

c/o Clarendon Laboratory,
Park Road,-
Oxford.

9th June 1955.

Dear Professor Singer,

I should be very pleased indeed to see you again, and perhaps you and your niece would care to have lunch with me some time in the second half of June. Please let me know after you have settled in London which day would suit you best. I have just arrived from America and may settle in Oxford where I have been offered a three years' appointment in the Clarendon Laboratory. I can tell you more about these personal things which have worked out fairly well when I see you, but I had better write to you now about a matter of great earnestness in which you may or may not be able to help.

may or may not

When I last saw you I told you about a plan to start research in a direction which ~~might possibly~~ be the starting point of a new industrial revolution. I thought that it might be possible to get financial support for such work, but abandoned any attempt in that direction after a few tentative discussions with you and a few others. I plunged into experimental work instead in which I was very lucky, and you see the results from the enclosed reprints. In the course of this work I observed certain anomalies, the implications of which I did not realise until about four weeks ago. ~~It~~ To-day the position is this: I can demonstrate the crucial points on which I based my expectation that an industrial revolution may be brought about in the immediate future. Other points remain to be settled before we can say anything with certainty, but it may be fair to say that there is a fifty-to-fifty chance that these other points will work out alright. Even if these chances are smaller than I anticipate, they are certainly large enough to get excited at this juncture.

The disaster to which all this may lead is more imminent than the pleasant changes it may bring about, since applications for purposes of war are closer at hand than anything else and go beyond anything one is likely to conceive. An attempt to control this development will have to be made, however small the chances of success may be, and the most essential question in this respect is whether it will be possible to get the physicists in America and England to take precautions about publishing observations which fall into this dangerous zone, at a time

That was of the two

Leopold Josephsp Jans

(Dr. Hellmann
in Fu 44-45)

Berke J. (45)

Oron J. (11)

Veddy J. (1)

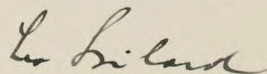
when such precautions necessarily seem to be premature. Unfortunately it will appear to many people premature to take some action until it will be too late to take any action. It will take some time until one can see what practical steps have a chance of being put across.

In the meantime I shall make an attempt to make further experiments in order to settle as quickly as possible those questions which are still open. I informed yesterday Professor Lindemann who is in charge of the Clarendon Laboratory in Oxford of all this, and suggested that I should devote my time and the facilities which I have been previously promised in Oxford, to this task, that the limitations which would interfere with my freedom of action in this matter, should be removed, and told him that I should make an attempt to get further facilities from outside-sources. I know from my friends that the budget of the Clarendon Laboratory has been strained, and it would not be wise to embark on this venture without having the necessary equipment. I should rather not ask professor Lindemann to approach government institutions or private individuals, and that I should rather see what I can do in this respect myself. As far as Oxford is concerned the path is clear. I should think that facilities of about £1000.--. per year will be required for one or two years. This money would be used in two ways. For salaries of two men of the order of £200.- to £ 300.- a year each, who would be required to assist this work, and the rest would be used for buying equipment. There is already some equipment for this work in Oxford, the biggest item being £15.000.- worth of radium.

I am fully aware of the difficulty of getting hold of a private person who has some vision and who is able to provide part or the whole of the required sum. On the other hand I cannot believe that it should be impossible to find somebody in Great Britain. Should you be able to think of anybody whom you think one could approach and whom you happen to know personally, I should appreciate very much if you could let me know.

If it is not possible to get the facilities here, I shall have to make an attempt in America, but I can hardly do so before september, since everybody is leaving New York at this time of the year.

Yours sincerely



Leo Szilard

c/o Clarendon Laboratory
Park Road,
Oxford.

16th June, 1935.

Dear Professor Singer,

When I last saw you I told you about a plan to start research in a direction which may or may not be the starting point of a new industrial revolution. I thought that it might be possible to get financial support for such work, but abandoned any attempt in that direction after a few tentative discussions with you and a few others. I plunged into experimental work instead in which I was very lucky, and you see the results from the enclosed reprints. In the course of this work, I observed certain anomalies, the implications of which I did not realise until about four weeks ago.

