DEDICATION SPEECHES

DR. HENRY G. HOUGHTON
MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CHAIRMAN OF UCAR, 1959-62

This is an auspicious day for the atmospheric sciences- auspicious as well, I believe, for the nation and the world. This magnificent building that we dedicate today is tangible evidence of a national commitment to the search for a more complete understanding of our often fickle atmospheric environment, to the ultimate benefit of all mankind. I find it remarkable and significant that this National Center for Atmospheric Research has grown from initial concept to a mature research center of high quality within the short span of one decade. This was not and could not have been the result of a small group of proponents. Rather, it has been achieved by the possibly unprecedented cooperation and support of many individuals and agencies from both the public and private sectors of our land. The credit belongs to all the people who were involved, but time would not permit me to list them. I can mention briefly some of the organizations they represented. These include: The state of Colorado, The National Academy of Sciences, The National Science Bourd, The National Science Foundation, the city of Boulder, and a group of our leading universities- now numbering twenty-three. The University of Colorado merits special attention for unselfish assistance to the fledgling NCAR. Most appropriately, then, many of these people, and representatives of all of these organizations are here today; some as speakers this morning and at the luncheon, others are on the stage and in the audience. To all of you, I say: You are not here as our guests at our dedication ceremony, but as equal participants in the celebration of our joint achievements. It is now my pleasure and privilege to introduce those who are seated on the platform- other than those who will speak. I would like to ask the audience to reserve their applause until all have been introduced. And I should also like to ask each person introduced to stand briefly so that the audience may identify them. First, I would like to introduce to you Mrs. Ralph S. Damon. Mrs. Damon was gracious to be with us last evening to dedicate the Ralph S. Damon room and the laboratory in memory of her late husband, a long-time friend of the High Altitude Observatory and of the Atmospheric Sciences. Mrs. Walter Orr Roberts, wife of the director of NCAR. Then Mayor and Mrs. Robert B. Knecht, of Boulder, who you all know. Dr. Joseph R. Smiley, President of the University of Colorado. Dr. J. Herbert Holloman, Assistant Secretary of Commerce for Science and Technology. Dr. Eric Walker, President of the Pennsylvania State University and of the National Academy of Engineering. Dr. Joseph Kapplan, President of the International Union of Geodesy and Geophysics. Dr. Allan T. Watermann, Trustee of NCAR, first director of the National Science Foundation, and long-time friend of NCAR. Dr. and Mrs. Lloyd Berkner. Doctor

Berkner is President of the Graduate Research Center of the Southwest- but, most importantly today, he was chairman of the Committee of the National Sciences; that first proposed the creation of NCAR. The Honorable William S. Jackson and Mrs. Jackson. Judge Jackson, as all Coloradoans and friends of HAO and UCAR know, is former Chief Justice of the Colorado Supreme Court, and he has the distinction of being the one person to serve continuously as Trustee of HAO and of UCAR. He is now our Trustee emeritus. Dr. and Mrs. Klopstead. Dr. Klopstead is former associate director of the National Science Foundation, and our staunch friend and guide along the road to this happy day. Doctor Martin Eby, whose firm built this building and carried out the imaginative design of the architect with great skill. Dr. John Calhoun, Vice-chairman of UCAR. Dr. and Mrs. Horace Byers, second chairman of UCAR, who will be your master of ceremonies at the luncheon. And finally, but by no means least, Dr. Richard Cassander, Chairman of UCAR, who will be our principal luncheon speaker. The accomplishments of our distinguished speakers this morning are so well known to all of you that, with their permission, I will not attempt to recount them in my introductions. We owe much to the state of Colorado for its enlightened encouragement of scientific enterprises in general and of NCAR in particular. Most important of all, this magnificant mesa, called Table Mountain, was purchased by the state and given to the National Science Foundation as the site for NCAR. Our first speaker, as governor, played a key role in this most significant and important action. It is an honor and a pleasure to introduce the Honorable John Love, Governor of Colorado.

