EINSTEIN AND INFELD, SEEN THROUGH THEIR CORRESPONDENCE* **

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On the basis of material in the Einstein Archive and Infeld's writings, the story of their relationship between 1920 and 1955 is reconstructed. While the scientific side of their early contacts and later collaboration is discussed, the major emphasis is placed on the development of their personal relations, and their comments on various social, cultural and political questions.

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Einen zweiten Infeld gibt es nicht
(Albert Einstein, 13 August 1949)

This talk is based exclusively on an examination of the Infeld correspondence files in the Einstein Archive. Some secondary sources, notably Infeld's autobiographical writings, were consulted for help in elucidating the correspondence. The first item in the Einstein-Infeld files is not from either.

It is a letter from Infeld's friend, the philosopher of science Josef Winternitz, to Einstein (13 Dec. 1927), requesting him to read and respond to a paper "Zur Feldtheorie der Elektrizität und Gravitation" (published version, "Zur Feldtheorie von Elektrizität und Gravitation," Eryk Infeld Bibliography[1], item 4, hereafter cited as EI Bibl. 4) that Infeld had previously sent to Einstein.

> "I know Mr. Infeld as a very gifted theoretical physicist, because in 1920/21 we, together with Messrs. Leo Szilard and Grolmann formed a circle for the purpose of working through the theory of relativity."

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** Permission to quote the Einstein letters granted by the Albert Einstein Archives, The Hebrew University of Jerusalem, Israel.

[1] This Bibliography is reprinted at the end of this article.

This letter serves to reminds us that Infeld's first contact with Einstein was during a visit to Berlin in 1920-1921. Turning to "Quest" (I cite the second edition, New York: Chelsea, 1980, as Q), we find an account of that visit:

> "I became weary of the political atmosphere in Poland, of the growing anti-Semitism and the tensions which were gradually diffusing into the university. ... To get away one had to have money. I talked to my father. He agreed immediately to keep me in Germany for a year. ... So I went to Germany, intending to study at the University of Berlin, at that time one of the best universities of Europe. ... But it was not so simple. If there was a nation hated more than any other at this time in Germany, it was Poland. ... In Poland I was a Jew and not a Pole. But here in Germany I was a Pole, a member of a hostile nation. I learned that it was impossible for a Pole to be admitted to the University without powerful outside influence." (Q, p. 90.)

He tried to secure the needed influence through letters of introduction from "influential people of the Jewish community in Cracow" to similarly-placed members of the Berlin Jewish community. Here again he met with prejudice:

> "I learned about the superior attitude of German Jews to any other Jews in the world and especially to Polish Jews. Among Polish Jews, in turn, those from the Austrian part of Poland, from Galicia, were regarded as most inferior" (Q, p. 90.)

Finally, someone suggested:

> " 'If you are a physicist, why don't you go to see Einstein? Maybe he will help you.' " (Q, p. 91.)

A telephone call to Einstein's house produced an invitation to "come right now." He did so, and "was shown into a waiting room full of heavy furniture" by Mrs. Einstein — Einstein's second wife Elsa, the source of the Biedermeyer furniture — who explained that Einstein was occupied with "a Chinese minister of education" (remember this is shortly after world notoriety descended upon Einstein in December 1919), and invited Infeld to wait.

> "I waited, my cheeks burning with excitement. A few minutes later a young man with a thin vivid face and smiling eyes entered the room and sat down opposite me." (Q, p. 91.)

The young man was carrying a copy of Weyl's "Raum-Zeit-Materie," and he and Infeld started to chat. This is how Infeld met Winternitz, identified in Quest only as "Joseph". Winternitz knew Einstein from his days in Prague (1911-12), where Winternitz's father was also a Professor.

Einstein soon

> "opened the door of his study to let the Chinese gentleman out and me in. Einstein was dressed in a morning coat and striped trousers with one important button missing." (Q, p. 92.)

Infeld explained his predicament to Einstein, who listened carefully and replied:

> " 'I should be very glad to give you a recommendation to the Ministry of Education. But my signature does not mean anything.'
>
> 'Why?'
>
> 'Because I have given very many recommendations, and' – here he lowered his voice to a confidential tone – 'they are anti-Semites.' " (Q, p. 92.)

Einstein finally decided to write to Planck, asking him to write a recommendation for Infeld. But in spite of this, Infeld's application for permission to study at the University of Berlin was rejected. After considerable further efforts by Jewish dignitaries, who now knew Infeld had Einstein on his side, Infeld was allowed to register as a "special student," entitled to take courses even though they did not count towards a degree.

At the University, he renewed his contacts with Winternitz, and together they:

> "organized a small group in which we discussed carefully the more difficult and subtle points of relativity theory. One of the members of our circle was [Jacob] Grommer, who had published a few papers with Einstein." (Q, p. 96.)

In the Epilogue to "Quest" (Q, p. 351), Infeld confirms that a third member was Leo Szilard. This is evidently the discussion group referred to in Winternitz's letter; it seems that the "Grolmann" mentioned is an incorrect reference to Grommer. Winternitz gave special thanks to Infeld in the preface to his book, based in large part on these discussions (as well as his conversations with Einstein).

> "I would not have penetrated so deeply into the understanding of the theory [of relativity] without the collaboration of my dear friends, the young physicists L. and F. Infeld, which I here gratefully aknowledge." ("Relativitätstheorie und Erkenntnislehre," Leipzig: B.G. Teubner, 1923, p. v.)

The reference to L. and F. Infeld reminds us that Leopold and Fanny Infeld (I am grateful to Eryk Infeld for providing Mrs. Infeld's first name) were married when he was twenty, and she evidently accompanied him to Berlin. The marriage lasted for some ten years, ending while Infeld was

working in Warsaw (see "Bronia", p. 126 in "Why I Left Canada", tr. Helen Infeld, ed. Lewis Pyenson, Montreal/London: Queen's University Press, 1978, hereafter cited as Why ...).

Returning to 1927, Infeld was now in Warsaw. After returning to Kraków, he obtained his doctorate in 1921 under Prof. Wladysław Natanson. Infeld recalls that it was the first in theoretical physics in Poland (Q, p. 102), and states that he was Natanson's only doctoral student (Q, p. 348). He worked for the next eight years in gymnasia (secondary schools), first as a teacher of physics in Będzin (Q, p. 348), and then for a few years as headmaster of the Jewish gymnasium in Konin ("Konin", in Why ..., pp. 130-135). Then he managed to secure a post in Warsaw at a Jewish girls' gymnasium.

