

Patent
Be block (brief mention)

R-1

Privatbrief.

Strand Palace Hotel,
Strand, London W.C.2.

den 18. Dezember, 1934.

Lieber Lange,

Da ich über 14 Tage lang nichts aus Berlin gehört habe und nicht einmal darüber orientiert war, ob die Reise nach Danzig zustande gekommen ist, habe ich Brasch telephonisch angerufen. Ich habe volles Verständnis dafür, dass er Briefe verbummelt, aber bitte schreiben Sie in Zukunft direkt. Vor allem möchte ich jetzt von Ihnen (Lange) hören wie Sie die Lage beurteilen. Wer sind die Herren (plural) die die Anlage in Berlin gegen den 7. Januar ansehen werden. Bisher war doch immer nur ~~das~~ von einem Onkel die Rede (was ist übrigens sein Name und Adressel). Ich würde nicht gerne die Sache in die Länge ziehen, weil wir wissen müssen woran wir sind. Vor allem möchte ich gerne dass Sie mir schreiben was Sie über folgendes meinen: es ist unklar ob sich in Oxford eine für mich tragbare Lösung ergeben wird und ob nicht, wenn ich Gehält von der I.C.I. annehme dadurch in eine Abhängigkeit gerate, die mich in der Patentarbeit hemmt. Wenn sich keine andere Lösung finden lässt, müsste ich doch nach New York gehen wo wenigstens die Unabhängigkeit vorhanden ist. Es kann jeden Augenblick die Lage eintreten, dass ich über New York entscheiden muss, oder dass ich auf ein Monat hinüber fahren muss um zu versuchen diese Entscheidung hinauszuschieben. Würden Sie meinen

die Besprechung im Januar die wir vorhaben ist genügend sicher und genügend ernst um meine Bewegungen (eventuelle Verschiebung der Amerika Reise) danach zu richten.

Meinen Sie nicht, dass es zweckmässig wäre wenn wir jetzt gleich eine Entscheidung herbeiführen würden (teils damit der erste Schritt getan ist, teils um den Ernst des Mannes zu erproben,) für den Fall, dass keine Begegnung bis zum 15. Januar zu Stande kommt, ein provisorisches Abkommen der folgenden Art zu schliessen:

Wir wollen um die Patentkosten zu sichern jetzt sofort ein Fond machen zu dem B.s Onkel die Hälfte bis zwei drittel hergeben soll, während wir entsprechend die Hälfte oder ein drittel hergeben würden. Der Fond soll insgesamt £1,000 betragen. Wenn wir uns nacher mit B.s Onkel über die Details nicht einigen können, würden wir an ihn aus den neu aufzunehmenden Gelder solange 30% abführen bis die von ihm hergegebene Summe zurückgegeben ist. Als 'wir' würde ich vorschlagen Fellner, Lange, Szilard und Wigner und zwar darum gerade diese, weil bei diesen eine Chance besteht dass wir uns über die Richtlinien einigen werden können. Sie wissen, dass nach den jetzigen Ideen 'wir' das Verfügungsrecht in der Hand behalten sollen, und wenn es gewünscht wird 'trustees' darüber wachen werden, dass das Geld welches in diesem frühen Stadium hergegeben wird, sachlich/sinnvoll verwendet wird.

Bitte um umgehende Stellungnahme! Natürlich können Sie sich nicht in Bezug auf Ihre Patente verpflichten über die Sie ja nicht allein verfügen können, aber diese Seite der Angelegenheit steht im Augenblick nicht zur Discussion.

Können Sie bitte mir die Fragen meines letzten Briefes beantworten, besonders das mit dem Berylliumblock.

Fritz, den ich gestern sprach, möchte Sie gerne treffen, und denkt daran auch nach dem Kontinent zu kommen falls wir uns da Anfang Januar treffen sollten. Er bät mich Ihnen das mitzuteilen.

Ihr

(Patents)
(Biography)

R-1

Strand Palace Hotel,
Strand, London, W.C.2.

