telegram was received by the telegraph operator at Dayton and apparently the telegraph operator, being a great chum of the local Associated Press correspondent, thought he would do him a good turn and gave him the telegram. The AP correspondent, this
that in the future, as we had today, the lecturers will be men of distinction as yours have always been, that we too may add. Will you also express to them the hope that we cherish, share with you in the use of the name "Wright" which you first gave to aeronautical science by their choice.

Professor B. Melvill Jones: Thank you. I will carry your message to the Society.

GREETING TO COLONEL CHARLES A. LINDBERGH

Ten years ago, another American dramatized aviation for the world. He, too, sits here with us tonight, and he comes to do honor, not to take it.

One of the paradoxes of America, I think, is that in this age of showmanship some of our most dramatic heroes are our most modest citizens. Colonel Lindbergh, we thank you for your participation tonight in this ceremony.

How dramatic the last thirty-four years of world achievements in aeronautics have been, I think can be summed up in a single sentence. From that beginning of 59 seconds of flight, if my memory serves me correctly, we have now achieved speeds of 440 miles per hour, altitudes of 54,000 feet, non-stop range of 6300 miles, a plane of 60 tons carrying 69 passengers for an hour, and engines of as great as 3100 horsepower.

The first honors to be presented are Honorary Fellowships, and I shall call on Dr. Millikan for the presentations.

PRESENTATION OF HONORARY FELLOWSHIP TO PROFESSOR B. MELVILL JONES

Dr. Millikan: Each year the Institute has the pleasant privilege of presenting to two outstanding aeronautical workers, one foreign and one American member, Honorary Fellowships, symbolic of the esteem in which the contributions of the recipient to the development of aeronautics are held by the body of Fellows which carries out the election.

Last year's choice for Foreign Honorary Fellow and the decision to withhold the formal award until tonight, combined in a peculiarly fortunate manner, in that the new Honorary Fellow has just given us a beautiful demonstration of his fundamental contributions to contemporary aeronautics.

Professor B. Melvill Jones' membership in the academic profession may be viewed either with alarm or respect. When it is combined with his many years of experience as a practical pilot and his invaluable services to the British Air Ministry in connection with the actual construction and operation of aircraft, the combination indicates an almost unique catholicity of interest and achievement in aeronautics.

The subject of Professor Jones' recent researches upon which he spoke this afternoon and which constitute the formal basis upon which his election to Honorary Fellowship was decided, combines in a remarkable way the extreme interest for scientists' work with the fundamentals of fluid mechanics and an immediate importance for the practical designers, builders, and operators of aircraft.

Professor Jones, when you return to England, will you, on behalf of the Institute, express the deep appreciation of our Institute to the Royal Aeronautical Society for permitting us to share with you in the use of the name "Wright" which you first chose. Will you also express to them the hope that we cherish, that in the future, as we had today, the lecturers will be men of such distinction as yours have always been, that we too may add to aeronautical science by their choice.

APPRECIATION TO R. A. S.

Professor Jones, when you return to England, will you, on behalf of the Institute, express the deep appreciation of our Institute to the Royal Aeronautical Society for permitting us to share with you in the use of the name "Wright" which you first chose. Will you also express to them the hope that we cherish, that in the future, as we had today, the lecturers will be men of such distinction as yours have always been, that we too may add to aeronautical science by their choice.

Professor B. Melvill Jones: Thank you. I will carry your message to the Society.

GREETING TO ORVILLE WRIGHT

Mr. Guggenheim: Thirty-four years ago today, two men gave to the world, aviation. One of those men sits with us here tonight. He was the first Honorary Fellow of the Institute.

When he received a notice of this meeting, he accepted it, and he sent his acceptance with his check and an application for a seat. Those of us who have had the great privilege of working with Orville Wright will not be surprised to hear that incident. It is characteristic of the man.

He has come here tonight, not to be honored, but to do honor to our guests. We shall respect his fine sensibilities and not ask him even to rise to accept that great homage that is in our hearts and that we all feel we would like to give to Orville Wright.

Mr. Wright, we are indeed grateful to you for coming here.
Introducing the concept of the ideal streamlined airplane, and for full scale research work on boundary layer flow."

Acceptance by Professor Jones

Professor B. Melvill Jones: I have first to express my thanks to the Institute of the Aeronautical Sciences for electing me to an Honorary Fellowship and to Mr. Guggenheim and to our President for the graceful words which they have said about me tonight.

I can assure you that I have a very lively appreciation of what it means to be an Honorary Fellow of an organization which is already, in spite of its youth, taking its place amongst the leading scientific bodies of the world.

Next, I wish to thank the Institute for providing me the occasion, which has enabled my wife and myself to realize an ambition which we have long held, to visit your great country. I had never imagined that when the opportunity to visit you came, it would come in such a magnificent form.

In England, the hospitality of the United States is so well known as to become almost a byword, but to realize to the full what it can mean, one must pay a visit under the auspices of your efficient and energetic Secretary, Mr. Lester Gardner.

Were I not experiencing it in person, I would not have believed a program of visits and entertainments such as he has prepared for us, to be possible, but so far it is going well and I am still alive, and so, may I say, is my wife.