There, he started to work again on physics in earnest, in particular on a unified theory of gravitation and electromagnetism, and sent Einstein a copy of his work. Receiving no reply, he must have appealed to Winternitz, whose letter to Einstein produced the desired effect. Einstein wrote Infeld on 17 December, apologizing for not having been able to read his work in more detail due to overwork.

> "But now I may tell you that after innumerable efforts I have arrived at the conviction that one cannot attain a satisfactory theory of electromagnetic phenomena starting with the afffine connection. In particular, concerning your assumption of a non-symmetric metric tensor, this road also does not seem practicable to me."

Introduction of the antisymmetric part of the metric

> "alongside the symmetrical part represents a quite independent postulation, so that a unification appears as quite external. For the moment, it looks as if Kaluza's method of introducing a formal fifth dimension still has the most to offer."

As I am sure many of you know, Einstein's opinions on this question vacillated a number of times over the years; his last unified field theory was based on a non-symmetric metric and connection.

Infeld replied on 6 January 1928:

> "I thank you, Hochverehrter Herr Professor, for your letter and for the paper, receipt of which gave me real pleasure. ... I had already become convinced that the non-symmetry of the metric tensor in the form that I gave should not be assumed.
>
> Yet I believe that an (affine) unified theory of gravitation and electricity can be constructed ... ."

He went on to give further details of a new version of his theory, concluding:

> "I would be much indebted to you if you were inclined to give me your opinion of the assumptions I have indicated."

A brief note in Einstein's hand on Infeld's letter indicates the nature of his "critical reply", which is not in the Archive. Infeld replied on June 2, 1928:

> "I thank you very much ... for the letter that I received from you in January of this year. I permit myself to report briefly to you the results concerning the unified field theory that follow from my assumptions."

After a discussion of these, he concludes:

> "Allow me at the same time to thank you most heartily for the good will that you have shown towards me. I am very happy that in July I shall most probably be able to attend the summer course in physics, which will enable me to deepen my understanding of your latest works through your lectures."

It is not clear to which summer course Infeld is referring. At any rate, Einstein spent July 1928 on the Baltic sea coast, still recuperating from an episode of heart trouble earlier in the year, and gave no lectures during that month.

On 4 October 1928, Infeld again wrote Einstein, commenting on the latter's paper on Riemannian geometry with distant parallelism. He pointed out that:

> "The geometry developed there by you is a special case of non-Riemannian geometry, and as such is treated in L.P. Eisenhart's book, Non-Riemannian Geometry, p. 47-50."

He detailed the nature of the special case and pointed out some similarities with his own theory.

In 1929, Infeld attempted to get a fellowship from the International Education Board (Rockefeller Foundation). On 14 January he wrote Einstein for help:

> "I take the liberty of turning to you in the following personal matter:
>
> The conditions in which I work here make any scientific work extraordinarily difficult. For reasons that I do not want to go into here in any detail, and that are certainly well known to you, very esteemed Herr Professor, the possibilities for me here scientifically are very limited.
>
> My Promotor, Prof. Natanson, in order to allow me to study abroad has written a letter of recommendation to the International Education Board, a copy of which I enclose. I very much want to spend at least a part

of my study period in Berlin, in order to work my way into the field of quantum mechanics. Prof. Schrödinger has said that he is ready to accept me as a stipend holder. The probability of obtaining a stipend, upon which so much depends for me, would certainly be considerably greater, if you, very honored Herr Professor, would have the goodness to send a few lines of recommendation to the International Education Board. I would have approached you through Professor Natanson, very honored Herr Professor, if Prof. Natanson were not so very sick at the moment.

Finally, I would like to once more justify turning to you with this request by the importance of this matter to me."

On 18 January, Einstein wrote the requested "few lines":

"I permit myself to most warmly support the application of Dr. Infeld. In particular, through repeated scientific correspondence with Dr. Infeld, I know that he has had careful training in the field of theoretical physics and has also had independent ideas in this field.

I should like to support the application of Dr. Infeld all the more since the conditions for his development in Warsaw, under the conditions prevailing there, are unfavorable."

In spite of the support of Natanson and Einstein, Infeld's application did not succeed. But, especially due to the help of Professor Stanisław Loria, he was able to obtain a senior lectureship at the University of Lwów, and then to habilitate there.

In 1932, he took a two-month leave from the University, in order to travel abroad. He went to Leipzig, no doubt attracted by the opportunity to learn more about quantum mechanics through contact with Heisenberg and his group. He found the political atmosphere extremely tense in the town, but:

"In this sea of hatred and fighting the physics department formed a small peaceful island free of anti-Semitism. Heisenberg's assistant was a Jew. Toward a foreigner from Poland the atmosphere was reserved but correct. ... At [Heisenberg's] seminar I met a young professor of mathematics, Van der Waerden, who was also interested in theoretical physics. ... I had with me the manuscript of a paper connected with a problem on which Professor Van der Waerden had worked [presumably EI Bibl. 18]. ... Two weeks after I had arrived in Leipzig Van der Waerden and I began to work together."

The result was the well-known Infeld-Van der Waerden paper on spinors, "Die Wellengleichung des Elektrons in der allgemeinen Relativitätstheorie", EI Bibl. l9. Apparently they sent the paper to Einstein, who suggested it be published in the Sitzungsberichte of the Prussian Academy of Sciences. On 15 November, after his return to Poland, Infeld wrote Einstein:

> "I must thank you most heartily for the good will you have shown me, and for the proposal to submit the work I did together with v. d. Waerden to the Academy. Today I got Schrödinger's letter from v. d. Waerden. He will be glad to referee the paper for the Prussian Academy. He doesn't like the way it is presented, however, and he proposes many changes to us privately, which can easily be taken care of.
>
> It is a great pleasure and honor for me that you cite us in your work (the paper is called: The Wave Equation of the Electron in the General Theory of Relativity by L. Infeld and B.L. v. d. Waerden).
>
> I would be very grateful to you, highly honored Herr Professor, if you had the kindness to send me a reprint after your paper appears. I hope you wouldn't hold it against me if I permitted myself to ask you for a proof copy, if you have one to spare?"

The paper mentioned is A. Einstein and W. Mayer, "Semi-Vektoren und Spinoren," Sitzungsberichte der preussichen Akademie der Wissenschaften, phys.-math. Klasse, 32, 1932. Infeld and van der Waerden are cited on p. 25.

In 1933, after the tragic death of his second wife Halina, Infeld again applied for a Rockefeller fellowship, and Einstein again supported him. On 1 July 1933 he wrote from exile in Le Coq sur mer, Belgium:

> "Professor Loria of Lwów informs me that he is attempting to get a research stipend for the Assistant and Private Docent at the University of Lwów, Dr. Leopold Infeld. I know a series of papers by Dr. Infeld in detail and can recommend him as a diligent young researcher in the fields of quantum and relativity theory. Infeld is a scientific writer, who possesses both the necessary originality and self-criticism, so that useful work can be expected from him."

