

L.E. DEN DOOREN DE JONG AND
THE BEIJERINCK VIROLOGY FUND

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1. THE BEIJERINCK VIROLOGY FUND

The Beijerinck Virology Fund was founded in 1965 by Dr and Mrs L.E. den Dooren de Jong to honour the memory of Martinus Willem Beijerinck (1851-1931), one of the founders of Virology. The aim of the Fund is the promotion of research within the field in the broadest sense, including relevant biochemical and biophysical aspects.

The management of the Fund was entrusted to the Royal Netherlands Academy of Arts and Sciences (KNAW). With limited funding, only the M.W. Beijerinck Medal was awarded every three years, to an outstanding virologist.

Dr Den Dooren de Jong died in March 1972. When Mrs den Dooren de Jong – Ris died in January 2000, at the age of nearly 101, her complete estate was, as previously agreed with her husband, bequeathed to the KNAW for the support of the M.W. Beijerinck Virology Fund. This enabled the Fund to extend its activities considerably.

The Beijerinck Virology Prize now includes the medal and a cash prize of 34.000 euros. It is still awarded every three years. In addition the Fund has created the Beijerinck guest-Chair that allows Dutch universities to invite virologists from abroad for a sabbatical stay of 1-3 months. The Beijerinck Premium has also been set up. This is awarded to a postdoctoral researcher who has carried out outstanding virus-related research at a Dutch University or Institute. Finally the annual M.W. Beijerinck lecture is given by an internationally renowned virologist.

This booklet presents a word portrait of Dr L.E. den Dooren de Jong and the research and other activities that made him a prominent bacteriologist. Special attention is given to his relationship with Beijerinck. In addition to highlighting Dr den Dooren de Jong's work this is an expression of our gratitude to him and Mrs den Dooren de Jong for their generosity in donating their estate to the Beijerinck Virology Fund and thereby contributing so much to the promotion of virus research .

2. THE LIFE OF L.E. DEN DOOREN DE JONG



Louis Edmond den Dooren de Jong
1897 - 1972

Louis Edmond den Dooren de Jong was born in 1897 in The Hague, the only son of Jacobus den Dooren de Jong en Maria Louise Godefroy. He had an elder sister Jacoba. His father was director of the Netherlands branch of a Swiss insurance company. Louis received his secondary education at the high school on the Stadhouderslaan in The Hague. In 1916, he went to study at the Delft Polytechnic (now Delft University of Technology). His main subjects were organic chemistry and microbiology.

His microbiology studies took place at the famous Laboratory of Microbiology, under the leadership of Professor M.W. Beijerinck. As an undergraduate, Den Dooren de Jong proved his potential by his contribution in the discovery of the production of urease by *Rhizobium* bacteria (known as *Bacterium radicolica* at that time) in experiments on the nutrition of these bacteria in 1919 and 1920. He impressed Beijerinck, and in 1920 was appointed as the Professor's assistant. Den Dooren de Jong graduated in 1921, shortly before Beijerinck retired. At the farewell lecture of Beijerinck in May 1921 entitled 'The cell; heredity and variability in microbes', Den Dooren de Jong assisted by demonstrating various microbial cultures. He was very proud that Beijerinck had asked him for assistance.

Beijerinck's successor, A.J. Kluyver wanted to make some radical changes in the organization of the laboratory. Den Dooren de Jong, because of his deep respect and great admiration for Beijerinck, was very unhappy with the changes and could not adapt to Kluyver's way of running the laboratory. He therefore gave up his Assistantship in Delft, and in 1923 moved to Rotterdam where he joined the Commodity Inspection Department as chemist-bacteriologist. In his new job he was in charge of bacteriological studies on milk. In the following years he would publish several papers about these studies in different professional journals.

At the same time, Den Dooren de Jong started research for his Doctorate. The subject he chose was not directly related to his daily work. Inspired by Beijerinck, with whom he maintained close contact, he decided to study the classification of bacteria according to the different nutrients they could use. Fortunately, against all odds, he found Professor Kluver willing to guide him in preparing his thesis and to act as his Promotor. This research had to be done in parallel with his full time job, but Den Dooren de Jong managed, and obtained important new results within a few years.