When I realized that I was to deliver the first of a series of lectures, many of which in the future will, I have no doubt, become classics of aeronautical literature, I was exceedingly alarmed, but I comforted myself with this thought; great enterprises often start in a very lowly form and it is much better that your lectures should start at the bottom and work upward in excellence, than that they should start at the top and work downward. With this idea in mind, I was emboldened to accept your invitation, but I will say I was very frightened.

We of the older organization, may I say the parent organization, the Royal Aeronautical Society, are surprised and pleased to note the rapid growth of a society which as far as I can see, seems glad to be regarded as one of our descendants. In watching your rapid growth, we feel that we have to look to our own laurels.

In private life, I am myself a parent and I am therefore in a position to explain to those of you who are not yet parents that there is nothing a parent likes better than to see his child surpass himself. I can assure you that we realize that the competition amongst friends, such as we always hope to be, is a most valuable spur to progress. We wish you unlimited success in all the activities which you may undertake.

May I take this opportunity of thanking again our Chairman, Mr. Guggenheim, on behalf of the Royal Aeronautical Society for the generous way in which you came forward at a critical period of our Society's history and helped us out of a very difficult financial position. I can assure you that we appreciate as much, or more, the spirit in which you did this as we appreciate the great and very real help which you gave us in a time of difficulty.

It is to me, personally, a most particular pleasure to have the opportunity to meet in person Orville Wright, in whose honor this gathering is made, and Colonel Lindbergh, whom it has been my ambition to meet for a long time. These two are, I think, without doubt the most famous personalities in the world of aeronautics at the present time. How very greatly the Royal Aeronautical Society of England respects the work of the Wrights is shown, as you have heard here, by the fact that they have made the Wilbur Wright Memorial Lecture the principal event of their year's program.

I had intended to convey to Mr. Wright, privately, the great regard which the Royal Aeronautical Society of England has always had for his work and for the work of his brother, but I am now glad to be able to convey that appreciation to him in public and in the presence of the members of our Institute.

In England, we have been very pleased and proud to extend the hospitality of our country to Colonel Lindbergh. We people who live in universities, know the value of peace and retirement for the prosecution of research and we sincerely hope that Colonel Lindbergh has found in our country, conditions favorable to the work upon which we know he is engaged.

I will not keep you longer from the distinguished persons who are going to speak on our program, and I close on a note of sincere thanks to you and to all for the welcome which you have extended to us in our first visit to your country.

Presentation of Honorary Fellowship to Glenn L. Martin

Dr. Millikan: The last time that I had the privilege of sitting next to Glenn Martin, who has been chosen by the Fellows of the Institute as the American Honorary Fellow for 1937, was last spring at Newport Harbor Yacht Club in Southern California. The occasion marked the celebration of the first long over-ocean flight which Glenn Martin had executed twenty-five years before from Newport Bay to Catalina Island and return. The commemorative ceremonies concluded with a flight over the original course in the latest China Clipper which, the next morning, started on its routine flight to China.

The incident is illustrative of the remarkably long span covered by Mr. Martin's creative contributions to aeronautics. The flight in the China Clipper was significant in showing that even after this long period of activity, his contributions are still continuously increasing in magnitude and importance. The great flying boat launched this month and built for the Soviet Republic is the largest and one of the most remarkable flying boats ever built in this country and it is a matter of common knowledge that his plans for the future surpass in conception anything that he has as yet achieved.

It is a special privilege to be able to present this certificate of Honorary Fellowship "for outstanding achievement in the construction of notable aircraft of all types" to a past President of the Institute, who has always taken such a deep interest in its development.

Acceptance by Mr. Martin

Mr. Glenn L. Martin: It is a great honor to receive this Fellowship. To be elected an Honorary Fellow by the Fellows of the Institute is a recognition that one appreciates more than many things that happen to one in a span of life. I express my deep appreciation of the honor. Thank you.

Mr. Guggenheim: May I be the first to congratulate the recipients of these awards? I have known Professor Jones for about eleven years. When we were making a survey of aeronautics in Europe and, of course, in England, it was one of my pleasant duties to visit Cambridge and talk to Professor Jones. Even in those days, his name in America was well known and the work that he was then doing was envied by many of us here.

It is indeed a pleasure for me to congratulate him tonight after eleven years of such distinguished aeronautical contributions on his part.

My friendship with Glenn Martin dates back at least to that time. During these years, he has been so conspicuous in his energy, ability, and persistence, in the development of aircraft, that we are all happy that this honor has come to him.

And now, we come to a part of the program that is of personal interest to me. It is the bestowal of the award that my father created.

At the time that the Medal Fund was created, it was placed in the hands of a self-perpetuating Board. Certain general conditions were suggested to the Board, and after that, the administration was left entirely in their hands. Since the creation of the award fund, many busy men have devoted time and special
attention to the award, and I wish to express my deep appreciation of their energy and ability, devoted to this work.

Four of the previous recipients of the award are here tonight. Mr. Wright, Dr. Durand, Dr. Hunsaker, and Dr. Lewis. The mere mention of those names will indicate to all of you with what great care these selections have been made.

In presenting the President of the Fund for this year, I wish to express my great appreciation to him for the efficient administration of the work of his Board. I now take pleasure in presenting to you T. P. Wright, President of the Daniel Guggenheim Medal Fund!

