Mr. Martin Blackman 660 Madison Avenue New York, N.Y. 10021

Dear Mr. Blackman:

When Morris, you and I met last Monday we discussed a project to prepare Albert Einstein's Collected Works for publication. I said I would send you a copy of the brochure which was prepared about that project several years ago. The copy is attached. I should like to express again my warm appreciation for your many kindnesses.

With many regards,

Otto Nathan.

Otto Nathan TRUSTEE

ON: jb

[TLS. On letterhead: "Estate of Albert Einstein 24 Fifth Avenue New York, New York 10011."]

## THE WRITINGS OF ALBERT EINSTEIN

THE WRITINGS OF ALBERT EINSTEIN, encompassing both his scientific and non-scientific papers and books, as well as his rich and vuluminous correspondence with leading figures in the worlds of science and affairs, will be published in a multi-volume series under the supervision of a distinguished Editorial Advisory Board. The Trustees of the Einstein Estate, Dr. Otto Nathan and Miss Helen Dukas, have arranged for publication by Princeton University Press, with the editorial cooperation of the Institute for Advanced Study. Funds are being sought to support editorial preparation.

The Editorial Advisory Board will include:

Valentine Bargmann, Professor Mathematical Physics, Princeton University

Freeman J. Dyson, Professor, School of Natural Sciences, Institute for Advanced Study

Charles C. Gillispie, Shelby Cullom Davis Professor of European History and Professor in the Program in History and Philosophy of Science, Princeton University

Gerald Holton, Professor of Physics, Harvard University

Martin J. Klein, Professor of the History of Physics, Yale University

Thomas S. Kuhn, M. Taylor Pyne Professor of the History of Science, Princeton University

Marston Morse, Professor Emeritus, School of Mathematics, Institute for Advanced Study

Shmuel Sambursky, Professor of the History and Philosophy of Science, The Hebrew University of Jerusalem

John A. Wheeler, John Henry Professor of Physics, Princeton University

Charles Scribner, Jr., President, Charles Scribner's Sons

Res Jost, Professor of Theoretical Physics, Swiss Federal Institute of Technology, Zurich

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With the advice of the Board, the Estate and the Press will select an outstanding scholar as General Editor to carry out the project, probably with several Associate or Volume Editors.

*Einstein's Contributions*. The magnitude of Einstein's contributions to the theoretical physics of the 20th century was described by Lee A. DuBridge, then president of the California Institute of Technology, who wrote, soon after Einstein's death:

"To describe and to evaluate Einstein as a scientist is at once a very easy and a very difficult job. It is easy to say that Einstein towers far above any scientific figure of the 20th Century—a statement I believe to be true. It is even easy to say that he is the greatest figure in science since Isaac Newton—a statement I also believe to be true.

"But, even though we see the towering peaks of Einstein's achievements, we are still too close to them to be able to evaluate them accurately. Einstein's work, without question, marked a turning point in the history of physics. But the full significance of that revolution will be more clearly visible 100 years from now than it is today."

Einstein's rich work in physics is too well known to require elaboration here; Dr. DuBridge's full text, which is appended, excellently summarizes the impact of his thought upon the scientific world. What is most immediately needed is the full, definitive, authoritative edition of Einstein's *Writings*, which, one hopes, will hasten full appreciation of their significance and vision.

In the course of his research Einstein published numerous papers, and he entered into significant correspondence, very little of which has ever been published. His writings to such eminent scientific thinkers as Erwin Schroedinger, Max Planck, Wolfgang Pauli, Madame Curie, Eli Cartan, H. A. Lorenz, Nils Bohr, Paul Ehrenfest, and Max Born, for example, provide splendid insight into the development of 20th century physics. They suggest, as well, further avenues for research, which Einstein himself was unable to follow. Just as he sought harmony in the universe, so, too, did he seek it in the world he lived in. His correspondence on non-scientific topics will not only remind scholars of his devotion to the problems of the world, which he never ignored for the intellectual problems of the universe; it will also show the range of his interests and his agile mind. His concern with the questions of philosophy, ethics, justice, war, peace, music, culture, world government, and the establishment of Israel is the frequent subject. of his correspondence with such notable contemporaries as Sigmund Freud, Bertrand Russell, Franklin Roosevelt, Chaim Weitzmann, Albert Schweitzer, Thomas Mann, and George Bernard Shaw. Only with publication of the complete corpus of his work will the world at large come to know Albert Einstein's true dimensions as scientist, philosopher, and humanitarian.