This time, Infeld succeeded in getting a fellowship and, heeding the advice of Loria, went to Cambridge, England. Initially he hoped to work with Dirac, but communication proved difficult. After attending a course of lectures by Max Born on his new non-linear generalization of Maxwell's theory, Infeld became interested in it. He approached Born to explain a defect in the theory and how to remedy it. Born's reaction was not encouraging. He interrupted Infeld angrily to defend his position, finally leaving the lecture hall saying, "I shall think it over." (Q, p. 209).

> "I was annoyed at Born's behavior as well as my own and was, for one afternoon, disgusted with Cambridge. I thought: 'here I met two great physicists. One of them does not talk. I could as easily read his papers in Poland as here. The other talks, but he is rude.' " (Q, p. 209.)

But the next day Born admitted Infeld was right, and they started to collaborate. Soon he was writing to Einstein again, to describe his work with Born and ask another favor. On 12 February 1934, he wrote:

"I permit myself one again to request something from you. I wouldn't permit myself to do this, if I were not convinced that for you it means a trifle, and for me a quite essential thing.

I am currently in Cambridge and am extraordinarily pleased with my stay here. Perhaps you saw in Nature the short notice written by Born and me. Together with Born, we wrote a large work (on the foundation of the new field theory ['Foundation of the New Field Theory', EI Bibl. 22]) that will appear in the Proc. Roy. Soc. Only now do I see what opportunities a center like that in Cambridge offers for scientific work. It means a lot to me to obtain the possibility of staying here longer. I don't have to give you the reasons why, because you know them very well. They lie not only in the scientific opportunities, but in the entire atmosphere of England, which I admire more and more. But I do not intend to look for any sort of position here. It would not be proper behavior towards my German colleagues, who find themselves in a much worse position. Luckily, there is another possibility for prolonging my stay here.

I think I have a little talent for popular science. A half-year ago my popular-scientific book [Nowe Drogi Nauki] appeared in Poland, which has now been translated into English and will appear at the beginning of March. The publisher is Gollancz (the publisher of the Brown Book [on the Nazi terror]) and he believes it has very great possibilities on the English market. I have just received the proofs, and permit myself to send you a set at the same time.

Now permit me to come to my request. Gollancz has told me that the possible sales of the book will be increased about tenfold, if you were inclined to write a few words about the book with permission to cite your judgement.

It is very uncomfortable for me to presume so much on your kindness and friendliness. Therefore I have to be quite clear. I don't want you to do me the favor if you actually don't like the book. But I would be extraordinarily thankful if you would have the kindness to read through parts of the book and write a few lines or even a few words about it, if you like. Speed is very important for me, since the book is supposed to appear in March. (There are many errors of printing and translation in the proofs, that will be removed).

Let me once more apologize. I would never allow myself to burden you, if this were not a very important opportunity for me and if my further stay here did not depend on it."

Again, Einstein came through with a preface to the book, "The World in Modern Science" (London: Gollancz, 1934). He wrote Infeld on 1 March 1934:

"I took great pleasure in your book and very much treasure its liveliness, clarity and simplicity. Enclosed I send you a short introduction, which I

> hope meets the need. If for any reason the wording has to be changed, please propose the relevant change to me."

But Infeld soon had to return to Poland, where the atmosphere at the University and in the country at large had not improved, nor had his prospects. He decided to try to go to the United States to work with Einstein. On 26 February 1936, he wrote:

> "Again after a few years I have to turn to you with another request. I am doing so only as a last resort. Let me present the situation briefly. After another half-year's stay in England, during which I worked with Born in Cambridge, I returned to Poland. Unfortunately, for reasons well known to you, I have no possibility of advancement here. Working with Born was extraordinarily pleasant and instructive for me. I believe that I adopt myself well to collaboration. Now for many reasons I have to and I want to leave here, at least for a year. I have already made some efforts in this direction. My aim was to go to Princeton for a year, in order to be able to work in the atmosphere prevailing there. The financial side of my plan is not without hope. I will most probably get the fare and a little money from a newspaper, for which I write popular articles on physics."

As we learn from "Quest", this newspaper — curiously enough – was a new paper, set up and subsidized by the government, Gazeta Polska, and Infeld had some hesitation about writing for it (Q, pp. 219-221).

> "As far as I can see, a quite small aid from the side of the Institute in Princeton would make my stay possible. To speak concretely: a small stipend of $300 would allow a stay of half a year, one of $600 a whole year's stay. But even a small aid would also be essential for my plans. If that doesn't work out, I would still try to come to Princeton, since I really want to.
>
> I am still working on the new electrodynamics and have found some results lately. Born, with whom I am very friendly, will also write you about this matter. It will take time, however, because as you know he is in India. I speak good English, and intend to take my wife with me, who is an Englishwoman.'
>
> I would ask you strongly in any case to send me some sort of formal letter, which would facilitate the overcoming of formalities (visa, leave, etc.). I know very well that you will do what is possible. I would like to have the answer as soon as possible so that, in case help from the Institute is not possible, I still have time to think of something new. My goal is to come to Princeton for the next academic year (1936-37).
>
> It is almost unpleasant for me to send you banal assurances of my gratitude. I have a bad conscience, that I am again imposing on your kindness."

Einstein replied on 18 March:

> "I spoke with Professor [Oswald] Veblen about your proposal; he is the most influential of the group of professors who are much occupied with administrative questions. He thought it would be possible that we invite you for a half or a whole year under the conditions proposed by you. But in any case, a decision on this is necessary at the next meeting of Professors, that will probably take place in a couple of weeks. Anyway, it would be justified that you soon assure your travel leave.
>
> I would be pleased if you came here, especially since you are occupied with the same problems as I am. Reciprocal stimulation and criticism is always good."

On 4 May, Einstein was able to report:

> "The matter was somewhat delayed by an ebb in the Institute's assets. Now however I am happy to inform you that the $600 has been granted. My colleagues and I will be pleased to have you here during the next academic year (beginning of October)."

The two soon started to collaborate, first on the problem of gravitational radiation – he and H. P. Robertson managed to find an error in Einstein's proof that it does not exist (Q, pp. 260-270); and then on the problem of motion in general relativity, the problem on which they continued to work for a decade and more. The story of their collaboration, as seen from Infeld's side, is told in "Quest", and Peter Havas has provided additional material in his article "The Early History of the 'Problem of Motion' in General Relativity" (in D. Howard and J. Stachel, eds., "Einstein and the History of General Relativity," Boston/Basel/Berlin: Birkhäuser, 1989, pp. 234-276); so I shall not discuss it here, except as it relates to the correspondence. By spring of the following year, it became clear that Einstein was not able to secure Institute support for Infeld for a second year. As he told Infeld:

> "My fame begins outside Princeton. My word counts for little in Fine Hall [then the site of the Institute]." (Q, p. 302.)