THE DANIEL GUGGENHEIM MEDAL FUND

Mr. T. P. Wright: The Daniel Guggenheim Medal Fund was created for the purpose of honoring persons who make notable achievements in the advancement of aeronautics. It is also, however, a commemoration of the support given by Daniel Guggenheim to the advancement of aeronautics, to donations for the creation of schools of aeronautics, and for the encouragement of civil aviation.

All interested in aviation recall the safe aircraft competition and the inauguration of a program which had in view the advancement of the art of flying and landing. The numerous Daniel Guggenheim Laboratories and schools of aeronautics located at leading colleges throughout the country are in evidence to anyone who has occasion to visit our universities.

Provision for the Medal was made in 1928 by a gift from the Daniel Guggenheim Fund for the Promotion of Aeronautics. A word on the establishment of this munificent Fund would, I am sure, be of interest. Our Chairman tonight, Harry Guggenheim, possessing a love and appreciation of aviation, interested his father likewise so successfully that his father established the Daniel Guggenheim Fund for the Promotion of Aeronautics with a most generous endowment.

Throughout the life of the above Fund, Harry Guggenheim, its President, suggested many of the useful projects which it has sponsored. He also took a keen interest in its affairs and administration.

This Fund, so carefully administered by Mr. Guggenheim, with the able assistance of Rear Admiral Cone and Rear Admiral Land, passed out of existence in 1930, having expended its substance in the many projects which it carried out, promoted, or endowed.

One of these was The Daniel Guggenheim Medal Fund, organized in 1927. One-third of the members of this corporation are members of the American Society of Mechanical Engineers, one-third are members of the Society of Automotive Engineers, and one-third are members of the Institute of the Aeronautical Sciences. The Board of Award is international. It has for members the nine Directors of the corporation and one member from the following foreign countries: From England, Griffith Brewer; from France, Professor Albert Caquot; from Germany, Dr. Friedrich Seewald; from Holland, Dr. E. B. Wolff; from Italy, General G. A. Crocco; and from Japan, Professor Koroku Wada.

The medal is of gold and awarded not more often than annually with no restriction on account of race, color, nationality, or sex. Selections are made by the Board of Award approximately a year in advance and a two-thirds vote of the entire Board is necessary for selection.

The recipients of the award form an imposing list of leaders in aeronautical science and in aviation in general. You have been given a booklet which lists on its cover the past recipients of the Medal with a biography of each. The first award, you will note, was made in 1929 to Orville Wright. This year, for his notable achievement in the advancement of aeronautics, the name of another illustrious man is to be added to the list of those who have received The Daniel Guggenheim Medal.

GEORGE MEAD HONORED BY R. AE. S.

Mr. Guggenheim: May I read a cable from the Royal Aeronautical Society which requires immediate attention. The cable says: "George Mead has been awarded the Taylor Gold Medal for the best paper given before the Society in 1937."

We all extend our congratulations to Mr. Mead and regard it as a great honor for a distinguished American engineer to be selected for such an award. I wish him to accept on our behalf, our admiration and congratulations.

Mr. George Mead: Thank you very much.

Mr. Guggenheim: We all regret that that rugged pioneer of airships, Dr. Hugo Eckener, is not here in person to receive the Medal. Two months ago, he wrote that he would be here but later, his health made it impossible for him to take the voyage.

As soon as it was learned that Dr. Eckener could not attend the meeting, he was asked to whom the Medal should be given and he immediately requested that Commander Rosendahl, the leading exponent of airships in this country, accept the Medal in his place. It was a happy choice indeed. There is no one, certainly, in America, in whose hands we would rather place this cherished Medal.

This Medal will be presented by the President of one of the oldest and greatest of our engineering societies, the American Society of Mechanical Engineers. In addition to his presidency of this great body, Dr. Davis is also President of the Stevens Institute of Technology.

PRESENTATION OF DANIEL GUGGENHEIM MEDAL

Dr. Harvey N. Davis: The American Society of Mechanical Engineers appreciates the honor of participating in the administration and the presenting of The Daniel Guggenheim Medal.

Since its creation, we have sought to assist in making it preeminent among aeronautical awards by honoring with it leaders in aeronautics and adding their names to the list of recipients.

I may add, parenthetically, that it is a matter of peculiar pleasure to me personally to participate in this ceremony because I have had a very keen interest as an outsider in aeronautics ever since the day when, as a minor official of the first Harvard Aviation Meet, I had the pleasure of assisting to check officially the establishment of a new world's altitude record for airplanes at something like twelve hundred feet.

Ever since the day a little later at Belmont Park Meet, when I saw one of Mr. Wright's planes ascend in the face of a moderate wind to establish a much higher altitude record and, with throttle wide open, sail gently backward down Long Island Sound, and had the pleasure of learning the next morning that after the wind had fallen and the dawn had come, it had managed to fly back again to the home field. Ever since the day a little later than that, when, as a civilian employee of the War Department, it happened to fall to my lot to send a telegram on Armistice Day that held on the dock in New Orleans what would otherwise have been the first shipment of helium to the American Expeditionary Forces in France; ever since the day, a little later than that, when I was rash enough to predict not only in private but in public, that commercial transatlantic aviation was a matter of the very near future and then had to wait five or six years to see that prediction come true, my faith in aviation never wavered during those years and it is as strong now as ever.