14. November, 1934.

Lieber Brasch,

Was mir Lange, der gestern ankam, von Ihrem Onkel erzählt, ist mir sympathisch und ich möchte Ihnen in diesem Zusammenhang folgendes berichten:

Ich habe Anfang März dieses Jahres angefangen, ein Patentkomplex aufzubauen und Patente angemeldet, die möglicherweise eine grosse Tragweite haben. Das erste Patent schützt die Erzeugung radioaktiver Elemente durch Neutronen, welche später von Fermi entdeckt worden ist. Die anderen Patente beziehen sich auch alle auf das Gebiet der Atomzertrümmerung und gehen in ihrer Tragweite weit über das erste Patent hinaus.

Es ist im Augenblick nicht mit Sicherheit zu sagen, ob die sehr weitgesteckten Ziele erreicht werden können, aber nach der Lage der Dinge scheint es mir, dass, wenn wir richtig zugreifen, die Entscheidung innerhalb von sechs Monaten bis zwei Jahren über diese Frage fallen wird.

Es wäre unsinnig, diese Patente als Privateigentum anzusehen und es soll eine Ko-operation mit verschiedenen Physikern allmählich und sehr vorsichtig aufgebaut werden. Während das Verfügungsrecht über diese Patente einer Gruppe von Physikern, die auf ein persönliches Einkommen aus diesen Patenten verzichten, vorbehalten werden soll und die dafür zu sorgen hätten, dass der grösste Teil des Einkommens konstruktiven Aufgaben zugeführt wird, sollen andere Physiker die ko-operieren und auch Menschen, die Kapital zur Verfügung stellen, einen von Fall zu Fall festzusetzenden Anteil an einem Gewinn erhalten, dagegen keinen direkten Einfluss auf die 'policy' der Studiengesellschaft, welche de jure das Patent zu verwalten hätte, ausüben.

Ich betone nochmals, dass es nicht möglich ist, mit Sicherheit Erfolg vorauszusagen, aber es ist möglich zu sagen, dass im Erfolgsfalle wir so etwas wie eine zweite industrielle Revolution in naher Zukunft vor uns haben.

Wie Sie aus dem einliegenden Brief von Polany ersehen, ist die Frage der Finanzierung akut und ich möchte

darum gern sehr bald wissen, ob Sie glauben, dass wir auf Ihren Onkel rechnen sollten.

Ich stehe auch vor persönlichen Entscheidungen die dadurch beeinflusst werden können und in den nächsten Wochen fällig sind. Das Folgende ist besonders vertraulich:

Oxford bekommt eine sehr grosse Menge von Radium und Lindemann und seine Mitarbeiter wollten sehr gerne, dass ich dort damit arbeite. Dies ist unabhängig von Patenten und eine rein wissenschaftliche Angelegenheit. Nun hat Lindemann sich mühe gegeben, für mich ein Gehalt von der Imperial Chemical Industries zu bekommen und zwar aus einem Spezialfond der, so viel ich verstehe, mir ziemliche Freiheit gelassen hätte. Obwohl er sich stark bei Sir Harry MacGowan exponiert hat, ist ihm das nicht gelungen und er fragt mich jetzt, ob ich damit einverstanden bin, dass er sich an das Research Council der Imperial Chemical Industries wendet. So wie die Dinge jetzt liegen, möchte ich aber vermeiden, finanziell von der Imperial Chemical Industries abhängig zu sein und lieber zusehen, dass ich etwa £300.- im Jahre von privater Seite auftreibe. Von dieser Schwierigkeit abgesehen, ist Oxford ~~xxxxxxx~~ der beste Ort für die nächste Zeit, weil die Einrichtung des Clarendon Laboratory für unsere Zwecke sehr geeignet ist.

Andererseits habe ich ein festes Angebot von der New York University auf ein Jahr mit einem nicht grossen, aber auskömmlichen Gehalt dorthin zu kommen, doch weiss ich nicht, ob ich dort das Radium bekommen kann, welches ich brauche und müsste schon hinüberreisen, um das festzustellen. Breit, der an dieser Universität war, ist leider fort.