Infeld proposed that he finance his further stay by writing another popular book — this time with Einstein.

> "I knew him well enough to understand that he would never lend his name to ghostwriting. A book with Einstein's name would really mean a book written together. ... I knew that if the book was to have any real historical value I must remain in the background and let Einstein express his views. It was important that the book should express Einstein's outlook on science. ... Next was the problem of the actual labor of writing, the tedious mechanism of popularization which would take a great deal of time. Here, I was sure, I could do better than Einstein and would be able to relieve him of most of the work." (Q, p. 308.)

After encouragement from Robertson and Melba Phillips, Infeld went to Einstein, but found himself almost tongue-tied.

> "I wanted to explain my plan clearly and in logical fashion. ... But, apparently for no reason at all, I could not talk; my well-prepared speech went to pieces, and after a few meaningless phrases, 'It is difficult to explain ... I hope you won't misunderstand me ...' I gave it up.
>
> Einstein looked at me in utter astonishment. He had never heard me stutter or found me unable to express myself. ...
>
> 'For goodness' sake, shoot out what you have to say. I am beginning to be really interested in what it is.'
>
> I gathered my courage and began an incoherent explanation, finally making myself clear by repetition, by traversing the subject again and again. ...
>
> Einstein looked at me silently, stroked his moustache with his finger and then said quietly:
>
> 'This is not at all a stupid idea. Not stupid at all.' Then he got up, stretched out his hand to me and said: 'We shall do it.' "

Thus was conceived the famous "Evolution of Physics", published by Simon and Schuster in 1938 and still in print – and still used by many of us in popular courses on physics. The work, as described in "Quest", proceeded rather speedily, and by the time Einstein left Princeton for his summer holiday on Long Island, it was essentially finished, it being left for Infeld to write up their discussions of the last two chapters.

> "During the vacation months Princeton is one of the most uncomfortable places in the world. The town is dead. The few remaining inhabitants, moving languidly over the burning pavement, repeat over and over in pathetic voices that the humidity is to blame. I sweated and drank water, drank more water and sweated, got up a five to write my thousand words before the burning sun made a furnace of the town." (Q, p. 315.)

Finally the manuscript was finished and sent off for Einstein's imprimatur. By 27 August 1937 Einstein was able to write Infeld:

> "I marvel at the energy, with which you have brought our worldly child into the world and outfitted it. The letter to the Dutch publisher [of a German translation] is going out with my signature by the same post. Cash the check and keep it as the first compensation for your pains.
>
> I am only returning to Princeton around the l9th of September and am already anticipating with pleasure the interesting work that lies ahead of us. I am now certain that we shall arrive at a decisive result."

The book was soon published, and a vigilant reader soon caught an embarrassing error. Mr. J. T. Hayward, Vice President of the Barnsall Research Corporation, Petroleum Building, Tulsa, Oklahoma, wrote Einstein on June 15, 1938:

> "In the second paragraph on Page 190 of your and Prof. Leopold Infeld's recent book ... the following statement occurs:
>
> 'In viewing the setting sun, we note the event eight minutes after it has taken place.'
>
> I have puzzled over this statement, and believe that it is possibly a slip of the pen. 'The event' presumably refers to the setting of the sun, and the delay in perception would be equal to the velocity of light divided by the distance between the eye of the observer and the horizon [sic]."

Again on holiday on Long Island, Einstein wrote a detailed reply to Mr. Hayward on June 20, sending a copy to Infeld with a note:

> "A reader has informed me correctly, that a complete mistake about the time of sunset occurs on p. 190. It is vexing that this slip eluded us. Naturally, it must be removed from future editions."

In 1938, Infeld was offered a lectureship at the University of Toronto, where J. L. Synge was head of the department of applied mathematics.

> "Einstein, Robertson and everyone else with whom I discussed it strongly urged me to accept the offer from the University of Toronto, although Einstein remarked many times how much he regretted that we should have to interrupt our collaboration." (Q, p. 323.)

It was during "the vacation period after the second year in Princeton" that Infeld "lived through the dramatic epilogue of a relationship which I have consistently omitted from my book" (Q, p. 323): he separated from his third wife, whom he had married in England. Einstein alludes to this in the next letter to Infeld, written 22 February 1939, when Infeld was already in Toronto.

> "I am very happily looking forward to the prospect of seeing you again in April. As concerns the separation, this is a curious matter, in which neither the direct participants nor bystanders are sure of what sort of a face to put on it. Although it isn't the same, yet it calls to my mind again Schopenhauer's elegiac-sentimental dictum: The man who marries for a second time is not deserving of the death of his first wife. You are thus so to speak still taking the middle course."

Presumably Einstein's remarks have more to do with his own marriages than with Infeld's. They seem particularly inappropriate given the tragic circumstances surrounding the death of Infeld's second wife, Halina – but I don't know whether Einstein was aware of this.

Einstein went on to remark:

> "Robertson told me that you are working on freeing the treatment of the problem of motion from coordinate conditions. That would be pretty. I see that this works for both integral conditions, but I still don't see how one can obtain the successive approximations in the calculation of the field in this way."

This apparently refers to the second paper on the problem of motion, in which the equations of motion are solved without distinguishing a special coordinate system: "Nothing is assumed in advance about the coordinate system except that it is galilean at infinity." ("The Gravitational Equations and the Problem of Motion II", EI Bibl. 37, p. 455.)

There follows an exchange of letters about this work, including: AE to LI, 2 March 1939; LI to AE, 7 March 1939; followed by a meeting in Princeton, described in "Quest" (p. 328). Apparently in the course of this trip to the United States he married Helen Schlauch, a mathematician whom he had met seven months earlier at a meeting of the American Mathematical Society (Q, pp. 323-324, 326).

Perhaps he took her to meet Einstein; at any rate, he writes in his next letter:

> "I regret very much that we could speak to each other so little last time. I intend to come to Princeton again" (LI to AE, 19 April 1939).

This letter was written while Helen and he were living in her New York apartment during his five-month summer vacation (Q, p. 326).