HONORABLE JOHN A. LOVE
GOVERNOR OF COLORADO

Thank you, Thank you very much. Thank you very much, Mr. Chairman and most distinguished platform guests, ladies and gentlemen. I am most pleased to be able to join with you today in the dedication of this magnificant facility. To express on behalf of the people of Colorado the pleasure and pride which they feel for having the National Center for Atmospheric Research Headquartered here. In truth, I was somewhat surprised, even concerned, to arrive and find that it was necessary to move from the great outdoors inside, because of some atmospheric phenomena. I'm accustomed to public gatherings, either to be forced or to claim credit or blame, as the case may be, for weather within the state of Colorado, but I've been watching with a good deal of interest over the months and years; I've been talking to Walt Roberts about long-range weather forecasting, and he's spoken at times a bit optimistically about it. And this was a chance, thought I, to subject it to some sort of non-scientific, pragmatic testing. What day and deed would he choose? Well, you did very well, really, with the slight exception of a little wind, Walt. The thought that occurs to me basically, though, is that the great importance which I assigned to the fact that this magnificant facility, housed in this great architectural triumph, I would say, means a great deal to Colorado and

to citizens of Colorado. It can be said, perhaps truthfully, that in generations and even centuries ago, that the more important things were centered around commerce; but increasingly its true, and I think it will become even more so, the center of things as far as importance and productivity and we can talk about the side effects and everything else- the important center is based around knowledge and confidence, research facilities. And this is one reason we draw in in expressing our pride. I know that the laboratory will be involved in broader areas, but I am particularly intrigued by the possibilities- first, of accurate, long-range weather fore-casting; and then beyond that, of course, the limitless possibilities that are painted by the goal which I am sure we will achieve- of weather modification on a large scale, and to have this facility in the very center of this and other activities, and to have it located in Colorado is a subject of much pride to us. We certainly congratulate and express our gratitude and congratulations to all who made it possible. We will look forward to the privilege of working with you and supporting in any way we can from the state of Colorado's level. Thank you very much.

DR. HENRY G. HOUGHTON

Thank you, Governor Love. We certainly appreciate your past support and your promise of future support.of this activity. We will try to do a little better next time we have to make a long-range forecast. I'm sorry to have to tell you that our next scheduled speaker, Senator Allott, could not be with us today. We regret this very much, because he has been a friend of NCAR- both in the congress, and also,personally he has been here a number of times visiting the laboratory. But, he was unable, at the last minute, to come because of legislative problems in Washington. I would like to read to you a telegram addressed to Walter Orr Roberts: "Deeply regret that legislative situation here made it necessary to change my plans to be with you for the dedication. I think you know the personal identification I feel with NCAR, and the pride I share with you and your associates in its growth and the significance of its contributions. Please express to all involved my congratulations and my best wishes. Regards, Gordon Allott, United States Senator." The National Science Foundation is a supporting agency for NCAR, and our relationships with the director of the Foundation and his staff are, and have been, so close that we are essentially partners in this scientific enterprise. The personal conviction and strong support of Dr. Allan Watermann, first director of the foundation, was of crucial importance to the creation and growth of NCAR. The present director has continued and strengthened the constructive cooperation between the Foun-

dation and NCAR. And it is, therefore, the greatest pleasure that I introduce the director of the National Science Foundation, Dr. Leland Haworth.

DR. LELAND HAWORTH
DIRECTOR, NATIONAL SCIENCE FOUNDATION

Thank you, Dr. Houghton. Govornor Love, Dr. Sander, Will Roberts, Guests and friends of NCAR.We have met here in a beautiful building, which I certainly do not need to tell you. It is one of the most effective homes for an institution of this sort that I've ever seen and probably the most effective. It's one of which everyone who has been concerned can be very proud. Now, I should like to speak, for a moment, more about the institution which is housed in this building, and for which it provides such a magnificant and fitting home. In the short space of seven years since the director was appointed and NCAR has been a working institution, it has become a world-renowned laboratory, unique among it's kind in all the world. It serves many important functions, too numerous to mention. Three, however, I think are especially worthy of note. It is laboratory, in which comprehensive attacks are made on important atmospheric problems that could not be effectively attacked piecemeal by small groups and scattered institutions. It interacts strongly with the scientific community outside its own walls, especially in the universities.And included in that interaction is,importantly, the fact/ or the facts- not only that there are many programs in which NCAR staff, university, and other institutional staffs worked together, but also the fact that NCAR provides facilities and services for work done primarily by people not members of its own staff, something that is done very unselfishly and very effectively. And thirdly, at an increasing importance in the last several months, it helps the country as a whole mount comprehensive attacks on broad problems, especially of a nature that require big efforts in the field. I will mention just two- a Project Hailswath of this past summer, and the Line Islands Experiment in the central Pacific, which has been going on this late winter and spring. This type of thing, I'm sure, will become more and more important as many of the things the atmospheric scientists learn in the laboratories and by small-scale experiments have to be done on a grander scale, especially some of the things that are looking forward to world-wide cooperation in neurological and general atmospheric things. Everyone concerned is to be congratulated for the magnificant success of NCAR. The original Academy committee, shared by my very good friend Lloyd Berkner, the university community as a whole, both for its efforts in leading to the establishment of UCAR, and then of NCAR, and the wise guidance that have been given to the NCAR throughout its history by its board, and others. The state of Colorado,