Tonight, we are to add a ninth distinguished name to this list of medalists by conferring the Medal, in absentia, on Dr. Eckener. We all wish that Dr. Eckener could have been here to receive it in person. None of us, however, would have wished him to imperil his health, which we hope will improve rapidly and let him continue to lead in the development of his special field.

To attempt to review the life of Dr. Eckener would bring you nothing new. You all know of his pioneering efforts at Friedrichshafen with Count Zeppelin and how, after his chief died, he carried on and became one of the great figures of the world. I am particularly impressed by that part of the citation which gives particular mention of those names will indicate to all of you with whom I have had the pleasure of learning the next morning that after the wind had fallen and the dawn had come, it had managed to fly back again to the home field. Ever since the day a little later than that, when, as a civilian employee of the War Department, it happened to fall to my lot to send a telegram on Armistice Day that held on the dock in New Orleans what would otherwise have been the first shipment of helium to the American Expeditionary Forces in France; ever since the day, a little later than that, when I was rash enough to predict not only in private but in public, that commercial transatlantic aviation was a matter of the very near future and then had to wait five or six years to see that prediction come true, my faith in aviation never wavered during those years and it is as strong now as ever.

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taken the old Graf Zeppelin and the Hindenburg to many countries of the world in an air crusade that has created an interest in airships in all parts of the globe.

Often on these trips, he has had with him a gallant American officer, whom we all admire. Dr. Eckener has designated him to receive the Medal for him tonight. I take pleasure in presenting to Dr. Eckener through you, Commander Rosendahl, The Daniel Guggenheim Medal for 1937, together with this certificate which states that the award has been made "for notable contributions to transoceanic air transport and to international cooperation in aeronautics."

Acceptance of Medal for Dr. Eckener

Commander C. E. Rosendahl: As a fellow-believer in airships, in approaching this task of accepting for Dr. Eckener the Guggenheim 1937 award, I do so in all the humility and with all the respect that a pupil can have for a great master. As a proponent of airships then, I know of no greater honor than my present duty of accepting this richly deserved award for Dr. Hugo Eckener.

It has been my great privilege to know this youthful old gentleman on a personal basis as well. I have motored with the Doctor and his family through the beautiful Black Forest hearing him all the while relate American stories and stories of the United States that even my best American story-telling friends hadn't told me. I have heard him draw laughter from a Japanese crowd by his use of Berlin slang while addressing them. He has indeed a grand sense of humor. Goodness knows, airship advocates the world over have needed something besides hydrogen and helium to keep their spirits buoyed up during the trials and tribulations, the ups and downs of airships. While seated at dinner on the banks of Lake Constance, I have heard Dr. Eckener relate early airship experiences and incidents which that cradling ground of airships had witnessed over many years. I have seen him in many jovial and a few serious moments in the control car of an airship. I have followed him through the gastronomical and oratorical maze of numerous banquets and receptions not only over the United States but around the world as well.

Dr. Eckener drew up the following brief statement that he has asked me to read to you assembled here this evening:

"In all truthfulness I can say that rarely, if ever, have I been more pleased over any distinction or token of appreciation that has been accorded me for my activities in the field of lighter-than-air aeronautics than over this award of the Guggenheim Medal. This great pleasure and appreciation has for its basis two reasons: First, I fully appreciate the high honor which this award carries with it; and second, I was especially gratified at the propitious time chosen for making this award to me. I was informed of this great honor immediately after the Hindenburg catastrophe. I believe I am justified, therefore, in interpreting this award not only as a token of appreciation of past service, but also as an encouragement and a challenge to continue in my work. This was of great value to my morale. It can probably be understood, and I readily admit, that in the first moments following the tragic happening at Lakehurst, which came so unexpectedly after hundreds of happy voyages, I felt a deep loss, and almost began to doubt whether the Zeppelin idea could still be carried on. The award of the Guggenheim Medal, therefore, in these hours of greatest sorrow, seemed to me like help from friends which rescued me from the deepest discouragement.

"It was immediately evident that a continuation of Zeppelin operations was out of the question with ships inflated with hydrogen; on this point, I am sure, I do not have to elaborate. We had of necessity to go to the use of the non-inflammable helium. The first problem was therefore: Is it possible to obtain sufficient quantities of helium? I am happy to be able to acknowledge here most gratefully that the President and Congress of the United States, in the generous spirit of their "good neighbor" policy and with great vision towards the future, initiated and enacted legislation which makes safe helium gas more readily available for the purpose of international commercial airship trans-
portation. Your Government's indication of its willingness to share the benefits of this safe gas, has given us the necessary fundamental and positive decision, which allows us to carry on.

"Immediately another problem arose, one of a technical nature: When using helium as lifting gas, would lighter-than-air be commercially economical? Produced in the modest quantities of today, helium is about ten times as expensive as hydrogen. Would therefore its use not be prohibitive? It was clear that the lavish squandering of an airship's lifting gas, as was the practice with the cheaper hydrogen, could no longer be indulged in. It would be necessary to some extent to modify our operating technique.