There follow four further letters about work on this paper: AE to LI, 22 April 1939; AE to LI, 25 April 1939; LI to AE, 27 April 1939; and 2 May 1939. By this time, the paper was nearing completion:

> "I agree with your improvements, and believe that with these the train of thought has been brought to its most complete form. Somehow, this should be published in the Annals [of Mathematics], since the entire train of thought will thereby now really be made easily accessible. If you prepare it, we could then best do this together. It is only too bad that working together has been made so troublesome due to the spatial separation."

On 23 October Einstein wrote to Infeld – in English for the first time. The shadow cast by the outbreak of war on Sept. 1, discussed so eloquently by Infeld in "Quest" (pp. 6-11), also falls on this letter:

"It is strange that the 'Annales' have not yet sent any proof sheets of our paper. I shall inquire occasionally about it at Dr. [Solomon] Lefschetz's office. I am very glad to learn that you are so happy with your wife. But I can imagine also how worried you are about your sisters in Poland. I hope that women are not so endangered in such situations. There is nothing one can do against those gang of scoundrels. But it seems to me that destiny is en marche!"

Infeld's and Einstein's worries were indeed justified:

"My younger sister [Bronia], who was also the best friend I ever had, vanished suddenly in Cracow and no one knows how she died. [See also the essay 'Bronia' in 'Why I left Canada', pp. 123-129.] Her husband was shot on the street and their young son died of illness and hunger. My older sister [Fela] died in Bergen-Belsen ... but I had better stop." (Q, Epilogue, p. 353.)

But events in Leopold's home followed a happier course, and on 18 January 1940 Helen Dukas, Einstein's secretary since 1928, wrote:

"Congratulations to the heir! [Eryk, of course.] I can imagine your joy and happiness, particularly of the proud father. I hope everything went well and the family is quite all right again. Dear Ludwik, please write me soon and tell me all about it."

Einstein added a handwritten postscript:

"Hearty congratulations! The youngster was earlier than the Annals of Mathematics."

The proofs finally arrived, and on March 8 Einstein sent them on to Infeld, with some suggestions for further changes. Then he went on:

"Your letter came today, and I am happy that all is going as you wish it, especially also with your little son. At [Eugene] Wigner's request, I spoke yesterday about the problem (in the colloquium). I only lectured about the thing in first approximation, so that the clouds of mathematical formalism don't hide the main idea. I succeeded in making the thing really understandable and I saw from the discussion that interest in it was exceedingly lively. We would have done well to have treated things this way in our first paper ['The Gravitational Equations and the Problem of Motion', (EIH), EI Bibl. 34], because otherwise one can only see the wood for the trees with difficulty. But unfortunately this can no longer be changed."

Infeld sent back the proofs in an undated letter, probably from May 1940, agreeing to the suggested corrections, and adding some political comments.

> "The political situation grows darker with each day. People who were very little concerned about the struggle in Spain [i.e., the Spanish Civil War of 1936-1939] are crying about the fate of the Finns [a reference to the Russo-Finnish War of 1940] and Mannerheim is a hero of democracy [a reference to the Finnish leader, who had presided over the White terror after the Soviet government gave Finland its independence in 1918]. The statements of the Communists exhibit a standard that is frightening [presumably a reference to what he later recalled as his 'revulsions against' the Party 'during the Molotov-Ribbentrop pact' (Q, Epilogue, p. 351)]. Politically, one feels isolated and 'confused' just at the time when I would like to stand strongly on one side. All of this is covered up for me by the calm and good atmosphere in our home, but it emerges from time to time and even very strongly."

After mentioning some of his current work on the problem of motion in electrodynamics (EI Bibl. 36, with P. R. Wallace) and on Brownian motion (EI Bibl. 38), he goes on:

> "Only now after being away from Princeton for two years, do I see how much I learned from you. I understand quite well, that you cannot report to me in detail on your work. Every day brought new attempts, new hopes, and also new disappointments. The endeavor and the work were so 'exciting' that I even forgot to be concerned about if and when something would result from it. I have learned from you what it means to attack the most difficult problems and to have the courage for it. Although, like a de-excited atom, I have sunk back again to my normal level here, still I now know what it means to collaborate on great problems, and perhaps I will once again succeed in working near you."

Almost a year later, on 6 March 1941, Einstein wrote:

> "Our work on motion has met with considerably more interest than we expected at the time. ..."

He added one of his now ever more-frequent pessimistic reports on the progress of the search for a unified field theory:

> "Our attempts to set up a useful [unified] field theory have not led to any results. I am more and more inclining towards the viewpoint that one cannot make further progress with the theory of the continuum, because in it the Riemannian metric imposes itself almost necessarily as the only natural conceptual structure. Our attempts at a more general conceptual structure have had no success at all up to now.
>
> I have just received your book ['Quest'], and will look at it with pleasure."

Infeld replied the same month:

"I am extremely anxious to know whether you liked my book and especially my treatment of anti-Semitism. About you, as about myself, I wrote just as I thought and felt. My publisher thought that I made you too human which he regards as a small objection and I as a compliment to me."

Einstein replied, probably in April 1941:

"Your book is excellently written. I read through it completely with close attention. On the other hand, I must tell you that it is not right to publish remarks made in private by personal friends. Usually, one even asks for permission before one prints public statements. Just imagine how embittered, for example, Loria would be, if he happens to see such indiscretions and sees them put before his countrymen. Have you thought about how the professors here will behave, after your comments on Princeton and the Institute, if Infeld II. wants to come to the Institute. If you had asked me ahead of time, I would have energetically advised you against publication. One should really not undertake anything that threatens the weak bridge of trust between human beings.

Now since it has happened, don't have too many afterthoughts. It is meritorious to pitilessly expose wrongs and mendacity. And the grass grows quickly over what has already happened, especially in America."

Infeld must have reacted with alarm to the implications of this letter, for Einstein wrote him on 22 April:

"You mustn't take my criticism too seriously. There is no reason to decline an invitation to Princeton. Anyway, the book is so well written that in general, sympathetic interest will preponderate for most people. Also, in general the feeling of the inviolability of the personal sphere is not so strong here as it is for me."

On 2 May 1941 Einstein wrote to ask Infeld's help in finding a position for Leopold Halpern, "who, through an intrigue that is impenetrable for me, has lost his position at New York University". Aside from a short note of thanks for a photograph of young Eryk, appended to a letter by Helen Dukas (8 August 1941), the correspondence seems to have lapsed for several years, only resuming at the end of World War II.

On 30 October 1945, Infeld wrote to Einstein:

"First, I want to congratulate you on the fine statement on the atomic bomb. I read it with great relief, happy you spoke up so strongly and clearly for decency and world-cooperation. Perhaps with the exception of Prof. Urey's, all the other statements lacked clarity and definiteness."