The Einstein Legacy. Albert Einstein published during his lifetime 274 scientific papers and 332 papers of general content. Only a few of his writings were published in book form. Access to these papers is difficult because they were published in a large number of European and American journals, magazines, and newspapers. Besides this published

material, Einstein left a large archive of scientific and non-scientific documents. A limited amount of unpublished material was assembled in several anthologies and published partly during Einstein's lifetime and partly after his death. The Einstein archives fill 28 file drawers, and are kept in a vault at the Institute for Advanced Study in Princeton, under the care of Miss Helen Dukas, Eisntein's former secretary who is one of the Trustees of the Estate.

Einstein stipulated in his last Will that the literary property in all his published and unpublished material be vested in a Trust to be established after his death and to be administered by two Trustees. Upon assuming the responsibility with which Einstein had honored them, the Trustees considered it one of their foremost obligations to make the Einstein material accessible to competent scholars and, eventually, to help prepare the publication of Einstein's complete writings.

Activities of the Einstein Trust Since Einstein's Death. In the years since Einstein's death, besides organizing his archives for the use of scholars, the Trustees have been able to add a large number of often very important documents to the collection. Through extended correspondence with scholars, libraries, and dealers of rare documents in different parts of the world, it was possible to obtain originals or copies of letters or other writings of Einstein, particularly from his earlier years when he mailed letters and papers written in longhand, without retaining copies. Arrangements, frequently difficult to accomplish, to exchange Einstein material for copies of material owned by the archives often produced precious additions to the Trust's collections.

Besides the many successful efforts of the Trustees to enlarge and enrich the archives, other steps were taken that will be helpful in

editing and publishing the Writings. An indexed microprint collection of Einstein's *published* writings has been prepared. Correspondence between Einstein and three of his friends (Maurice Solovine, Arnold Sommerfeld, and Max Born) has been published, as has a collection of Einstein's writings on peace. These publications are of course only a small part of the collected writings, but their existence will make easier the tasks of the editors of the comprehensive collection.

Arrangements with Princeton University Press. The Trustees have entered into agreement with Princeton University Press to assume responsibility for the publication of Einstein's Writings in book form. For a number of reasons, the Press seemed to be the most appropriate publishing house for that great venture. Ever since the death of Einstein, the Press has expressed its interest in the publication of Einstein's collected writings. The Press is one of the oldest publishers of Einstein's scientific works. One of his most famous books, THE MEANING OF RELATIVITY, was published by the Press in 1922; the 5th edition of that volume was prepared by Einstein himself as his very last scientific work, and was published in 1956, the year after his death. The experience the Press has gained through the publication of similar works, such as the Papers of Thomas Jefferson and Woodrow Wilson, will be of great assistance to the Einstein project. Moreover, the physical proximity between the Press and the Institute for Advanced Study, where the editorial work will be done, will be very helpful.

The Trustees have also been in communication with The Hebrew University in Israel because Einstein's Will provides that, upon termination of the Trust, the archives and all other assets of the Trust will

become the property of The Hebrew University. The President of the University welcomed the initiative of the Trustees in making arrangements with the Press for editing and publishing Einstein's papers, and has assured them that the University will cooperate with them and the Press to the fullest possible extent.

The agreement between the Press and the Trustees stipulates that the initial edition of the Writings will reproduce all of Einstein's papers in their original languages (this refers also to writings by others, which may have to be included in the volumes for a fuller understanding of some of the Einstein documents); this means that a very large part of the material will have to be published in German. This decision was made since the Press and the Trustees are convinced that, for the purposes of historical scholarship, papers of such significance should be preserved in print exactly as the author had prepared them. It is envisaged that the Press will also publish an English translation of at least a large selection from the Writings, and it may itself publish, or license to be published, translations in other languages.

The Editorial Work. The editorial work will be done in cooperation with the Institute for Advanced Study in Princeton with which Einstein was closely associated during the 22 years he spent in the United States after emigrating from Germany. The Institute has offered to make offices available for the General Editor and his staff and to provide the necessary mechanical equipment. This generous contribution by the Institute will greatly facilitate the use of the material in the archives. The General Editor, when appointed, will probably have several Associate or Volume Editors, themselves scholars in physics or

the history of science. It is hoped that the editorial work on the non-scientific material can be done simultaneously, under the direction of a scholar particularly qualified for such an undertaking. The editing of the scientific and non-scientific papers will raise many difficult questions. The General Editor and his staff will be able to consult not only with the Press and the Trustees, but particularly with the Editorial Advisory Board.