"It is a well-known fact that the system of so-called "water-recovery" is the deciding factor with which this problem can be solved. While in hydrogen operation, the weight of fuel consumed in the motors is balanced by deliberately valving or releasing a compensating amount of lifting gas, it will be necessary in helium operation, to create this balance by water ballast recovery from the exhaust gases. I should like to state here that our tests in Friedrichshafen have shown that without difficulty it is possible to recover a sufficient quantity of water ballast from the exhaust gases of the Diesel engines which we employ.

"With this, the deciding factor has been obtained; but additional steps must be taken to avoid other losses of helium. When using hydrogen, airships took off from the surface fully or nearly fully inflated. This, however, entailed an immediate loss of lifting gas through valving, until the necessary flying altitude had been reached. To fly over low mountain ranges, this altitude must be at least 1900 to 2300 feet, and it was therefore necessary to provide suitable measures for reaching such altitudes without expensive loss of gas. It is possible by pre-heating the lifting gas before the ascent, to rise with the ship not fully inflated; at the lower temperatures of flying altitudes, the pre-heated gas cools off rapidly to outside temperatures in flight, and the ship may reach the required flying altitude without appreciable loss of gas. Tests made in Friedrichshafen have shown that this problem of pre-heating also can easily be solved.

"The situation then is as follows: With these two means at our disposal, namely water recovery and pre-heating of the gas, it will be possible in the future to carry out oceanic voyages without losses of helium by valving. Except for losses through unavoidable incidents, helium should not be lost, except through unavoidable diffusion and in purification. These losses, however, are expected to be kept so low, that they should not exceed 10% of the total losses we have had in hydrogen operation. This would mean that helium operation essentially should not be higher in cost than hydrogen operation.

"This finding, however, is of the greatest importance for the future development of airships. It is self-evident that airship transportation can be maintained and survive only, if it is economical and self-supporting. One cannot keep it alive indefinitely with money out of the pockets of the taxpayers; this is necessary and justified only during the first years of development. The ten demonstration round-trips of the Hindenburg in 1936, however, proved that with an average booking of 70 to 75 passengers at a rate only little above the average cost of a first cabin passage on an express steamer, it is possible to have self-supporting airship transportation. It should not be difficult to maintain bookings of 70 to 75 passengers, especially on future helium-filled airships which guarantee a maximum of safety. It is well-known that many travelers refrained from using the airship previously, because of its inflation with hydrogen.

"In conclusion, let me say that just as has been the case in comparable tragedies in other modes of transportation, the tragic Hindenburg catastrophe, terrible and deplorable as it was, has actually brought about tremendous progress in the safety of this modern means of transportation. Only now, with helium assured are we fully convinced and justified in advocating the Zeppelin airship as a means of transportation. I, for one, will continue to do so wholeheartedly, and I wish to thank you for the precious medal which will inspire me further.

"More than ever is it necessary today to work for everything that may bring peoples and nations closer to each other; and this means first of all the development of Commerce and transportation, which in the end—I am positively convinced—will finally triumph over all that which now separates peoples and nations in an atmosphere of Chauvinism."

This evening you are doing honor to Dr. Eckener as more than just a great aeronautical character; you are honoring a great personality as well. The epoch-making flight of Colonel Lindbergh was but the climax of years of toil and preparation, accumulation of knowledge and experience. Dr. Eckener's contribution to the field of aeronautics in 1936, likewise represented the fruits of many years of labor and devotion to a cause.

As a young journalist who first scoffed at airships, Hugo Eckener became attracted to the cause first through admiration for Count Zeppelin and then through studious realization of the real merits of the airship. Successively he went through many posts in the organization, always progressing and eventually succeeding to the mantle of old Count Zeppelin as the guiding cause in the development of the rigid airship. He has seen the airship cause prosper and suffer, but never become extinguished.

In the lean years, even as Managing Director of the organization, Hugo Eckener couldn't afford even a modest European car but peddled his way about by bicycle. But never did he lose sight of his goal—transoceanic airship service.

Dr. Eckener had intended to retire from active service in the summer of 1937, satisfied that he had brought the airship itself to the point where personnel and material were ready to carry on and permit him to view its future development somewhat from the sidelines, as it were. But the tragic losses of his right bower, the late Captain Ernst Lehmann and other valuable pioneering personnel, have brought Dr. Eckener like a good soldier, back into harness again, with multitudinous duties on his broad shoulders once more. Aerial ambassador extraordinary and purveyor of good will, we shall indeed see more of Hugo Eckener and be glad often to welcome him back to these shores.

In closing, I wish to express my sincere thanks to Mr. Guggenheim and the Institute of Aeronautical Sciences for the honor of having been permitted to participate in relaying this justly earned award to my good friend, Dr. Hugo Eckener.

Mr. Guggenheim: I have a cable here from Dr. Eckener: "On account of not quite satisfactory health, am unfortunately compelled to renounce personally attending the meeting. I beg to express by cable my appreciation of the great honor bestowed upon me by the awarding of the Daniel Guggenheim Medal and at the same time to express my warmest greetings and best wishes for further blessed and successful activities of the Institute of the Aeronautical Sciences. Signed, Eckener."