Der dringendste Geldbedarf für die Pflege der Patente ist etwa £300 für das nächste Jahr, obwohl wir auch £500.- für diesen Zweck gebrauchen könnten. Hiervon abgesehen, würde ich gern einen jüngeren Mann im Alter von Gohn Peters zum Zählerbau haben und eine Reihe von transportablen Instrumenten, die man sowohl in Berlin als auch in Oxford dann zur Verfügung hätte.

Falls Sie glauben, dass man an Ihren Onkel herantreten sollte, so würde ich sehr gerne in London, Paris, Amsterdam, Brüssel oder Zürich mit ihm zusammentreffen, falls ihn seine Reisen nach einer dieser Städte führen. Es scheint mir, dass eine längere Aussprache unbedingt erforderlich ist; in Ermangelung einer solchen könnten wir allenfalls ein provisorisches Abkommen etwa so machen, dass er uns einen Betrag von der Grössenordnung von £1.000.-- zur Verfügung stellt und wir,

falls wir die Patente verwerten, ihm diesen Betrag zurückzahlen. Die Rückzahlung könnte mit einem Aufschlag von 1.000.--. pro Jahr erfolgen für jedes Jahr welches bis zur Rückzahlung verstrichen is, um das immerhin bestehende Risiko, dass nichts aus unserer Sache wird, auszugleichen.

Bitte schreiben Sie mir mit Flugpost, wie Sie über die Sache denken. Sie können von allen in diesem Briefe enthaltenen Tatsachen Ihrem Onkel gegenüber Gebrauch machen.


Mit freundlichen Grüßen,

Ihr

Leo Szilard.

(Ins Stenogramm diktiert; von
Dr. Szilard nicht gelesen.)

P.S. Zur Erklärung von Polany's Brief: Donan ist der führende Physiko-Chemiker Englands und Direktor des Physikalisch-Chemischen Instituts des University College, London. Aschner ist der Generaldirektor der Glühlampenfabrik in Budapest, welches dem Glühlampenkartell der General Electric Company angehört.

R-1 
Strand Palace Hotel,
Strand, London W.C.2.

den 6. November, 1934.

Lieber Lango,

Diese ist eine Privatangelegenheit und als solches vertraulich. Ich möchte jetzt allmählich zu dem nächsten Kapitel übergehen und Versuche beginnen von denen ich Ihnen in London erzählt habe. Dazu ist eine grössere Menge von Beryllium nötig und die Firma Horaeus-Vacuum-Schmelze, Hanau a/M, Postfach 91, hat mir angeboten 2 Kgr Beryllium mir zu liefern doch will sie den Gegenwert RM. 1,000.- zur Sicherheit hinterlegt haben. Da ich mich mit all den komplizierten Devisenbestimmungen nicht auskenne und Scherefeien mit den Hin- und Herüberweisungen wenn möglich vermeiden möchte, wollte ich Sie bitten zu überlegen ob wir etwa den folgenden Weg einschlagen sollten. Wir könnten Horaeus, unter Hinweis auf die z.Zt. in Gange befindlichen ^{Beryllium} geschlossenen/Versuche von Ihnen und mir, bitten, dass das Beryllium nicht mir sondern Ihnen persönlich zur Verfügung gestellt wird, dass Sie den Betrag hinterlegen und wieder zurück erhalten wenn Sie das Beryllium unbeschädigt zurück geben. Es muss uns natürlich überlassen werden die Versuche in London oder sonst an einer geeigneten Stelle durchzuführen. Diese Lösung hat natürlich zur

Voraussetzung, dass Sie diesen Betrag ohne Schwierigkeit
ein Jahr lang entbehren können und dass es Ihnen niemals ausreicht
weil es auf diese Weise festgelegt wird.

