braces, as you know, not only chemistry but biology, for chemical research frequently develops biological discoveries also; and so it seemed fitting to cover both fields in this new and, at that time, unique institution.

Dr. Duncan became our first director and at his untimely death a few years later, just as the then new building had been completed, his assistant and close associate, Dr. Weidlein, took his place and has ably carried on the work, with the happy results of which you and all the world know. Those results speak for themselves and are the best proof, if any is needed, that an institution of this nature, organized and conducted along the lines Dr. Weidlein has projected, and with the facilities provided for the application of chemistry to industry, fills a useful and important place in modern life. The measure of the institute's success is the increasing volume of fellowships which have been established as the value of work currently accomplished has been demonstrated.

I can not praise too highly all that Dr. Weidlein has done in developing this institution and making it a factor of such constructive value in the life of this country, and, I may say, of the world, for science fortunately has no national boundaries and new discoveries in any country eventually benefit all mankind.

I have been very happy to have a part in this work and feel it has been a great privilege for my brother and me to provide this place where men of science can come in their search for new ways to increase the usefulness of industry, to promote health and so improve the common lot of all. It is science, not governments or wars of conquest, that open to us new horizons; and, as Dr. Duncan so truly said, the new processes and new powers which science will discover will in the future give man the chance to live and to live more abundantly. If this institute can contribute, even in small measure, towards this end, all of us here today can feel that our efforts will not have been in vain.

Mr. Mellon has paid a worthy tribute to Dr. Robert Kennedy Duncan, whose idea, courage and enthusiasm have carried through our organization to this day. "Nothing great," Emerson said, "was ever achieved without enthusiasm." The men engaged in research work at Mellon Institute have this quality to a marked degree, and I can assure you, Mr. Mellon, that your message will add to their courage and determination to succeed. They deserve all the credit for the accomplishments of the institute. This modern building with its majestic columns is the culminating step toward the dream of your brother, Richard B. Mellon, and yourself—the vision of a greater institute beautifully and efficiently housed, in keeping with the character of these scientists' contributions to humanity and to science.

Mr. and Mrs. Richard B. Mellon always were builders, not only of institutions but also of character. These excellent qualities are reflected in their children, Mr. Richard K. Mellon and Mrs. Sarah Scaife. They, together with their mother, have continued the work of Richard B. Mellon. It is impossible to name any worthy measure that has made for civic uplift and benefit in Pittsburgh that has not had the direct friendly assistance of the late Mr. Mellon. His son is a worthy successor and I am honored to present to you Mr. Richard K. Mellon, who represents his father and family. Mr. Mellon.

ADDRESS OF RICHARD K. MELLON

Honored guests and ladies and gentlemen: Well do I recall the opening of the first permanent building of the Mellon Institute in February, 1915. On that occasion I accompanied my father and mother and some classmates from Shadyside Academy. Of course, it was a rather interesting evening for us, but as I reflect, I realize that we younger fellows hadn't the slightest conception of what future developments were to bring forth, or what was contained within the walls of that former building. I am quite sure that none of us appreciated what knowledge of science meant to industry and business at large.

I was fortunate enough in those years to overhear at home the two brothers, my uncle and my father, discuss many times with the late Dr. Robert Kennedy Duncan, and later with Dr. Weidlein, the current findings and future possibilities in the field of scientific research. As time passed, I had an opportunity to become well acquainted with the various events that took place in the progress of industrial research. Those discoveries seemed rather thrilling at that time, as chemical warfare was taking such a prominent part in the great war. Following that period there was a tremendous expansion in industry in this country, as you all know, and it was during this era that research departments were started by corporations of all sizes and kinds.

Following this post-war expansion period came depression, and it is surprising to know how many industries survived on their research findings alone. Many of the products of manufacturing plants at the present time were conceived during the past few years. It has been said, and I think rightly so, that research in this country is responsible in a large degree for our present high standard of living.