The second honor to be bestowed is the Sylvanus Albert Reed Award. The recipient this year is one of the ablest members of the staff of the National Advisory Committee for Aeronautics. Nearly the entire Committee is here this evening to have the pleasure of seeing this award bestowed. We also wish that the Committee's Chairman, Dr. Ames, might be here, but only ill health prevents his presence.

I have a telegram from Dr. Ames that I would like to read to you: "Congratulations to the Institute on the inauguration of the dignified program to honor the Wright brothers and to commemorate the birth of aviation. Congratulations to all who are being honored tonight. Am highly gratified at honors bestowed on members of our organization and particularly over recognition of Jacob's important contribution."

And now it is my pleasure to call on my good friend, E. P. Warner, who is also a member of the National Advisory Committee for Aeronautics, who has been asked to bestow the Reed Award.
HONORS NIGHT MEETING

Eastman N. Jacobs

Presentation of the Sylvanus Albert Reed Award

Hon. Edward P. Warner: As December 17 approaches each year, the thoughts of each of us must turn to a bleak December day on the wind-swept Carolina Beach thirty-four years ago. To some of us, the great events of December 17, 1903, came as a matter of substantially contemporary knowledge. To some, they have come as a much later reading of history, but to each of us must have come at some time, the inclination to try to recapture the emotion of that day, to fancy himself a participant in the scene that took place at Kitty Hawk.

That was thirty-four years ago, years richly filled with events and now we come to Honors Night of the Institute of the Aeronautical Sciences.

For years beyond reckoning, groups of men have been gathering together, as we are gathered here tonight, and selecting those of their own number whom they would adorn with special distinction. We have always taken, I think, a particular satisfaction in our participation in any such selection, for in that well-worn statement, that in honoring him we honor ourselves, there is a profound truth.

Honor resides in the character of the organization by which honor is paid and I think that I have been sufficiently remote from the management of the affairs of this Institute in recent years to say what its officers would not say, that the Institute of the Aeronautical Sciences has attained in these recent years to a high place and a deserved recognition among the world’s scientific bodies.

Honor resides in the manner of election, and the recipient of the Sylvanus Albert Reed Award is chosen by that most democratic and most rigorous of methods, election by the parliament of his peers, the seventy Fellows of the Institute.

Honor resides in the tradition that cumulatively clusters about an award and we are making an addition tonight to a roster already illustrious, a roster already bright with names each of which recalls its own particular triumph of aeronautical progress. Honor resides in the occasion of an award’s founding and in the character of the achievement for which the award is made and in the character and in the services of him who is designated to receive it.

Of those matters, we can best speak here tonight as a collective whole. When Dr. Reed began his notable work, he had in his own mind and as his own initial contribution, a clear theory of what he thought might be accomplished. Of the processes by which the theory was developed and the obstacles surmounted, we all recall something of the history. But his experience must have left Dr. Reed with a profound sense of the value and the importance of a nice blending of theory and practice, and of the importance of never allowing either one to get too far out of step with the other.

Dr. Reed would have appreciated and admired the work that has been done by Mr. Jacobs, not merely for its superficial evident practical value, but for its underlying quality. He would have admired the skill with which mathematical arts have been used to fertilize the field of experiment. He would have admired the ingenuity with which new instrumental equipment has been developed and new techniques of research devised as the means for utilizing them arose. He would have admired, not less, but no more than those other and more preliminary factors, the final application which has left its mark upon practically every aircraft designed in the last three years and which has made the symbol 230-12 as well known in the aeronautical community as H2O is among chemists. All that he would have appreciated, and we appreciate it here.

Still speaking of what I know the sponsor of the Reed Award would have felt, he would have appreciated, too, the fact that at the end of a day devoted to developing the means of increasing the standards of efficiency and of performance of aircraft, of power and capacity, still lying far beyond our present horizon, Mr. Jacobs has turned for relaxation to a fresh field of rather meagre
quality and to an aircraft of rather meagre power, the product of his own hands and his own desire, and as his own builder, has gone into the air as his own pilot.

Eastman N. Jacobs, born in Colorado, graduate of the University of California, for twelve years a member of the staff of the National Advisory Committee for Aeronautics, Wright Medalist of the Society of Automotive Engineers in 1933, guest speaker of the Volta Foundation in 1935, tonight becomes recipient of the Sylvanus Albert Reed Award "for his contribution to the aerodynamic improvement of airfoils used in military and commercial aircraft."

**Acceptance by Mr. Jacobs**

**Mr. Eastman N. Jacobs:** Even granting some of the very flattering remarks made by the Honorable Edward P. Warner, I still remain a little mystified as to why you should have chosen me for this honor, but I can say very truthfully and literally and sincerely to all of you, my friends in the Institute of the Aeronautical Sciences, I cannot tell you how deeply grateful I am to you for this award at this particular time.

I know that in honoring others, we honor ourselves. I think Professor Warner suggested the investigation of airfoil sections in tunnels in the first place, so he could say that very honestly but I cannot dwell on all the people who have helped me with this work. It has certainly been a joint work and the National Advisory Committee for Aeronautics really deserves the credit.

Particularly, I want to emphasize the credit due Dr. Lewis for his constant push, particularly through the early phases of investigation.