Bitte teilen Sie mir postwendend mit ob Ihnen dies
als eine praktische Lösung erscheint. Ich werde dann bei
Horners anfragen wie sie sich dazu stellen. Ist die Horners
Vacuummaschine der A.M.S. unterstellt?

Ich glaube, dass ich in den nächsten Monaten jedenfalls
in England bleiben werde weil ich hier die Möglichkeit haben werde
mit einer sehr grossen Menge Radium zu arbeiten. Im Übrigen
sollten wir uns, glaube ich, bald wieder sprechen, sobald Sie
wissen bei welcher Spannung der Radioaktivität losgeht; es wäre
dann an der Zeit zu verabreden wie die grossen Länzen unserer
weiteren Aktionen ausssehen sollen. Ob man mit Bosch sprechen
soll etc. etc. Spätestens müssen wir uns aussprechen sobald
wir wissen wie die Energie der aus dem Beryllium ausgelösten
Neutronen ist. Darüber sind im Augenblick direkte Versuche in
Cambridge im Gange und ich habe etwas Beryllium dazu dorthin
geschickt.

Mit herzlichem Grusse

Ihr

R-1

PLEASE ADDRESS
COMMUNICATIONS TO
THE DIRECTOR.

TELEGRAMS: RESEARCH, PHONE, WEMBLEY.
TELEPHONE: ARNOLD 4321 (TEN LINES)

NEAREST STATION:
NORTH WEMBLEY.
(BAKERLOO)
(A. L. M. S.)

RESEARCH LABORATORIES OF THE
GENERAL ELECTRIC COMPANY, LTD.

OUR REFERENCE CCP. 20R28.
YOUR REFERENCE

WEMBLEY.

Dr. L. Szilard,
6, Halliwick Road,
Muswell Hill, N.W.10.

1st October, 1934.

Dear Dr. Szilard,

In our letter of August 9th 1934, we stated that disintegration by neutron bombardment was discovered by the Joliot's. In your letter of September 5th you challenged that statement.

We realize now that you are right and we are wrong and that this statement is false. We ask you to accept our apologies for an inadvertent error. But we fear that the recognition of it does not change our decision on the main issue.

Yours faithfully,

For and on behalf of the
Research Laboratories.



Director.

VM.

RESEARCH LABORATORIES OF THE
GENERAL ELECTRIC COMPANY, LTD.

6, Halliwick Road,
Maswell Hill,
London N.W.10.

31st July, 1934.

C.C. Paterson, Esq.,
Research Laboratories of the
General Electric Company Ltd.,
Wembley.

Your Ref. LDG/20R28.

Dear Mr. Paterson,

I am very grateful to you indeed for having come to a quick decision. This is most essential for me in the circumstances.

The "radium" for medical use being a rather limited field I did not anticipate that you would be very much interested in it. In view of the fact, however, that the process put forward in my patent application is based on an effect which has been discovered by Professor Fermi after I filed my application, I should appreciate it very much if you could kindly substantiate the reasons for your belief that the patent application does not contain anything which is really new.

I also should be very much interested to learn why you think that the patent, if it could be upheld, would still not be of any practical value. Do you mean that the power consumption involved in the process would lead to a price which could not compete with natural radium? And if so, on what assumptions did you come to that conclusion? If you mean something else could you perhaps kindly let me know what precisely you had in mind?

C.C. Paterson, Esq.

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31st July, 1934.

Many thanks for the information contained in the second half of your letter. There is probably some slight misunderstanding somewhere, and it might, therefore, be useful that I should revert to the matter later on.

Thanking you once more for your prompt attention to this matter, I remain,

Yours very truly,

Your name and address

I am very grateful to you indeed for your letter in a given instance. This is not the first time in the circumstances.

The position you indicate was being a matter of fact which I did not anticipate that you would have been interested in it. It is clear that, however, that the proposed patent in my patent application is based on an idea which has been discovered by Professor [Name] in his application. I should appreciate your assistance if you could kindly substantiate the facts for your letter that the patent application contains anything which is really new.