In September 1926 he defended his thesis entitled 'Contributions to the knowledge of the Mineralisation-process' in Delft. He was one of Kluvers first Doctoral students. The high quality of the research reported in the thesis was acknowledged in 1966 when the leading American microbiologist R.Y. Stanier dedicated his paper 'The aerobic Pseudomonads: a taxonomic study, 'in the Journal of General Microbiology (ref.1), to L.E. Den Dooren de Jong, and explained that 'the foundation of his approach – the ability to use a variety of organic compounds as carbon and energy source for aerobic growth – was laid by Den Dooren de Jong (1926) in a study of many strains, both fluorescent and non-fluorescent. Our primary goal in the present paper has been to extend the methodology of Den Dooren de Jong by determining detailed nutritional spectra for a wider range of the biotypes among the aerobic pseudomonads than those which he examined'.

In his thesis, Den Dooren de Jong also described a new group of bacteria, the 'protaminephage bacteria', nowadays classified as *Mycobacterium spec.*, that found application in the production of cortisones (ketosteroids) in the fifties.

Den Dooren de Jong's success in his work for the Commodity Inspection and with his thesis was crowned by promotion. In the summer of 1926 he was made responsible for the bacteriology of the waterworks in Rotterdam in addition to his work for the Commodity Inspection.

In his private life, however, he was less fortunate. In November 1924 he had married Lily Bicker Caarten, but that marriage came to an end shortly after he had obtained his doctorate. The divorce deeply shocked Den Dooren de Jong and he lost interest in research for a time. However by the end of the year 1927 and the start of 1928, he had regained his energy and he recommenced his fundamental research. By then he had met Ali Ris whom he married in November, 1928. Ir Ali Ris was the daughter of Dirk Ris and Alida Rijnbende. Her father was the Founder and President of the Board of the Hoek factory for industrial gases in Delft. In 1924 she had graduated in chemistry at the Delft Polytechnic, having studied with Beijerinck's pupil, G.van Iterson, Professor of Microscopical Anatomy. In her Den Dooren de Jong found not only a loving wife, but also a partner who fully understood his profound interest in microbiology and his passion for research.

Den Dooren de Jong then started the research on the nature of bacteriophages with which he broke new ground. In 1926, the second edition of the book by D'Hérelle 'Le Bacteriophage' had been published, suggesting that bacteriophages were ultramicrobes.

In The Netherlands P.C. Flu at the Institute of Tropical Medicine in Leyden and N.H. Söhngen at the Agricultural Polytechnic in Wageningen held the same view. Perhaps that inspired Den Dooren de Jong, who was well aware of the earlier work of Beijerinck on tobacco mosaic virus (TMV) and the idea that a virus was not a microorganism but a *contagium vivum fluidum*. For his study, he chose the bacteriophages of the spore-forming *Bacillus megaterium*. Again, he had

to combine this research with his usual work and that was not always easy. During a couple of months, for example, he had to give full attention to an extensive food poisoning by *E.coli* in milk in Rotterdam, and had then no time to work on the phage problem.

However, by January 1929, Den Dooren de Jong had obtained results that demonstrated that it was possible to derive an infectious lytic preparation from bacterial cells originating from spores that had been subjected to heating for 5 minutes at 100 degrees C. This preparation was of corpuscular nature and filterable through Seitz-filters. The filtrate was able to produce large numbers of phage particles. With these experiments, Den Dooren de Jong proved that the bacteriophage was not ultramicrobial but produced from bacterial cells. He presented the results first at a meeting of the Netherlands Society of Microbiology, and a little later, in January 1930, the experiments and results were communicated by Kluyver at a meeting of the Royal Academy of Arts and Sciences in Amsterdam. The results made D'Hérelle's theory of the ultramicrobial nature of the bacteriophage untenable, and forced him to revise his opinion on the nature of the bacteriophage completely. It was a great triumph for Den Dooren de Jong.