which provided not only the land, which is important, but also a fine environment, in the figurative, and very importantly the figurative, as well as the literal sense. The NCAR staff, and especially its brilliant director, Walter Orr Roberts. The scientists, from all parts of the land, who individually have cooperated, both in research and through thier wise guidance and counsel in respect to NCAR's programs. In my opinion, the people, the Federal government, and especially the National Science Foundation, have every reason to be very grateful, and I am sure they are. I hope it will not be presumptious of me to express to all concerned, on their behalf, a very sincere thanks. Thank you.

DR. HENRY G. HOUGHTON

Thank you very much, Dr. Haworth. We appreciate more than we can say those words from you. The National Science Board provides policy guidance to the director of the National Science Foundation, and, I understand, assume a broader role in the establishment of national science policy. The approval by the National Science Board of the creation of NCAR after careful consideration was a most heartening and important step. We have the pleasure today of hearing from the present chairman of the National Science Board, distinguished bio-chemist and scientific statesman, Dr. Philip Handler.

DR. PHILIP HANDLER
DUKE UNIVERSITY
CHAIRMAN, NATIONAL SCIENCE BOARD

Thank you, Mr. chairman, Dr. Roberts, Governor Love, President Smiley, distinguished guests. It's a most delightful privilege to participate in this happy and auspicious occasion. When the National Science Board walked about this mesa a few years ago, we were much taken with the possibilities of this felicitous location, and with what were then tentative plans for a laboratory building. On behalf of the Board, may I convey to Mr. Pei, to Dr. Roberts, and all of their colleagues our warmest congratulations for the patent success of their efforts. Now many scientists believe that the intellectual structure of science, erected in this century, will be the enduring expression of our civilization; comparable, in this sense, to the cathedrals of the middle ages. But perhaps that thought is incomplete. We all rejoice in the Gothic concept of the house of God, a noble physical structure which conveys in stone and glass the majesty and grandeur of men's theological beliefs, Edifices within which all of us experience awe and elation. To be sure, some of the greatest science has been accomplished in the hoary basements of ugly barracks-like buildings, and men have been known to pray in modest chapels and abandoned warehouses. In this century, in our country, many

clean, functional, but rather uninspiring laboratories have been built across the land. Yet, science, too, should have its cathedrals, cathedral laboratories which convey the grandeur of its concepts, the bold imagination which has gained insight into the essential aspects of man as a living creature, into the nature of matter, and understanding of the universe in which we find ourselves. ¶ Such cathedrals should express also the essentially aesthetic nature of the scientific experience. It is not any inadequacy of the English language which leads scientists to imploy adjectives such as "elegant," when confronted with the manner in which an experiment compels conclusion; "beautiful," when viewing a crystal structure, or the remarkable fashion in which micro-molecules self assemble to form a living organism; "breathtaking," when savoring one of the major sweeping generalizations which reveal the nature of the universe; or "awesome," when contemplating the scale of the cosmos. And accordingly, it is but fitting that science, too, should be conducted in a structure which elicits awe and elation, a structure in which one can, in dignity, pay occasional homage to the pantheon of the gods of science: Newton, Maxwell, Gibbs, Einstein, Darwin, and all their company. ¶ And, as medieval man looked exclusively to religion for salvation in another world, modern man also looks to science, the understanding it affords, and the technology it breeds, to alleviate the condition of man on this planet. So worthy an enterprise should be housed in an equivalently noble structure. And all this, gentlemen, you have accomplished, and we are much in your debt. ¶ Governor Love, may I congratulate you and the citizens of Colorado for locating NCAR at Boulder, and for your good fortune at having this beautiful house of science in your midst. For my part, I am most pleased that, in our time, the people of the United States, through their elected representatives, have seen fit to create and support a federal agency, the National Science Foundation, which can and does make possible occasions such as this. Here, on this eyrie, this exciting structure expresses part of America's hope for tomorrow. All who contributed to the planning which brought us to this moment should be proud indeed. ¶ On behalf of the National Science Board, may I convey to the staff of NCAR and representatives of UCAR our best wishes for tomorrow. As you explore atmospheric phenomena in this symbolic structure, may fortune attend your efforts. We are confident of your success and confident that the American people will be well repaid for their investment in your enterprise. Good luck.