I also should be very much interested to know if you think that the patent, if it could be granted, would still not be of any substantial value. It is clear that the proposed invention is of the nature which would lead to a price which would not compare with natural products. And in so far as your suggestions and you came to that conclusion, it is very possible also could you perhaps kindly let me know what precisely you had in mind.

PLEASE ADDRESS
COMMUNICATIONS TO
THE DIRECTOR.

TELEGRAMS: RESEARCH, PHONE, WEMBLEY.
TELEPHONE: ARNOLD 4321 (TEN LINES)

NEAREST STATION:
NORTH WEMBLEY.
[BAKERLOO
& L. M. S.]

OUR REFERENCE LDG/NRC/20R28.
YOUR REFERENCE

RESEARCH LABORATORIES OF THE
GENERAL ELECTRIC COMPANY, LTD.

WEMBLEY.

9th August, 1934.

L. Szilard Esq.,
6, Halliwick Road,
Muswell Hill,
N.W.10.

Dear Dr. Szilard,

In reply to your letter of the 31st July, the reasons for our belief that your patent application lacks novelty is that the discovery that disintegration could be produced by neutron bombardment was made by the Joliot's and was prior to your patent. After that discovery it was naturally to be expected that neutrons could disintegrate heavy as well as light nuclei.

As regards your second point concerning the commercial value of your invention, it appears to us that original particles, first producing neutrons and then alpha particles, would produce not more than one alpha particle for 10^{13} original particles. Accordingly to produce a current of 10^{-12} amp. carried by alpha particles would require the expenditure of several thousand kilowatts. That does not seem to us a commercial proposition..

We note that you think there is a slight misunderstanding concerning the rest of our letter, and that you

may/

may revert to this matter later on.

Yours very truly,

For and on behalf of the
Research Laboratories.

C. Paterson *L.S.*

Director.

BMO.

R-1

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WESTERN UNION (5 LETTER ED.)
A. B. C. (6TH. EDITION) AND PRIVATE.



HEAD OFFICE

MAGNET HOUSE,

KINGSWAY, LONDON, W.C.2. 9th August, 1954.

REGISTERED



H.C.M.

Leo Szilard, Esq.,
8, Halliwick Road,
MUSWELL HILL,
N. 10.

Dear Sir,

With reference to your letter of the 20th July, addressed to Dr. Railing, in his absence, I have communicated with Mr. Paterson, who informs me that as far as production of artificial radium for medical use is concerned, our Company cannot interest itself in this application.

With reference to the larger issue which you raise, Dr. Railing, with whom I have communicated, asks me to tell you that he thinks the issue is one which is so far outside the scope of a Company's normal activities, that unless the proposition takes some much more definite shape, it would be impossible to participate.

Yours faithfully,

Enclosure to the Letter of the 14th August, 1934 to
Mr. Paterson.

1. Efficiency.

You state that in your opinion original particles first producing neutrons and then radio-active atoms would not produce more than one radio-active atom for 10^{13} original particles. I can show that your figure is wrong by a factor 10^7 to 10^{10} .

2. Novelty.

a). You state that the discovery of induced radio-activity by neutron bombardment was made by the Joliot's. I assume this statement of yours is a clerical error and that what you meant was that the Joliot's induced radio-activity by alpha particle bombardment, as evidently the effect in question was discovered by Fermi.

b). Whether after the discovery of the Joliot's it was natural to expect a similar effect for neutrons for light elements is a question which we may leave open for the present. All I have to say on this point is to emphasize the fact that in the three months that elapsed between the Joliot's and Fermi discovery no other laboratory made Fermi's unquestionably important discovery, and that in spite of the fact that it takes a few hours to improvise an experiment for its demonstration in the laboratories where Geiger counters and Radon are tools of routine work, and that your expectation for the Fermi effect as stated in your letter is off ^{the} a mark by many powers of 10.

c). As to the question whether a similar effect was to be expected for neutrons in heavy elements I wish to state that such an effect was not to be expected and has not been found. What has been found is a different process

in which there is no chemical change as the neutron apparently gets swallowed without a simultaneous ejection of a proton or an alpha particle and this peculiar process is 100 to 1000 times more efficient than anticipated.