There is no doubt left that these observations settle one of the two crucial points which determine whether or not the development will lead to a sort of industrial revolution in the near future, and settle it in a affirmative sense. The second crucial point is still unsettled but leaves the way open for only two alternatives. So that we may fairly say of having something like a 50/50 chance for getting an answer in an affirmative sense. This, I believe, has to be considered a very high chance in view of the issue which is involved, and even if this chance were less we would have every reason to take action on it.

Let me tell you which steps I have taken ¹ until now. In March last year, it appeared advisable to envisage the possibility that

the recent discoveries in the field of nuclear physics might enable us to liberate energy on a large scale and to store energy through the whole-sale production of radio-active bodies. At that time, I did not see my way for a direct experimental attack but, seeing the outlines and the importance of the two crucial points which I mentioned above, I applied for a number of patents dealing with methods and apparatus involved in the prospective industrial application. These patents were very lucky in foreshadowing the subsequent development. The first of these patents, for instance, protects the production of radio-active bodies through neutron bombardement and can be considered as a basic patent. A month or so, after this patent had been filed Fermi discovered that radio-active bodies can be produced through neutron bombardement and a rapid development started ~~then~~ these radio-active bodies were used as a tool for further research. I myself got in August last year permission to use the radium in St. Bartholomew's Hospital during the holidays, and jumped ^{into} experimental work. This work went so well that I extended it beyond ~~the~~ the holidays until the end of the year and went then, after a six weeks visit to Oxford, to New York. Not until I was in America did I realise the full significance of my London observations. About the same time, I received a definite offer of an appointment for three years from the Clarendon Laboratory and so I came to England a fortnight ago.

Here I informed Prof. Lindemann, who is in charge of the Clarendon Laboratory of the situation which has arisen and raised the question of fitting in my plans with the other work. I told him that I wish to keep the experiments in my own hands and to have all the freedom of movement which is necessary at this juncture. Prof. Lindemann promised me his support and all the facilities which were previously granted for my work in Oxford, the biggest item of which is the use of £ 15 000 worth radium.

In addition of the facilities which are available right now in Oxford? I should require for the work a budget between £ 600 and £ 1 200 a year and should attempt to raise in the first instance £ 600 per year for three years, before actually starting the work. I thought it better not to ask Lindemann to take the initiative in the matter and so, once more, I am looking for a Maecenas.

While I am fully aware of the difficulties to raise such a sum, I am inclined to think that ultimately it will be possible to find somebody who has sufficient imagination to grasp the situation and who is, at the same time, in a financial position to help in this matter.

Should you be able to think of somebody whom you know personally and of whom you think that he could be approached? Please, do let me know. I am very anxious though to keep this matter quiet and this letter is only intended for your information.

I may add that it is not intended to approach industrial companies and that, though every effort will be made, to get patent protection and that, though these patents may be exploited, on a profit basis it would be misplaced to apply in this matter primarily commercial considerations. The patents might be handed over to a body which would administer them along commercial lines, but would use the profit for constructive purposes. A precedent for this, though on a small scale, is the Research Corporation in New York, which was created in 1911 for the administration of the patent rights handed over to them by F.G. Cottrell and which has since grown into an active business organisation. While it is premature to discuss these things at present it is ^{necessary} ~~better~~ to mention them in order to explain that it is not possible to offer the patent right to private persons or to draw up any commercial agreements about them, though an adequate for invested funds need not be excluded.

I have also to add, in order to give you a complete picture, that the disaster to which this development can lead may be more imminent than the industrial revolution which it may bring about, and that, from this point of view, an attempt will have to be made to keep the patents secret and gradually to bring about something like a conspiracy of those scientists who work in this field.

Yours sincerely,

Clarendon Laboratory
Parks Road
Oxford
Telephon:3545

16th June, 1935.

Dear Professor Singer,

I believe I have not seen you since I had lunch with you and your niece sometimes in June last year. Many things have happened since then.

I arrived from America a fortnight ago and I may settle in Oxford where I have been offered a three years appointment in the Clarendon Laboratory.

I should be very pleased if you and your niece would care to have lunch with me if you happen to be in town. Please let me know which day would suit you best. I am in London once or twice a week and if so, I am staying at the Harewood Hotel, 74/8 Gower Street, Telephone:Museum 3941.

To-day I should like to write to you about another matter and I do this by a separate letter. I wish it would be as easy as that to keep private and public life in watertight compartments.

With kindest regards,

Yours sincerely,