This may be a reference to a letter to The New York Times, published October 10, and signed by Einstein and 19 other prominent persons (see Einstein on Peace, pp. 340-341).

After first explaining his long silence,

> "For the last few years I had a strong desire to ask your opinion on the things I was working on. But I did not want to take up your time",

Infeld went on to discuss his recent work on cosmology, done together with his student Alfred Schild (EI Bibl. 44-45; the discussion continued in the next few letters). The letter concluded on a personal note:

> "As you see, I am still in Toronto and I like the place. We would be very happy here if not for the horrors of peace; the terrible news from my family. Of all the many people, my sisters, their children, cousins, friends, only one girl – my niece – was found alive in Belsen, and her father in Cracow!"

Einstein replied on November 29, 1945:

> "First of all my deepest sympathy on the dreadful news that you have also had about the fate of your relatives. The fate of the Jews is horrible and it is clear that the influence of National-Socialist propaganda still presents serious dangers to us for a long time."

Infeld replied on 19 December:

> "I was very much touched by your sympathetic letter. I find that what happened to my people in Poland haunts me days and nights. Out of my whole family there are only two people left alive, and I am doing my best to bring them to this continent.
>
> ...
>
> Perhaps the only good news that I have received from Poland was that my good friend Professor Loria is alive, and now reorganizing the University of Breslau [Wrocław]. However his letters are a tragic cry for help. There are no libraries, no books, no physical apparatus. He himself spent four years hiding with a farmer ['Despite his Jewish blood he had never denied his origin and, most exceptional among Christians with Jewish blood, he not only was not anti-Semitic but had the courage to fight anti-Semitism' (Q, p. 146)]. He is yearning to come for a few months to this continent, and to organize some intellectual help for Poland. I wrote on his behalf to Professor [Karl K.] Darrow [perennial Secretary of the American Physical Society], who approached the Rockefeller Foundation, but they are not ready to intervene now. I wrote also to my friend, Professor Oscar Lange, the Polish Ambassador in Washington, suggesting that in the interests of Poland he would [should] do what he could to bring Professor Loria here for a few months. As you know, the present Polish Government is, on the whole, very progressive, and by far the best Poland ever had, but the situation in the country is still terrible, and the people are rotten and poisoned by Hitler's propaganda."

This is presumably a reference to the grave anti-Semitic incidents that took place in Poland after liberation. It has been estimated that there were 350 returning Jews murdered in 1945 alone, and pogroms took place in Rzeszów (July) and Kraków, Infeld's home town (11 August), culminating in the Kielce pogrom (4 July 1946), which left 42 dead and several dozen injured (see, e.g., Michał Borowicz, "Polish-Jewish Relations, 1944-1947", in C. Abramsky, M. Jachimczyk and A. Polonsky, eds., "The Jews in Poland", Oxford: Basil Blackwell 1986, pp. 190-198; Iwona Irwin-Zarecka, "Neutralizing Memory / The Jew in Contemporary Poland", New Brunswick/Oxford: Transaction Publishers 1989, pp. 47-49 and Krystyna Kersten, "The Pogrom of Jews in Kielce on July 4, 1946", Acta Poloniae Historica, vol. 76 (1997), pp. 197-212).

> "I should be very grateful to you if you have any suggestions for help, or would you like to write a letter of a few lines to Professor Lange on Loria's behalf? It would have a great influence on the Polish Government. As you will know I don't like to bother you with such things. I do it only if I am absolutely convinced that you are very sympathetic to the cause as in this case."

Einstein replied on 25 December:

> "I can well empathize with your pain, especially since a number of members of my family were also killed by the Germans.
>
> I am really shocked that the reaction in this country to these infamous acts is not as strong and spontaneous as one would have expected. ...
>
> I have sent some words of recommendation for Loria to the Polish Ambassador; from your book I know that he really deserves it."

On 21 April 1946, Einstein writes:

> "I have read with great pleasure your excellent article on the atomic bomb" ["Atomic Energy and World Government", a pamphlet published by the Canadian Institute of International Affairs in 1946, based on a lecture Infeld gave "Across the length and breadth of Canada, about fifty times" (Why ..., p. 26).]

Einstein went on to discuss his latest attempt at a unified field theory, and apparently sent a copy of the paper, on which Infeld commented in his reply of April 25:

> "Your letter and your paper evoked all the wonderful memories of our collaboration, and I wish that I could have spent some hours in your study. I should like to send my best wishes for a great success in your work, which I believe with you may capture the truth for which you have been looking for such a long time."

Infeld's next letter of 13 July, 1946 is concerned with less pleasant matters. It is on the stationery of the Emergency Committee for Civil Rights, of which Infeld was an Executive Committee member. It is concerned with the aftermath of the defection of Igor Gouzenko, a code clerk in the Soviet Embassy in Canada, who claimed to know the real names of a number of Canadians in a Soviet spy ring, referred to in documents only by code names. Sixteen people were arrested under circumstances that Infeld and other prominent Canadians felt violated their rights under Canadian law. "Among those arrested I found the names of two people I knew well. I had no doubt they were innocent" (Why ..., p. 29), and indeed both were subsequently cleared by the court. Infeld's letter appeals for Einstein's help by signing a proposed statement of American scientists protesting against such violations of civil rights. There is no indication of any action by Einstein on the matter.

The next letter, from Einstein to Infeld, is concerned with Infeld's contribution to the Schilpp volume, "General Relativity and the Structure of Our Universe," (EI Bibl. 53). The letter is dated 31 March 1947:

> "At the beginning of your manuscript that you sent to Mr. Schilpp, there is an error, which is all the more disturbing, since you put special weight on this point."

There follows a discussion of Infeld's paper on relativistic cosmology, continued in a missing reply by Infeld, to which Einstein refers in his next letter of April 12, continuing the discussion. Einstein ended with a political comment:

> "I am very happy that you are so active in political matters. I quite agree with your comment about the U.S.A. Such a victory is a dangerous business."

In November of that year, Einstein wrote in support of a Guggenheim Fellowship for Infeld (dated Nov. 16, 1947 in Helen Dukas' hand), perhaps to work on his Galois book, published in 1948 ("Whom the Gods Love"):

> "Leopold Infeld was one of the most remarkable men with whom I had the pleasure to work; he has since proved to be a physicist of creative faculty. I feel sure he will create some work of at least considerable educational value for students of science. Intellectually he is uncompromisingly honest and has a clear understanding for questions of principle. As a writer he is very gifted and his work will doubtlessly be easy reading (without avoidable technicalities) and not superficial."

In 1948, Einstein wrote Infeld in praise of the book; the letter is printed in "Why I Left Canada" (p. 23), so I shall not quote it.