(See one of Professor Fermi's papers in "Nature")

LEO SZILARD

R-1
Strand Palace Hotel,
Strand, London W.C.2.

14th August, 1934.

Dear Mr. Paterson,

Many thanks for informing me in your letter of the 9th August of the reasons for your belief that the manufacturing of radio-active bodies for medical use which I discussed with you would be:

- 1) too inefficient to be of any practical value, and
- 2) that the process for which I filed a patent application could not be considered as new at the time of filing.

I am afraid I have to contradict almost every statement you make in your last letter. I am enclosing a detailed statement on the subject from which you will see that the efficiency of the process is in my opinion 10^7 to 10^{10} times larger than stated by you, and that the process involved is entirely different from that discovered by the Joliot's.

As I told you I limited the conversation with you to one issue because I was anxious to make only statements for which there is evidence already available in form of experiments that have already been published. Therefore I am in a position to prove every statement that I make on this issue on the basis of publications from the Cavendish and the Paris and Rome Laboratories. I am aware that it must be very difficult if not impossible for any of your experts to form an opinion on the subject without being

in possession of the reprints of certain recent publications which are not available in your libraries, but I can let you go over those reprints.

May I emphasize that while the assumptions on which you based your decision, which has been communicated to me by Magnet House, can in my opinion not be upheld, it is not my intention to ask you to reconsider your decision. On the other hand I would rather not leave the matter where it is, and am certain you will appreciate my reasons.

As you know I discussed the possibility for practical applications of nuclear physics with Dr. Railing which go much beyond the scope of the issue with which we have to deal here; if I am to go on with these discussions it is essential that no doubt should be cast upon my statements through the fact that there is a divergence between your opinion and mine expressed by a factor of 10^7 to 10^{10} . If I were wrong by a factor 10 in the present issue I certainly would have no right to claim the full attention of Magnet House as I intend to do.

I wish to thank you once more for having substantiated the reasons on which your decision was based.

Yours very sincerely,

Leo Szilard

Strand Palace Hotel,
Strand, London W.C.2

5th September, 1934.

C.C. Paterson, Esq.,
Research Laboratories of the
General Electric Company Ltd.,
Wembley.

Dear Mr. Paterson,

I wish to thank you for your letter of August 9th in which you are kind enough to disclose the information on which you based your opinion concerning the novelty and the efficiency of the method which I suggested.

I am very sorry to say that in my opinion your information on both these points is not in accordance with the facts, and I regret that such a divergence of opinion should have arisen at this juncture.

I do not propose to re-open the subject of manufacturing artificial "Radium" for medical use just now but may come back to the subject later on. Evidently there would be no point in going further until the present divergence of opinion has been settled.

Thanking you again for the attention you gave to the matter, I remain

Yours very truly,

Strand Palace Hotel,
Strand, London W.C.2.

30th October, 1934.

C.C. Paterson, Esq.,
Research Laboratories of the
General Electric Co. Ltd.,
Wembley.

Dear Mr. Paterson,

I thank you very much for your very kind letter of the 1st instant, from which I see that there is no longer a divergence of opinion on the question of the probable novelty of the invention which I submitted to you. I assume that the divergence of opinion on the question of efficiency still persists. My estimate differed from yours at the time when I submitted to you this invention by a factor of more than 10 million, and I based my estimate on the information which was available at that time. Since then progress has been made which in my opinion has greatly improved the efficiency.

Yours very truly,

23rd July, 1944.

Walter Adams, Esq.,
Academic Assistance Council,
Burlington House,
Piccadilly, W.1.

Dear Mr. Adams,

I saw Professor G.P. Thomson, and tentatively raised the question which I mentioned to you. I gave him as many details as is possible in one interview.