When it is realized that there are more than 1,600 industrial research departments associated with nearly every line of industry, the recognition that is given to scientific findings can readily be seen. All these companies have their own particular problem and are at work seeking a solution that will advance their par-

ticular product. In other words, their research is directed in a particular direction forward; but under one roof scientific effort is centered, and because of this, each fellowship is given a broader vision of what is being undertaken by other people in diversified lines.

A general feeling seems to prevail that this is a scientific chemical laboratory, aiding only industry. This is not entirely true, and we can well realize the reason for the misunderstanding. Scientists are so shy about their work that very little is ever published regarding their efforts. The fellows of Mellon Institute are constantly at work doing pure research in the field of biology and have been quite successful in their discoveries. Many lives have been already saved as the result of the individual effort of these fellows, and it is the hope of the founders that they will continue their research in the biological and related fields. Too much praise can not be given them, and I know that they regard success as their chief reward.

This memorable occasion gives me much pleasure, and, at the same time, brings sadness. We had hoped that one of the founders, my father, would have been here with us to participate in this dedication, and it is a disappointment also that his lifelong partner, my mother, had to be absent to-day. They both followed so carefully the progress which the institute has made and enjoyed watching the construction of this beautiful building. Mother has done much to add to the cheerfulness of the interior. We are happy indeed and keenly delighted that the one original founder, the Honorable Andrew W. Mellon, is here to participate in to-day's ceremonies.

Acting in behalf of the founders, I have the honor to say that they have complete confidence in the future under the able guidance of its present director. He has had marked success in the administration of the multiple duties that have confronted him, and keenly appreciates the tasks that are ahead of him. It is a pleasure, at this dedication ceremony, to hand the key of this new building to Dr. Edward Ray Weidlein, director of the Mellon Institute.

Honorable Andrew W. Mellon and Mr. Richard K. Mellon, on behalf of the trustees, executive staff and fellows of Mellon Institute, we accept the great responsibility that you have placed in our charge. These new and unusual facilities for research, in the fields of both pure and applied science, will strengthen our position to add to the comfort, convenience, health, safety, happiness and prosperity of mankind. We wish to express to you our most cordial appreciation for all that you have done for us.

[Dr. Weidlein introduced the guest speakers, who made addresses as follows: Dr. Irving Langmuir on "Chemical Research"; Dr. Harold C. Urey on "The Accomplishments and the Future of Chemical Physics"; and Dr. W. P. Murphy on "Scientific Research in the Solution of Medical Problems." Dr. Weidlein called attention to the circumstance that the speakers were Nobel laureates and made a statement concerning the establishment of the Nobel prizes.]

Long before ideas of the physical form of Mellon Institute's new home had crystallized, two definite decisions were made: First, to fulfil its essential purpose, the building must be the most advanced scientific workshop that modern knowledge could provide. Secondly, it must be beautiful as a tribute to science and to the institute's own achievements—appropriate to the ideals of its founders and in keeping with the imposing architecture of companion buildings in Pittsburgh's civic center.

Although other types of architecture were considered, the preference from the outset was weighted heavily in favor of the Grecian school. The architecture of ancient Greece combines great beauty with the simplicity that is fitting to a home of science. And in the philosophy and the general intellectual curiosity of the Greeks of the golden age, modern science had its beginning. The architecture of the building, therefore, was to be a tangible recognition of the link between the science of early days and the science of the present and future, exemplified in the institute's purpose and work.

It is a fitting climax in our dedication to thank all the skilled workmen as well as the contractors who have converted the thoughts and ideas of the architects and engineers into this beautiful structure. Mr. Alexander Howie and his workmen deserve special mention for their skill in setting the stonework and especially for their unusual engineering ability in putting the columns in place. The total weight of all 62 monolithic columns, including bases and capitals, each with an over-all height of more than 42 feet, is 4,432 tons: here is the largest monolithic column installation in the world. They did not even put a scratch on a single column. We also wish to thank our general contractors, Mellon-Stuart Company, for their splendid work.

The greatest credit goes to the architects, Janssen and Cocken, who were able to take our needs for arrangement and space and to design such an artistic and practical building. In this outstanding work they were aided constantly and faithfully by our own staff engineer, Mr. Harry S. Coleman, who has become the leading expert in this country on laboratory design, and we are proud of him.