The next sequence of letters is concerned with renewed work on the problem of the equations of motion, work that culminated in Einstein and Infeld's last joint published paper, "On the Motion of Particles in General Relativity Theory", (EI Bibl. 51), published in 1949 in the new Canadian Journal of Mathematics, at Infeld's suggestion. Since they were not in physical contact, the correspondence about this paper documents their scientific collaboration in more detail than is possible for their two earlier papers. Consisting of some thirty-odd letters, it would itself merit a separate talk. Infeld discusses the collaboration, with citations from some of the letters, in an piece entitled "Einstein", (Why ..., pp. 143-147), so I shall cite only a few points of human interest from them:

Infeld to Einstein, 18 October 1948:

> "It is a great pleasure for me to work with you again and I don't think it can be bad for my ulcers because it makes me happy."

Infeld to Einstein, 25 October 1948:

> "Your letter gave me great pleasure. The region of disagreement between us converges quickly to zero."

Infeld to Einstein 1 November 1948:

> "I hope this correspondence is not too great a strain on you. I enjoy it very much, though 550 miles make the progress slow. But, as you once remarked, the world waited for a good theory of motion for such a long time that a few months more matter very little."

Einstein to Infeld, 19 November 1948:

> "Collaboration with you has given me extraordinary pleasure, and I believe that neither of us alone could have brought it to completion. For the material is downright insidious."

A number of Einstein's letters from 1949 are also quoted in "Einstein" (Why ..., pp. 136-152), and I shall not cite these passages. This was the year in which Infeld made his first post-war visit to Poland, where he received an invitation to work during the following year. After his return to Canada, in June 1949, he visited Einstein for what was to be the last time, and told him about his plans to spend time in Poland (see "Einstein", Why ..., pp. 147-148). Not long after, on June 20, Einstein wrote:

> "I have often wondered whether, out of idealism, you might not get too deeply involved with the Polish problem. In spite of great sympathy with the present government in Poland I cannot help being very doubtful about

> the stability of conditions there. After some time the evil men may emerge from the mouse-holes in which they are now hiding – not much different from what happened in Germany in the twenties. These people will make life very difficult for you."

Infeld's death spared him from the full force with which this prophecy was realized in 1968.

> "Even if conditions in the West are most disturbing today it is not to be assumed that the present hysteria will continue for a long time or even develop into an intolerable situation. People are too well off: they are not likely to go to extremes as long as they have enough to eat."

It is clear from the 1949 correspondence that joint work on a new paper was now underway:

> "When it appeared that we had come to agreement on all details, again a difference appeared between us. I had already sent Einstein the finished manuscript of our joint paper when we once more failed to understand one another. I felt that we had to meet personally to discuss the new work, which still lies in my files. Unfortunately, something intervened making it impossible for me to see Einstein. Our last work together will never see the light of day." ("Einstein", Why ..., p. 149).

What happened becomes clear from the correspondence. On 28 September 1949 Infeld wrote Einstein, commenting on the political situation, presumably in response to President Truman's announcement on 23 September that the Soviet Union had exploded an atomic bomb:

> "We are coming through a crucial time and in the next few months the international situation must change. I do hope that it will change for the better. In my pamphlet that I sent you some time ago I have predicted that the Russians will have their atomic bomb by 48 and was attacked for this "pessimistic" prediction by some military men."

In October 1949, Infeld received an invitation to spend the second term of the academic year at Princeton University. His request for a leave was turned down on the grounds that it was too late. Accordingly, Infeld applied in November for a one-year leave for 1950-51, making it clear that he also intended to accept the invitation to spend time in Poland (see "Einstein", Why ..., p. 147). His plan was approved by the university president (see Infeld to Dean Beatty, University of Toronto, 13 September 1950).

On 6 November 1949, Infeld wrote Einstein:

"I wanted to write to you this letter quite a long time ago. But then, unexpectedly, the invitation came from Princeton. I was surprised and happy about it. I looked forward (I can not tell you how much!) to seeing you and learning about the problems on which you are working. As I wrote to Wigner it seemed too good to be true. Briefly speaking I can not come! The dean (luckily you never needed to know what a dean means) said I am indispensible (!) here, that the notice was too short, that there would not have been any difficulty had he known in advance. So I am not coming this year. Whether they will extend the invitation for the next year is up to them and the best thing would be if Princeton would decide by itself without any outside pressure or suggestion. The only thing I can say is that it is almost sure that I would come if they would invite me.

Now I would like to tell you about another thing. For a long time I wanted to come for a day or two, to discuss the problem of motion on which we got stuck. I want to tell you why I did not come and why I do not intend to come in the nearest future. This part of the letter is *confidential and only for you* (Of course is all right for Miss Dukas and your household to know it). I do not know whether you heard that a few people, certainly not communists, were lately not allowed to cross the unfortified frontier. This is rather a long story. My past is comparatively clean, although, as you well know, I am left of Louis XIVth. But as a foreign born, I have to, crossing the frontier carry a passport. In it is the Polish visa. Should have Princeton invited me, I would have needed a visa from Washington, and, so I think, the fact that Princeton invited me + perhaps some intervention from Princeton would have been sufficient to overcome this difficulty. But for a few days (up to 29 days to be exact) I do not need, as a Canadian, any visa. But they can send me back. I should like, therefore, to wait for a good opportunity, or for a time when the tension will ease up, especially as it is hardly possible to become worse than it is."

He then turned to the problem of motion, ending with the following comment:

"There are other interesting results concerning the gravitational radiation. I am sure now that you were right in 1938. If we adopt our approximation procedure, then gravitational radiation cannot exist. My paper (you remember, on the odd power expressions in λ) is wrong. These expressions can be created or wiped out purely by a choice of a coordinate system!"

This is apparently a reference to a manuscript sent to Einstein. This letter seems to represent the first evidence of Infeld's dramatic reversal on the question of gravitational radiation. For Infeld's first paper arguing against its existence, see EI Bibl. 58.

A few more letters were exchanged before the well-known events of 1950, which led to Infeld's decision to resign from his Toronto post and stay in Poland (see "Why I left Canada", in Why ..., pp. 39-54). I shall not attempt

to resume them here. On 5 October 1950 he wrote Einstein for the first time from Hoża 69:

> "My family and I are very well off here. I regret very much indeed, that there is little chance that we will see each other again, but unfortunately this would probably have been true if I had remained in Toronto. I doubt very much that I would have been allowed to cross the border after daring to visit Poland. One of the pleasant things here is the absence of many of the worries which consume one's energy elsewhere.
>
> I'm sorry if the reporters bothered you because of me. It is always a great comfort to know that I can count on your understanding."