It might be useful, in view of the possible development of this matter during the next six weeks, that you should have direct information of Professor Thomson's attitude. I wondered therefore, whether you would like to write to him and tell him that you have heard from me that I am considering to start research work on a certain type of nuclear interaction, and that I had a tentative discussion about it with him. You could perhaps put the following questions to him.

- 1). Would he like to consider, should the question arise later on, that this work is done in his laboratory.
- 2). Is it fully justifiable to suggest to manufacturers or financial groups that such research work should be supported from the point of view of the chances and the importance of the practical applications.

Professor G.P. Thomson will leave London for six weeks in a few days time.

Yours sincerely,

6, Halliwick Road,
Muswell Hill,
London N.10.

13th July, 1934.

Dear Mr. Polanyi,

I should like to discuss with you questions of policy in connection with the patents of which you know. The development is up till now very favourable and exactly along the lines forshadowed in my patents. It is rather the "Neutron" Line than the "explosion" line that has become ripe for action. The development is also interesting from the point of view of chemistry as it will be possible to have ~~quantities~~ radio-active isotopes of very many elements and use them as radio-active indicators both in chemistry and physiology. I almost believe now that you should consider taking up this field and have already bullied Paneth into building a Geiger-counter. Perhaps you could let me know how long you will stay in Manchester and I may then visit you for a few days if convenient.

Yours

E.S. Ensigning you a memorandum dated June 13th which I would send also to Wigner, Fellner and Lange but not to the others mentioned therein. I may also send you a letter to the editor of "Nature" a rough draft not over-hauled from the point of view of English.

R-1
6, Halliwick Road,
London, N.10.

21st February, 1934.

Sir Hugo Hirst,
The General Electric Co., Ltd.,
Magnet House,
Kingsway,
London, W.C.1.

Dear Sir Hugo,

You kindly offered a few weeks ago, to introduce me to a Director of your Company and I suggested that this interview should be postponed until I had further news from Dr Lange. Though I had a report from him from Berlin I am not yet in the possession of all the relevant facts.

Nevertheless, I should appreciate it if I could discuss the matter now with your Company as I may have to go to America at very short notice any time from now on.

I do not yet know for certain if we have got immediate important application for fast electrons but I do believe that a Company like the General Electric Company would be justified in keeping in close touch with the probably very quick development in this new field.

Yours sincerely,

20th July, 1934.

Dr. H. Railing,
General Electric Company,
Magnet House,
Kingsway, W.C.2.

Dear Dr. Railing,

Following your suggestion I saw Mr. G.C. Paterson yesterday. We limited the conversation to the question of the production of artificial "radium" for medical use, as this is the only issue on which experimental data either published or under publication are available which would enable your research laboratory to check statements I am able to make on the subject.

As to the other more important issues I have shifted my ground since I last saw you. I see my way now to get information on the vital points by fairly simple experiments, and I shall therefore immediately attempt to find a frame and facilities for such experiments.

The matter is complicated by personal issues. I have been appointed as a research associate to the New York University and shall have to visit New York in the second half of September. Not knowing whether the circumstances in New York are favourable for my experiments I have not accepted this appointment as yet, and we agreed that I shall be free to resign at the beginning of the term.

I shall use the time between now and the middle of September to see if I can find whole-hearted support in this country for the enterprise on which I am embarking. I am getting into touch with several persons for this purpose.

As far as your Company is concerned I should appreciate any positive or negative statement concerning your willingness to co-operate. Some difficulty will doubtless arise from the fact that you will be unable to form a direct opinion on my suggestions; the only solution of this difficulty that occurs to me would be that I give a detailed picture to some third person who is attached to one of the English universities, and that you should get information from him about his views on the subject.

I shall be glad to receive any suggestions from you on this point, and could probably be at your disposal at any time until the beginning of September, possibly until the middle of September.

Yours very truly,

PLEASE ADDRESS
COMMUNICATIONS TO
THE DIRECTOR.