Several parts of the new home of the institute have been inserted with symbolic meaning, to render the art

therein emblematic of the purpose of the institution, the beneficence of science, the origin and advancement of chemistry and the value of industrial research. This symbolism was devised by Dr. William A. Hamor, of the institute's executive staff, in cooperation with Janssen and Cocken.

In closing this memorable occasion, I wish to acknowledge with thanks the loyal support which the institute has received from Mr. Henry A. Phillips, our treasurer and a trustee, who has guided us successfully to the completion of the building. We are also grateful to Dr. John G. Bowman, chancellor of the University of Pittsburgh, who has had a very important part in the development of the institute. We maintain close cooperation with the University of Pittsburgh and are deeply appreciative for the splendid support of that institution.

Then, again, let me express our thankfulness to our founders for this splendid institute, which they have created, and, to quote from Dr. Murphy's address, "let us hope that, with the help of men trained in such an institution as this one, the results of research may produce even greater happiness, health and a longer and more efficient life than is now possible."

ROBERT KENNEDY DUNCAN[1]

By Dr. B. T. BROOKS

NEW YORK, N. Y.

IT is impossible to return to Mellon Institute without feeling that the influence of Robert Kennedy Duncan is alive and is a vital force here to-day, even though there are very few of the fellows here who were here when he was alive. It is appropriate to speak of his character here, because I believe that in many respects the character of Robert Kennedy Duncan is the character of Mellon Institute to-day.

I wish that I had his wonderful gift for expression, his beautiful diction. In speaking of the character of Dr. Duncan I feel a great responsibility, since I am for the moment the mouthpiece for those who knew him well and loved him. I do not presume to give you an appraisal of his character. In my opinion the professional biographers who have attempted to psychoanalyze great men have generally done a very poor job of it. And so I shall speak only of a few of the traits of Dr. Duncan's character which most impressed me, and if I omit other qualities which may have greatly impressed others, I admit that the fault is entirely mine and plead also that lack of time prevents making this picture of him as complete as I would like.

There were several outstanding traits of character which I believe could not fail to impress any who were associated with him. These traits were what I term his complete honesty of purpose; second, his great courage and intelligent audacity, and, third, his human qualities. Speaking of Dr. Duncan should not cast a moment's shadow on this very happy occasion. The atmosphere here is in some respects like the celebration of a victory, a victory which was planned by him, together with Mr. Andrew W. Mellon and Mr. Richard B. Mellon, who understood Duncan and his purposes. There is, I think, another element in this celebration which I can only describe as something which warms the heart, and which I associate with those human qualities of Duncan's, and which I believe has come down through the years with those who understood him and have carried on.

Some of you may wonder how all this achievement represented by the new Mellon Institute and its splendid record of past performance has come about. Was it merely that Duncan had conceived a plan of practical cooperation between science and industry, or was it merely that the Mellons had anticipated the New Deal and were seeking for ways to spend money regardless of result?

No, I think it required more than wise planning and resourcefulness to have accomplished what has been done. I believe that one key to the mystery, one cardinal element which made all this possible, was the character of Robert Kennedy Duncan.

It is always interesting to examine the career of a great man and try to discover the more or less hidden clues to his success. In Duncan's case it would be trite to say that he inspired confidence and had rare qualities of leadership.

I assure you that the quality of leadership is still a great deal of a mystery, like genius, and is the subject of a great deal of inquiry. We still debate or privately wonder as to whether or not such great leaders as Jeanne d'Arc or Abraham Lincoln were not really more than mere human clay. We find the rare combination of qualities that we vaguely call leadership in utterly different types of men. Several years ago the American Engineering Societies made a study of the elements conducive to success among engineers. The opinion expressed by the vast majority of about sixteen thousand questionnaires placed character above all other essentials. Some of our military authorities from a study of great military leaders, and failures, have come

[1] Address delivered at the trustees' dinner in connection with the dedication of the new building of Mellon Institute.