A Monument to Albert Einstein. Albert Einstein made it known to those who were closest to him that there should not be any funeral or memorial services; there should not be a marked grave or monument, and his name should not be used for multifarious purposes and interests. As far as humanly possible, these wishes have been obeyed. Although he often wondered about the reverence in which he was held throughout the world, for he considered it undeserved, he realized—and so expressed himself once more shortly before his death—that some of his scientific work would constitute a lasting contribution to the knowledge and understanding of man. In giving the Trustees explicit authority to publish the documentation he left, Einstein made it clear that this was the area of memorializing to which he did not object.

The Writings will be the most fitting monument to Albert Einstein. They will show a man of most extraordinary stature and significance. Among the truly great men of history, there are not many who not only opened new vistas of thought and knowledge, but who also applied themselves to the many political, social, and human problems facing the world in which they lived. Einstein is one of them. The Writings, and particularly the many letters that will be incorporated, will bring to light

the human being that Einstein was, and not only the scientist. They will make obvious his deep interest in securing political and intellectual freedom for men and women throughout the world, his opposition to any kind of authoritarianism, his unequivocal antagonism to all types of prejudice and discrimination, his long, never-ceasing struggle against war and in favor of orderly and peaceful relations among the nations of the globe, his devotion to the Jewish people in their efforts to find a home of their own, as well as many other interests to which he gave his active support.

The Writings will be a unique publication of the work of a truly unique man. He exchanged letters, often over many years, with most of the great personalities of his time in science, in political affairs, in art, and in literature, yet he never tired of corresponding with the humble and unknown who had addressed themselves to him in anxiety or despair or in hope of obtaining information or advice that they felt he alone could supply. Einstein's letters make manifest his wisdom and concern about scientific and purely human problems, and also his outspokenness and humility.

Whoever will help in facilitating the publication of *The Writings of Albert Einstein* will participate in a scientific and cultural event which is of greatest significance for our own times as well as for ages to come.

The Budget. At this point it is exceedingly difficult to prepare budget estimates for editorial and related costs for *The Writings of Albert Einstein*. A General Editor is still to be appointed, and only after he has made a preliminary examination of the papers and after establishment of editorial guidelines can a detailed budget be adopted.

The following budget represents our best estimate of five-year costs, on the basis of experience with other large projects such as the Jefferson and Wilson papers. It is hoped that the editorial work can be largely completed in five years.

## THE WRITINGS OF ALBERT EINSTEIN

## Five-Year Budget

Editorial Salaries (General Editor and Associate Editors) <sup>1</sup>	\$400,000
Secretarial functions	100,000
Translation expense <sup>2</sup>	50,000
Office expense (including reproduction of documents)	40,000
Meetings of Editorial Advisory Board	50,000
Administration	10,000
Contingencies	<u>15,000</u> \$665,000

- 1. It is expected that this will be a mixture of full-time and half-time activities. The scholars chosen for these tasks may not be able to give full time except when on leave from university posts.
- 2. Translation policies have not been established, but it is clearly important to publish at least a Selected Edition in English.

Albert Einstein ... the Scientist

Lee A. DuBridge *President* California Institute of Technology

*Chancellor Allen:* Nowhere in America or perhaps in the world could there be found anyone to speak on Einstein—The Scientist, who would be better qualified than the next speaker: President DuBridge.

*President DuBridge:* To describe and to evaluate Einstein as a scientist is at once a very easy and a very difficult job. It is easy to say that Einstein towers far above any scientific figure of the 20th Century—a statement I believe to be true. It is even easy to say that he is the greatest figure in science since Isaac Newton—a statement I also believe to be true.

But, even though we see the towering peaks of Einstein's achievements, we are still too close to them to be able to evaluate them accurately. Einstein's work, without question, marked a turning point in the history of physics. But the full significance of that revolution will be more clearly visible 100 years from now than it is today.

Nevertheless, we do already have a perspective of 50 years since Einstein did some of his most important work in 1905 when he was only 26 years old. And, with this perspective, the towering nature of his contributions is already clearly evident.

In 1905 Einstein addressed himself to solving a riddle which had

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first been posed by the famous experiments made by A. A. Michelson and his co-workers beginning in 1889—experiments which, incidentally, brought the first Nobel prize in physics to the United States. Michelson attempted to measure essentially the velocity of the earth through the "ether"—the ether being that intangible medium which was assumed to be spread through all space and which accounted for the propagation of light. It seemed obvious that the earth's velocity through this medium could be determined by measuring the difference in the speed with which light traveled in two directions—say parallel and at right angles to the earth's motion. This was simply analogous to measuring the current in a river by comparing the speed with which a rowboat could go upstream with its speed when going across.