TELEGRAMS: RESEARCH,PHONE,WEMBLEY.
TELEPHONE: ARNOLD 4321 (TEN LINES)

R-1
NEAREST STATION:
NORTH WEMBLEY.
[BAKERLOO
& L. M. S.]

OUR REFERENCE LDG/20R28.
YOUR REFERENCE

RESEARCH LABORATORIES OF THE
GENERAL ELECTRIC COMPANY, LTD.

WEMBLEY.
27th July, 1934.

Dr.L.Szilard,
6, Halliwick Road,
Muswell Hill, N.W.10.

Dear Dr.Szilard,

In accordance with the discussion we had when you were here last week, Dr.Campbell has examined the specification you left with us. As a result, we have come to the conclusion that we should not be interested in this invention, for the following reasons.

In the first place, we do not think it contains anything which is really new; in the second place we are not convinced that even if the patent could be upheld, it would be of any practical value.

As regards other ideas which you might care to submit, we have noted the suggestion in your letter to Dr.Railing that this should be done through a third party in one of the Universities. We do not see how this scheme could help, since it would in any case be necessary for this third party to communicate your ideas to us before we could decide whether or not they were of interest to us.

We/



We should much prefer that any ideas you put forward for our consideration should first be covered by patents; this will allow us to study them and discuss them freely with you without any fear of subsequent misunderstanding.

Meanwhile, we should like to thank you for having brought the matter before us, and we shall be pleased at any time to examine any concrete proposals you may put forward, subject to the above proviso.

We return your specification herewith.

Yours very truly,

For and on behalf of the
Research Laboratories.

A handwritten signature in cursive script, appearing to read "O. Patterson". The signature is written in dark ink and is positioned below the typed name of the Director.

Director.

v.C.

28th July, 1934.

Memorandum of Possible Industrial Applications arising
out of a New Branch of Physics.

It is possible to indicate methods which might be successfully applied for the purpose of liberating atomic energy. It is not possible to foretell with certainty that these methods will be successful, but the experiments necessary for ascertaining this are fairly simple and could be carried out on a small scale in the university laboratories. Should such experiments give favourable results, the production of energy and its use for power production would be possible on such a large scale and probably with so little cost that a sort of industrial revolution could be expected; it appears doubtful, for instance, whether coal mining or oil production could survive after a couple of years.

I have applied for a group of patents in order to obtain patent protection for those methods which seemed to be promising, and it appears that these patents were successful in foreshadowing the latest developments in physics.

They include, for instance, methods for the artificial production of radio-active bodies based on a process which recently has been discovered by Fermi. The production of artificial "radium" for medical purposes based on these processes seems to be a sound commercial proposition, but it would be sidetracking the issue to concentrate on this point.

Facilities are required for two different purposes:-

B.) In order to develop and maintain a group of valid patents £500 are required for the next year, which would also take care of administrative expenses connected with the maintenance of the patents.

2.) If we wish to start the necessary experiments one ought to secure the continuity of work for two to three years. It is not possible to state exactly what facilities will be required as this will depend to a large extent on what facilities will be provided by the university laboratory which would be used as a frame for this work. It would, however, be advisable to have £2,000 available for expenditure that may be incurred.

From the point of view of a financier who could consider contributing to the required facilities the position is this:- the chances that the envisaged experiments will yield a favourable result may be estimated to anything between 1 to 20 and 1 to 5. The value of the return in case of success is, of course, enormous and could hardly be estimated in terms of money, so that from the purely financial point of view it is a sort of lottery with a fairly good chance to win a prize and enormous prizes. Yet it would be highly preferable to get financial support from quarters that would consider the experiments as a research work in the field of science which has a good chance of highly significant industrial applications, and realise that the exploitation of discoveries of this scope must not be organised on a purely commercial basis.

Difficulty will undoubtedly arise from the fact that it is not easy for anybody to form an independent opinion of his own on the merits of the case. A possible way out would be, to get the opinion of some of the professors of the University of London who are working themselves in this field, and with whom I can easily keep in touch on the matter.