Beijerinck was very ill at that time. He suffered from cancer and was becoming weaker. However, he was very happy that he had lived to see that the definition of bacteriophages now complied with his original definition of a virus. The old master died about a year later, on the first of January 1931.

Den Dooren de Jong continued the research on the bacteriophages in spore-forming *B. megaterium* and included related bacillus species in his study. He further proved that the phage can occur in a 'masked' (i.e. not directly demonstrable form) from which it can arise by induction. With these results he came close to the concept of lysogeny that was only fully developed twenty years later by A. Lwoff and co-workers at the Institut Pasteur in Paris.

The outcome of his research was published in a series of 6 papers 'Studien über Bakteriophagie' in the Zentralblatt für Bacteriologie in the years 1931 – 1936 (ref.2). These papers attracted much attention, especially at the Institut Pasteur in Paris. This study of Den Dooren de Jong was still cited in the authoritative book 'Sexuality and the Genetics of Bacteria', published by Francois Jacob and Elie L. Wollman as late as 1961. In 1966, A.Lwoff referred, in his paper 'The Prophage and I' (ref.3), to the work of Den Dooren de Jong as one of the classics of lysogeny.

In 1933 Den Dooren de Jong left the Commodity Inspection and moved to the Hospital Services of Rotterdam. There he initially worked as a bacteriologist, becoming Head of the Bacteriological Laboratory for the local hospitals. After that, he probably no longer had the opportunity to do additional fundamental microbiological research.

In the previous decades Den Dooren de Jong had become friends with Beijerinck's sister Henriette as well as his old Professor and he continued his visits to Gorssel also after Beijerinck's death. When it was decided to add a sixth volume to the Collected Papers of Beijerinck, published between 1922 – 1924, and to include a biography of Beijerinck and reviews of his studies in botany and microbiology, Den Dooren de Jong was the obvious person to write the biographical part. He was very honoured by this request, which gave him a good opportunity to pay tribute to his admired master. Henriette supplied biographical data; she even gave Den Dooren de Jong extracts from her diaries. The text was also published as a separate book, 'Martinus Willem Beijerinck, his Life and his Work', by Van Iterson, Den Dooren de Jong en Kluyver in 1940 (ref.4).

Unfortunately Henriette Beijerinck passed away in 1937 at the age of ninety, before the work was completed.

In Rotterdam, Den Dooren de Jong became a key figure in the local medical world. He regularly gave lectures for the Clinical Society on recent scientific developments and he advised many of the clinical specialists. He published regularly, including several papers on *Mycobacterium tuberculosis*. and tuberculosis (ref.5).

In the late 1950, Den Dooren de Jong participated in an investigation by the National Health Council concerning the incomplete decomposition of buried bodies, which was causing considerable trouble in the clearing of graveyards. He demonstrated that the formation of adipocere was due to the action of bacteria on body lipids. His papers on this subject attracted much attention (ref.6).

His continued interest in developments in virus research is illustrated by his papers in the Ned. Tijdschrift voor Geneeskunde on 'Viruses and their behaviour' and 'Viruses and their tructure' from 1954 and 1956, in which he included recent data on genetic and molecular studies of viruses (ref. 7).

After his retirement in 1962, he continued to do research and between 1965 and 1969 he published three papers in the journal 'Anthonie van Leeuwenhoek' on the metabolism in *Chlorella vulgaris* (ref. 8). In 1967 Den Dooren de Jong and his wife moved to Wageningen where Den Dooren de Jong died in March 1972.



Louis and Ali den Dooren de Jong-Ris
Married in 1928

3. THE RELATIONSHIP BETWEEN DEN DOOREN DE JONG AND BEIJERINCK

For all of his life, his relationship with Beijerinck was a source of pride for Den Dooren de Jong. From the time he began to work in the Laboratory of Microbiology, first as a student and then as an assistant he had deep respect for Beijerinck. He admired the Professor's broad, biological and microbiological knowledge of microbiology and he was greatly impressed by how Beijerinck taught students about the variety of microorganisms, stimulated them to ask questions, design experiments and critically discuss the results. It confirmed Den Dooren de Jong's decision to study microbiology and to do research in that field.