In his reply of 13 October, Einstein commented

> "In the past man was in the main only the plaything of blind forces – now he is additionally a plaything of bureaucracies, and learns to adjust. Do you know Lichtenberg's saying: 'Man learns little from experience because every new folly appears to him in a new light'?"

He also commented on Infeld's application of the slow approximation method to Einstein's new field theory (EI Bibl. 55, "The New Einstein Theory and the Equations of Motion"):

> "The attempt to transfer our theory of motion to the new theory would be completely unjustified. In fact, the localization of energy in the non-symmetric theory does not allow a quasi-stationary approximation. This finds expression, for example, in the fact that a homogeneous progressive wave in the antisymmetric part of the field does not carry any energy at all. Energy transport must be based upon a substructure, to which there is no access based on successive weak field approximation."

Meanwhile, Infeld was in Holland in connection with his position as Vice-Chairman of the Polish peace organization, and wrote to Einstein on 11 October 1950 seeking his support for the efforts of the World Peace Council:

> "I, myself, feel happier than I have ever felt in my life, and find the atmosphere here [i.e., Poland] very exhilarating. The people and the government are concentrating on reconstruction and peace. Of course, they make blunders too, but these are of an entirely different order of magnitude than those committed by the other side. But I do not intend to make propaganda. I will only add my voice to others which, I know, will reach you."

But in spite of a second letter asking for Einstein's support of the upcoming Peace Congress (LI to AE, 31 October 1950), Einstein demurred (AE to LI, 13 November 1950, cited in "Einstein", Why ..., p. 151). Perhaps Infeld did not know or had forgotten about Einstein's unpleasant experience

in connection with the 1948 Wrocław World Congress of Intellectuals, when a message he prepared criticizing both sides in the Cold War was not read; instead, his letter agreeing to send a message was read as if it were the message itself (see "Einstein on Peace", pp. 491-496).

The next few letters concern a mix-up over the German-language rights to "The Evolution of Physics". I shall only cite one characteristic sentence from Einstein to the Dutch publisher of the original German-language edition (26 December 1951):

> "When Infeld asked me, on the occasion of a request by the American occupation authorities, if I would allow a German translation of the book to be published in Vienna, I gave my permission. I did so, although on grounds of principle I would never have allowed it, after the great crimes committed by the Germans against the Jewish people, if it had been a question of a book of which I was the sole author."

On 23 March 1952, Infeld wrote:

> "The atmosphere in the Institute which the government built for me here is excellent. You would be interested to know that we have never been approached for anything for war. The only thing I miss is the opportunity to talk with you. ..."

On 9 April, referring to the Korean War, he wrote:

> "I just came from Oslo where we have a meeting of the bureau of the Peace Council. I wish to tell you that from the very rich circumstantial evidence I am absolutely convinced that the bacteriological war is on though it is on a comparatively small and experimental scale."

Einstein replied only on 28 October, explaining that he had mislaid the letter:

> "As concerns the Peace campaign, I cannot take part in it, because in my opinion it is more or less an act of propaganda, i.e., it concerns an action connected with the 'cold war'. The only thing that could really have practical success is an attempt at bringing together the main participants and not a public blah-blah. The blah-blah only has the effect of unnecessarily exciting the opposing sides. I am always reminded of Heine's poem 'The Disputation', which closes with the passage:
>
> 'Yet meseems it plain as ink
> That the Rabbi and the Monk
> That the both of them they stink.' "

On the side Einstein has added in his hand, "the poem is worth reading". He continued:

> "The requested photograph I send you gladly, and only hope that the currently prevailing wind will not make it necessary for you to carefully hide it from time to time."

This seems to be an allusion to the anti-Einstein, anti-relativity campaign in the Soviet bloc.

On March 28, 1954 Infeld wrote from a Peace Council meeting in Vienna, asking Einstein whether he would accept an award:

> "The peace council gives — every year — prizes for achievements in art and science. (The prizes have of course nothing to do with the Stalin prizes). We are, as I tried to tell you many times a non-communist organization smeared by our enemies as such. (If you would only know how many lies are told about my country!). Now the jury would be greatly honored if you would accept the prize. You know that I am usually presenting to you a case without trying to influence you. Yet this time I cannot refrain from doing it. It may become an important factor for our battle for peace and for our battle of decency in scientifique critique. [This seems to be an allusion to Infeld's defense of the theory of relativity against attacks on it by Soviet philosophers as 'idealist'] The others who are nominated for the prize are Chaplin and Shostakovich. Both agreed to accept it."

Again Einstein demurred, writing on 3 April:

> "Unfortunately, I cannot accept the honor intended for me in view of the experiences I had on the occasion of the Congress in Wrocław in 1948, when a message from me was suppressed or rather falsified."

On 2 December 1954 Infeld wrote:

> "I am optimistic about the future; more so anyhow than a year ago. ... I am feeling happy in my country. We have a lot of young very intelligent and capable men. It is nice to know that no one of them will be looking for a job. There is a lot to do here – too much, sometimes for my health."

Einstein replied on 8 December:

> "I am happy about the good news about your life and activities. I share your optimistic outlook on the international situation, and one could hardly have hoped for such a favorable turn."

Both Infeld and Einstein seem to be alluding to the thaw inside the Soviet bloc and the international detente that followed the death of Stalin.

In 1955, a conference was organized in Berne to celebrate the fiftieth anniversary of the special theory of relativity, and Einstein was invited. On 3 January 1955 Infeld wrote Einstein at the behest of a committee preparing

to celebrate the fiftieth anniversaries of quantum and relativity theory in Berlin, asking Einstein to attend. "Though I knew there was not much chance Einstein would come to Europe, I wanted to do as the organizing committee asked — for both East and West Berlin" ("Einstein", Why ..., p. 152). Infeld was to lecture on relativity in Berlin, he informed Einstein.

Einstein answered on 17 January, in a letter that ends the correspondence:

> "I am unfortunately (or should I say God be praised) not healthy enough any more to appear at such official occasions. ... I think it would be nice if you make clear in your sermon that the center of gravity of the theory lies in the general principle of relativity. Most contemporary physicists still haven't grasped this."

And in spite of the efforts of Infeld and many others, I suspect that this is still true.

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[4] Zur Feldtheorie von Elektrizität und Gravitation, *Phys. Z.* **29**, 145-147 (1928).

[5] Les équations de Maxwell dans la théorie commune à la gravitation et à l'électricité, *C. R. Acad. Sci.* **186**, 1280-1282 (1928).

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[2] Taken by the kind permission of the author from: E. Infeld, *Gen. Rel. Grav.*, **1**, 191-208 (1970).

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