I should also like to speak about those who do not get the credit. The people who do not get the credit for this are certain aeronautical engineers. They were the ones who said we were wasting our time investigating wing profiles and their drag because the wing profile drag, according to them, was an insignificant part of the entire airplane drag and we couldn’t do anything about it any-

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**THE LAWRENCE SPERRY AWARD**

FOR A NOTABLE CONTRIBUTION MADE BY A YOUNG MAN TO THE ADVANCEMENT OF AERONAUTICS

THE BOARD OF AWARD HAS SELECTED

CLARENCE LEONARD JOHNSON

TO RECEIVE THE AWARD FOR THE YEAR

1937

FOR IMPORTANT IMPROVEMENT OF AERONAUTICAL DESIGN OF HIGH SPEED COMMERCIAL AIRCRAFT

INSTITUTE OF THE AERONAUTICAL SCIENCES

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Clarence L. Johnson

Mr. Elmer A. Sperry, Jr.: When I look around, I see that there are quite a few Sperrys here, so may I say in behalf of the Sperry family, that the Lawrence Sperry Award was established last year at the suggestion of the Institute of the Aeronautical Sciences and that it is most gratifying to hear from many of Lawrence's old friends, both here and abroad, that this act on the part of the Institute of the Aeronautical Sciences is a most suitable tribute to his memory.

This year, the Committee, consisting of Grover Loening, Glenn L. Martin, Charles L. Lawrance, James Doolittle, Lester Gardner, and myself, selected as the recipient of the Lawrence Sperry Award, Clarence L. Johnson, "for important improvement of aeronautical design of high speed commercial aircraft."
Mr. Johnson is 27 years old. He was graduated from the University of Michigan in 1933. He was a football player and on the football team. Later, he did graduate work at the University of Michigan. The Lockheed Aircraft Corporation sent a model to be tested in the wind tunnel of Michigan. Mr. Johnson made the test, wrote the report, and sent it back to the Lockheed Corporation. They couldn't understand a word of it so they asked him to come and tell them what it was all about. He went and soon after joined their Research Division. He has been in charge of research work and test work on the transport planes developed by Lockheed.

I am sure, Mr. Johnson, that Lawrence would have been as happy as I am to present you with this check and with this certificate of award. I hope that this recognition of your work by the Institute of the Aeronautical Sciences will be a stimulus to you in achieving still greater accomplishments.

Acceptance by Mr. Johnson

Mr. Clarence L. Johnson: It was a very useful gag, you might say, to write a report that nobody could understand. I have tried to do it ever since. In many respects, I hope I have succeeded.

I accept this award as a tribute to Lawrence Sperry, who built the first airplane in a bedroom. Mr. Sperry was very young, very enthusiastic, and he set an example for all of us to follow. I thank you.

Mr. Guggenheim: For the presentation of the other Institute honors, I shall now call on Dr. Millikan.

Fellows for 1937

Dr. Millikan: In accordance with the By-laws of the Institute, the Fellows each year elect ten new members to fellowship. This year the ten were chosen by ballot from an initial list of sixty-seven nominees. The election was concluded only last week so that many of the newly elected Fellows could not arrange to be present to receive their certificates in person.

We are very happy to be able to announce the names of all the new Fellows and to hand their certificates of Fellowship to those who were able to be here: B. C. Boulton for eminent contributions in airplane design, Commander C. E. Rosendahl for leadership in the development of American lighter-than-air aircraft, and P. B. Taylor for your part in the development of modern American airplane engines.

The newly elected Fellows who were unable to be here are Lieutenant Commander Ralph S. Barnaby of the United States Navy, Dr. Karl T. Compton, President of the Massachusetts Institute of Technology, Professor A. V. de Forest of the Massachusetts Institute of Technology, Professor E. P. Lesley of Stanford University, A. A. Priester of the Pan-American Airways, Professor C. G. Rossby of the Massachusetts Institute of Technology, and Dr. L. B. Tuckerman of the National Bureau of Standards.

Honorary Members for 1937

One pleasant duty remains, the presentation of the certificates of Honorary Membership in the Institute. The Honorary Members are elected each year by your Council in recognition of their services to aviation. I will not attempt any extended remarks in introducing these distinguished gentlemen in handing them their certificates, since their careers and their achievements are known to everyone connected with aeronautics.

Dr. Lyman J. Briggs, Director of the National Bureau of Standards.

Rear Admiral A. B. Cook, Chief of the Bureau of Aeronautics of the United States Navy Department.

Fred D. Fagg, Jr., Director of Air Commerce of the Department of Commerce.

Dr. W. R. Gregg, Chief of the United States Weather Bureau.

Hon. Harry F. Guggenheim, member of the National Advisory Committee for Aeronautics.

Dr. George W. Lewis, Director of Research of the National Advisory Committee for Aeronautics.

Major General O. Westover, Chief of the Air Corps of the War Department.

H. E. Wimperis, President of the Royal Aeronautical Society.

I am going to ask professor Jones if he will deliver this certificate to Mr. Wimperis on his return.

Mr. Guggenheim: To close this memorable evening, we are about to hear from the dean of any aeronautical scientific gathering, our one and only Dr. Durand.

If I should begin to tell you of the many accomplishments that fill the magnificent career of Dr. Durand, I should not only keep you here all night, but I should not enjoy the friendship that I hope I now have with Dr. Durand. I have Dr. Durand at a disadvantage tonight. But I will not embarrass him. I will only tell him how deeply he is beloved by all of his colleagues and ask him if he will be so kind as to give his address.