Directly after his retirement, Beijerinck moved to Gorssel, a village near Zutphen (Gld), with his two sisters, Henriette and Johanna. There he owned a modest country house on the grounds of which he built a new house while the former house was equipped as a laboratory for himself and a studio for Henriette, who was a good artist. Beijerinck was allowed further use of the facilities of the laboratory in Delft. He never returned to the lab, but Den Dooren de Jong helped him as much as he could. Soon Beijerinck was asking him to provide chemicals and glassware for preparing culture media. From time to time he would also ask Den Dooren de Jong to perform a specific experiment. Moreover a lively correspondence developed between them and frequently Den Dooren de Jong was invited to visit Gorssel for further discussion.

The course of these visits was described by Den Dooren de Jong in Beijerinck's biography, as cited here: 'When the visitor got out of the bus, which stopped right in front of the house the great scholar came to meet him with outstretched hands, asked in a friendly way how he was, took his case out of his hands and led the way to a tree where he had just discovered a remarkable beetle. There they entered into an academic discussion which might last for half an hour, till Beijerinck came to the conclusion that the tired traveller might wish to refresh himself, and took his case to the guest-room, then waiting for him impatiently in his study. Here an enormous discharge of ideas and opinions came out in spate, and the old Delft habits still being strong, the guest was taken to task for his ignorance, the lecture being followed by a brilliant exposition of the right answer as it should have been given. Then a walk through the woods of Gorssel, which might last for hours, and where Beijerinck also physically showed his indefatigability. This was followed by an animated talk over a dinner in the company of the two kind sisters, who acted as hostesses. In the evening – at any rate in summer – master and guest went for another walk, deeply immersed not only in microbiology and botany, but in all the discussion of exact sciences, for Beijerinck was profoundly interested in the progress of chemistry, physics and astronomy...'. " The next day was again devoted to lengthy discussions, either walking in the wood or in grounds, or in the study.

By the time the visitor came to leave, the conversational quiver of the great scholar was empty and the guest was tired in body, and limp in mind. Yet the visitor was not dissatisfied, for it was always delightful to hear Beijerinck talk; however strange his opinions might sometimes be, there was always something in them leading the hearer to astonishment which ultimately rose to admiration'. Such a description shows the role of intellectual father Beijerinck played for Den Dooren de Jong, and illustrates the mutual affection in their relationship.

During their talks Den Dooren de Jong brought up the question of his future in Delft. He was happy to learn that Beijerinck, before he retired, had recommended him as conservator at the Laboratory of Microbiology. Such an appointment would have been important, especially in view of his intentions to marry in the not too distant future. However, Beijerinck's successor, Professor Kluver did not agree as it did not suit his plans for reorganizing and restyling the laboratory. The disappointment added to Den Dooren de Jong's dissatisfaction with the drastic changes Kluver was making in the laboratory and the new style of working he had introduced. He did not feel that he belonged there.

Beijerinck tried to cheer him up, and made a number of suggestions to show his full confidence in his capacities. He proposed the preparation of a joint publication for the Royal Academy of Sciences (KNAW) and he urged him to consider a subject for a doctor's thesis. 'You know', he wrote, 'that in my opinion nutrition of bacteria by carbon and nitrogen would be a challenging problem'. In another letter he mentioned 'I am now reading the book of D'Hérelle 'Le bacteriophage et son rôle dans l'immunité'. It is an excellent book; D'Hérelle is almost a second Pasteur. If you do not have this book, you should buy it immediately'. And he advised Den Dooren de Jong not to lose patience but to live for science 'for then you will be able, even in Delft, to be and continue to be a very happy man'.

It was of no avail. Den Dooren de Jong decided not to stay in Delft and began looking for another position. Beijerinck found that decision most regrettable as he was very much concerned that Den Dooren de Jong would not have time for fundamental scientific research and his doctor's thesis. As already mentioned, Den Dooren de Jong applied to the Commodity Inspection Department in Rotterdam as chemist-bacteriologist with Beijerinck's blessing.