DR. HENRY G. HOUGHTON

Thank you, Dr. Handler, for those inspirational remarks, which very properly lead us to our next speaker. This extraordinary building which so effectively fits its environment and the scientific program housed within it, is the product of the skill, imagination, and artistry of the architect. I've had the pleasure of knowing him for several

years, and happen to be an occupant of another of his buildings,this one at MIT. Therefore, it is an especial pleasure to introduce the architect, becoming one of the west's best known architects of our country, Mr. Ieoh Pei.

IEOH MING PEI
I. M. PEI AND PARTNERS
ARCHITECT FOR THE NCAR LABORATORY

Thank you, Mr. Chairman, Governor Love, friends and workers at NCAR. I think it's almost five years ago when Dr. Roberts first took me and three of my associates up on this mesa. We were flabbergasted by the beauty of the site. So when he asked us, 'please, make the building inconspicuous' we understood. He also said "Please save all the wild flowers" - we also understood; but, unfortunately, we did not succeed too well. I am sorry. The site is, indeed, the most beautiful that we've ever had, to deal with. You would think that, blessed with this kind of beauty, architecture should come easy. But it was not easy. We tried many buildings here, many, many, designs, but they all fell apart. We didn't know why they fell apart until much later, when we discovered something we should have known all along; and that is that when you're confronted with nature- such power and such beauty, you just don't try to compete with it. You try to join with it; and this is exactly what we decided to do. Consequently, we built the building out of materials from the mountains. We bush-hammered it to create texture to match the mountains. We have succeeded partially, at least, but... sufficient to solve a very difficult problem for us; and that is how to fit a building into this magnificant environment. The aggregates that you see, that we have used in this building, came only fifteen miles from here. This gives us a wonderful opportunity to really weld the building into the background of nature. We couldn't use natural forms, of course, because men have to work here and live here, but we tried not to impose on it unnatural forms, such as forms we use in the cities. So, we've learned a lesson, and we thank you for this opportunity to learn this lesson, and it has been a great challenge for us. Now, occasions such as this, for me, is an opportunity for thanksgiving, really, in the true sense of that word. And I would like to ask you to permit me to take this opportunity to thank many of my associates- and many of them are here today. Architects, engineers- who participated in this experiment with us. We also want you to share with me my appreciation for the marvelous job that Martin Eby, Co., has done for us. This construction company is a rare one, and it still retained its feeling for craft which is so rapidly disappearing today, and we very grateful for them, to them- for this. beutiful piece of construction. And lastly, I want to give thanks to clients. They have serious, sympathetic, understanding, and demanding- I say all these things. And without that, we would not have been able to achieve what you see today.Thank you very much.

DR. HENRY G. HOUGHTON

Thank you, Mr. Pei. We and the generation of atmospheric scientists who follow us owe much to your skill. Our last speaker this morning is the director of NCAR and the President of UCAR,and many other things. In the final analysis, he is the one who has put everything together to make the National Center the creative living and exciting place it is. I could, and would like to, say much more about this remarkable man- but to do so would only embarrass him. So, my friend and your friend, Walter Orr Roberts.