The Wright Brothers

Dr. William F. Durand: I am glad of the opportunity to speak some few words in signalization of this occasion, which links together the events of today, here in New York City, and the profoundly historic event which occurred on the North Carolina coast thirty-four years ago.

The story of the conquest of the air by the Wright brothers, brought to its fruition on that occasion, is too well known to you to need repetition, but there are some aspects of that long and patient search to which more than a passing thought may perhaps be given.

By their own words, it would appear that their interest in human flight traces back to 1878 and to the antics of a toy helicopter which their father had brought back and given to them as boys on that occasion. Who can say that the results of later years did not trace back to that incident, as a little seed planted a quarter of a century earlier and brought to flower in the epoch-making achievement of 1903? In any case, we may well believe that the effect of this early incident was never lost, and when as young men they came to know of the world of Lilienthal, Pilcher, and especially Chanute, who was their neighbor, this early interest became quickened into an absorbing passion.

In common with Lilienthal, Pilcher, and Chanute, they believed that the way to human flight lay through experience with the glider. Of the three basic problems of flight, namely sustenance, propulsion, and control, they believed the last to be on the whole the most difficult and the one calling for the first specialized study.

Wilbur Wright has been quoted on some occasion as having said that there were two ways in which to learn to ride a fractory horse; one was to ride the horse and to find out by experience the best manner of conquering and ruling his jumps and jerks and turns and tricks. The other was to sit on a fence nearby and see him go through these maneuvers and then retire peacefully and quietly and try to figure out how to meet them. He remarked further that the latter was much the safer way but the former was likely to produce the best rider.

And so, with an eye to the immediate purpose of achieving experience in the air, they began that series of experiments on the Kill Devil Hills near Kitty Hawk, North Carolina, extending from 1900 through to the close of 1903, first with gliders and finally with their engine-powered machine with the crowning result which we now know.

To me, these pioneer years of study and continued progress for the goal in view, have in their outstanding features, all that stood out as an example of faithfulness to the highest ideals of scientific research, the grand strategy employed, the appeal to experience and the continued change and improvement based on the results of such experience, the study of such basic data and information as was then available, and the early appeal to the wind tunnel for
The extension and creation of such data. The patience, the persistence, the faith in ultimate success, the skill employed in meeting unexpected and discouraging obstacles and difficulties—these were all manifest in the highest degree.

**EARLY GLIDER EXPERIMENTS**

You will recall that three successive gliders were built, of continuously enlarging sizes, each one embodying the results of experience with the preceding. Then followed the engine-powered machine expressing in its form, proportions, and mode of control, the integration of the experience with the preceding forms of gliders.

Thus, the three years of experience in riding a glider under all kinds of atmospheric conditions, led to the final results of 1903.

It is of interest to note, as they did, that in the five years of Lilienthal's work with gliders, he was able to realize only something like five hours in the air. Impressed with all too short a period of actual gliding time, they held before themselves the ideal of much longer periods, of many long hours in the air, during which every trick and turn of this fractious horse might be studied and mastered. To this end, as you will perhaps remember, they had hoped to use a glider at least in part as a form of man-carrying kite sustained in an up-sloping current of air, along one of the sand dunes comprising the Kill Devil Hills, and thus give far longer periods of time for the study of control than would be possible with free glides.

**DECEMBER 17, 1903**

These hopes, as we know, failed of full realization and in fact they returned from the experiments of 1900 with only a few minutes of actual flying in the air. This was followed, however, in the later years, by longer and longer flights with increasing time in the air and while no actual record of glider flights was kept, the number was certainly in the hundreds, perhaps between seven or eight hundred and a thousand, and all leading up to the climax of December 17, 1903, the day on which was demonstrated not only the possibility but the practicability of human flight in a self-powered, man-controlled machine.

It is that achievement which we celebrate on this occasion—the release of man from a two-dimension world as to his movement, and the opening up of a third dimension by way of flight in the air.

Of these two brothers Wright, one, as we know, has passed on to his reward, and surely with the encomium, "Well done, good and faithful servant." The other one, Orville Wright, we are permitted to have here with us today and to make more personal the conditions of this occasion. I know that I only echo your own thought in wishing him to be with us for many years that we may enjoy his friendship and profit by his wisdom and counsel.

**CONGRATULATORY TELEGRAM FROM R. A. S.**

Mr. Guggeneim: In closing this memorable evening, I cannot do better than repeat what I said before, that I believe that the Institute has originated today a unique form of anniversary commemoration which is blessed with a distinction hitherto unknown in the casual celebrations of this day. I can think of no better compliment both to ourselves and to the Institute than to read in closing this cable which has come from them: "The council and members of the Royal Aeronautical Society send to Council and members of the Institute of the Aeronautical Sciences, their every good wish for the success of the first Wright Brothers' Lecture by their joint distinguished Fellow, Melvil Jones. The happy thought which inspired its inauguration will lend still more closely the Institute and the Society which have the science of aeronautics so much at heart, and in their most important lectures, pay lasting tribute to those great names, Wilbur and Orville Wright. Signed, Pritchard, Secretary."