The shattering result of this experiment was that there was no difference in speed whatsoever. The velocity of the earth relative to the ether was zero—and remained zero—in spite of the fact that everyone knew that the earth was dashing along in its orbit about the sun at a speed of 1100 miles per minute.

Now this was but one of many experiments in the fields of optics and electricity which revealed contradictions with accepted theories. And a variety of attempts had been made—most successfully by H. A. Lorentz in Holland—to account for the troubles. However, in 1905 the mysteries still remained.

It was then that Einstein came along with the breath-taking proposal that we take Michelson's experiment seriously and take as a basic postulate of physics that the world is so constructed that the velocity of light in free space is an absolute universal constant whose value is always the same regardless of circumstances under which it is measured.

The consequences of this and the other postulates of special relativity were far-reaching. Many puzzles in physics were at once clarified; the concept of the ether was eliminated; a new concept of the significance of time was introduced, and also there followed the idea that the mass of a body was a function of its speed—a relation which had already been accepted for charged particles, and

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which now was extended to cover all matter. It was this relation which led to the idea of the equivalence of mass and energy, the basic idea of atomic energy.

Today the theory of special relativity is such an inherent part of physics that it is hard for us of this generation to imagine what physics' could have been like without it. It is like asking what physics was like without Newton's laws of motion or of gravitation.

Twentieth century physics as contrasted to 19th century "classical" or Newtonian physics is characterized by two major and far-reaching ideas; namely, relativity and quantum theory. I have already indicated how Einstein was responsible for relativity. I must now point out that he also had a major responsibility for the quantum theory.

The basic postulate of quantum theory was first enunciated by Max Planck in 1900. This was the idea that when light energy is produced it is emitted, not continuously, but in lumps or packets or "quanta." Now Planck, though he found that with this assumption he could solve his problem, really did not believe it, and, indeed, spent several years trying to show how to get along without it, or at least how to minimize its universality. In the end he had to give up.

Again it was Einstein who made the bold proposal that we believe in Planck's quanta and that we assume that light travels in these energy packets and that light is always emitted and absorbed in lumps—the energy of each unit being equal to Planck's constant multiplied by the frequency. Once this idea was accepted, a whole array of phenomena were explained and the basis was laid on which Niels Bohr a few years later built the first satisfactory theory of the structure of the atom. Today we realize that the quantum idea is absolutely basic to all physics.

So, in the one year 1905, the youthful Einstein by bold leaps of his constructive imagination laid the foundations for the two major new concepts of modern physics. If Albert Einstein had passed away in 1906 at the age of 27, he would still be remembered as one of the great figures in physics. But of course he did not stop there.

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He went on to develop further ideas in both relativity and quantum theory, making many contributions of great significance which I cannot take time even to mention.

But possibly the greatest and most characteristic achievement of Einstein, the idea which is of such profundity that we know of no other living mind that might have conceived it, was the theory of general relativity first propounded in 1916. This is clearly not the appropriate place, nor is the speaker the appropriate person, to describe the theory. If you wish a simple sentence to characterize the two theories of relativity, it is this: Special relativity deals with physical conditions encountered when observations are made on bodies moving relative to each other with a constant velocity; general relativity deals with cases in which the velocity is changing, in which there is acceleration. Since the most commonly observed cause of an acceleration is what we term the force of gravity, Einstein was led directly to a new theory of gravitation. And since the measurement of acceleration itself depends on measurements of space and time, general relativity propounded a new concept of space-time.

The full consequences of general relativity have not yet been worked out, but no aspect of it has yet been found which is contrary to experience. Einstein himself spent the next 35 years of his life in completing the theory and in trying to tie together the new ideas about gravitational fields with the quite different set of ideas relating to electromagnetic fields. But the achievement of a unified field theory is still apparently a far-off dream which may have to await, for its fulfillment, the birth of another intellect comparable to that of Albert Einstein.

And so today all scientists unite in saluting one of the great minds of the ages—one which ranged with originality and profundity from the unimaginable minuteness of the atomic nucleus to the unimaginable vastness of the universe.

This will suggest why it is that the scientists stand in awe of a mind so great. But scientists also salute the human qualities of this great man. He was a man of simplicity, of gentleness; a man with

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a great heart who never performed a selfish deed, who never expressed a thought that was not motivated by the most sincere and generous concern for the welfare, the freedom and the happiness of some individual human being—or, more likely, of the whole human race.

His monument lives in the structure of science and also in the hearts of men.

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