DR. WALTER ORR ROBERTS
PRESIDENT OF UCAR, DIRECTOR OF NCAR

Thank you, Henry, and all. There are so many friends here, and I think everyone sitting in this room and many who are not here- everyone has contributed to what this occasion symbolizes, and I'm almost speechless to say anything in appreciation. I'm overwhelmed at seeing so many friends who have come today to share in this occasion. You've all participated in our dreams and our ambitions, and it was good of you to come today to take note of this symbolic occasion. I know that I will stumble and make errors if I try to name specifically even a few of those who helped- there are so many of you that have done so many things,that have encouraged when times have been difficult, and that have helped when the task would have been impossible. Let me just speak, however, of some who have given help and support. I want first to say something in appreciation for Jack and Betty Evans, who have so long meant so much to Janet and me, and have shared so much in all of the dreams. Jack built the first birefringent filter for solar prominence photography at Climax with his own hands- the instrument that made it possible for me to do my thesis work when I was up there at Climax with Janet, working up for my doctorate. And Don Menzel, and Harlow Shapley, and Fred Whipple, and the many others of the Harvard Observatory. To John Adkins, and Gene Streeder, and others in the Office of Naval Research who stuck by us and helped us and did so much for us in those years- those years of our Climax Observatory. To Jack Abrams, who was the line superintendent at Climax when Janet and I first came there. And Frank Kubaugh, and Ed Isenack, and the whole of the Climax company. Fred Conden and Allan Asten, and Allan Chapley, and so many, many, others. And the NBS, and now so many at ESSA. To Judge Jackson, and the trustees- the devoted trustees, of the High Altitude Observatory. To Lloyd Berkner, and to Joe Kaplan, and to Ralph Damon, whose memory we honored last night, and had the wonderful occasion and opportunity to have Ralph's family with us- Mrs. Damon and all of the children. To Bob Carlson, our first business manager who flew from California with his son Harvey to be with us today. And

to Bob Lowe, who filled out Bob Carlson's big shoes when Bob left- Carlson left to go out to California. Bob helped so much in those crucial growth years. These and countless other people gave their time and their loyalties over the long history of the HAO. Dick Thomas, friend and co-dreamer and needler who helped to keep us on our toes, and honest, and tell us our mistakes-because he loved us. If we were to draw up a list of the honorary founders of NCAR, it would be a long and impressive list. It would certainly include Henry Houghton, and Tom Malone, and Roscoe Braam, and Bill Von Aarks, and our counselors and our trustees, and it certainly would feature Earl Vessler, whose enthusiasm and sense of the impossible stirred us all,not only in NCAR but in all the atmospheric sciences. To the Committee of Architectural Deans, who had the wisdom to tell us that we should talk to Mr. Pei. To Aldo Brockway and Stu Coleson, who came to us from the University of Colorado in retirement; to help us build this building and make it work. And to IM, Mr. Pei,and his colleagues- It was a thrill, it was an experience hard to describe, to be able to work with them and to understand something about how architecture can be made to serve the purposes that you have. And I think we were extraordinarilly fortunate to find a man who understood our dream, and our site, and our purpose. And also to Mr. Eby, who as I.M. has said, has carried out the things that Mr. Pei was wise enough to be able to create. To Mary Andrews Wolff, and to Fred Roecker, and to Gary Johnson, and all this wonderful crew of magicians around here who care for our buildings and grounds, and who got things ready for us today, despite snow and rain, and... maybe they brought the weather today, too- they overshot a little. Our Boulder Citizens Advisory Committee, who sat with us and consulted and helped to decide the wise use of our beautiful site. And Bob Turner, and others in the city, now and in the past. Our friends in the state capital and in Washington. To Ken Spangler and the AMS. To Allen Waterman and Lee Haworth and the manny, many, others who have made today possible. We are grateful to the University of Colorado for what it has done over all of these years. To Bob Sterns and Ward Darley, and to Craig Newton, and to Joe Smiley. And I want also, especially, to thank my dear friend Cecil Effinger for he did for us today. I know I speak for everyone, here, our entire, marvelous gang, my associate directors, the whole entire staff- for your host today in saying thank you. Thank you for the things that we have had the wit to remember to say, and the multitude of other things that we haven't said. We pledge to do our utmost to deserve the trust that you have pplaced in us today and in the days and days past. We welcome you to NCAR- With your help, I know that we can create, around this building as a focus, a research program of the highest quality, dedicated to the common goal of progress of the atmospheric sciences, for- as Henry put it- the welfare of all the people of the earth. In

this scientific age, the challenges and the opportunities are many. To push back scientific frontiers; to develope new tools for men to use. But above all else, to learn to use our newfound powers peaceably, for the good of all. In no realm, I think, of science, are there more difficult or more stimulating challenges than in the atmosphere. It stretches from our feet here into the realm of the stars. The atmosphere is a finite and a perishable resource- that incloses our planet in a sometimes benevolent, sometimes despotic embrace. The challenge is to understand, to predict, and to conserve this precious resource. More than ever before, I think we in the scientific community today, are in a position to meet these challenges and are eager to do so. Thank you all again from the bottom of my heart.