At the same time Beijerinck was very anxious that once he moved, Den Dooren de Jong, would not be able to assist him, as previously. Much to his relief Den Dooren de Jong assured him that, no matter how, he would be entirely at his service. Since he was rather isolated in Gorssel, the contact with Den Dooren de Jong had become important to the Beijerincks family. Beijerinck asked him to bring his violin next time he came to Gorssel, as his sisters would greatly appreciate hearing him play. Den Dooren de Jong apparently put his heart and soul into his playing and Beijerinck, when he thanked him for his visit, worried that 'you should take care that your musical talent will not overrun your qualities and interest in science'.

In the summer of 1923 Den Dooren de Jong was selected as number 1 from a list of eighty applicants for the position in Rotterdam, and he energetically threw himself into his new job, beginning with bacteriological studies on milk. He kept Beijerinck well-informed about what he was doing so that he could respond enthusiastically and give all kinds of suggestions. Den Dooren de Jong then proved that Beijerinck had been right in having great confidence in his capacities, for as soon as he had his daily work-situation under control, he started the research for his doctor's thesis. Beijerinck suggested cautiously, that 'Enzymes and microbes of milk' might now be a suitable subject, but Den Dooren de Jong preferred a study of the classification of bacteria according to the different nutrients that can be metabolized as that would present a more fundamental problem.

Beijerinck was all in favour of this idea and in early 1924 Den Dooren de Jong was already sending him his first results and ideas. During their discussions, Beijerinck urged Den Dooren de Jong to talk to Prof Kluver and ask him to be the Promotor. Kluver should agree with the

subject chosen. As Den Dooren de Jong was hesitant about asking Prof Kluyster because of his recent disappointing experiences in Delft, Beijerinck wrote a letter of recommendation on the subject to Kluyster. He added 'If you consider how from a nervous, foolish man I have made him into someone who has done for me everything he could, and how he has taken the question of nutrition with great diligence and is truly at home in this area ... you might understand that I am rather in favour of him'. Kluyster promptly replied that whatever Den Dooren de Jong's feelings were about his leaving Delft, there were no problems on his side and he promised as much assistance as possible. This cleared the way for good collaboration between Den Dooren de Jong and Kluyster in further research for his thesis and the final responsibility was now in Kluyster's hands.

Den Dooren de Jong worked as hard as he could with Beijerinck pushing him. There were distractions from his private life. In November 1924, he married Lily Bicker Caarten. The research for the thesis was at a standstill for a few months, much to the regret of Beijerinck who considered that getting married was only a distraction from pursuing science. However, Beijerinck sent Den Dooren de Jong best wishes for his wife and informed him that his sister Henriette intended to send one of her paintings as a wedding present, and that he would provide himself the frame for the picture. Beijerinck was however greatly relieved when in February Den Dooren de Jong forcefully resumed the research for his thesis.

Den Dooren de Jong tried to speed things up and continuously produced new results which both Beijerinck and Kluyster satisfied. The more Den Dooren de Jong's work progressed, the more exuberant Beijerinck became in praising the results. 'You are achieving what I have had in mind for many years, but could realize no more. I am extremely happy that I can see how order is produced out of the chaos of ideas and, what is even better, that it is done by you'. 'I could not succeed in that because I was only a poor organic chemist while you can now properly combine the two different scientific disciplines'. Beijerinck also acknowledged Kluyster's contribution and pointed out how fortunate it was that Den Dooren de Jong had the opportunity to benefit of his guidance.

When Beijerinck finally received the thesis, he sent his warmest congratulations to Den Dooren de Jong: 'You have properly tackled the subject-matter and I am proud that your work has given such illuminating answers on questions that preyed on my mind for so long'. Den Dooren de Jong defended his thesis 'Contributions to the Knowledge of the Mineralisation-process' in September 1926 with Prof. Kluyster as his Promoter. The ceremony took place in Delft, and Beijerinck did not attend as travelling had become very difficult for him.

All seemed to be going well for Den Dooren de Jong. Things were not going as well in his private life. His marriage came to an end after two years, shortly after he had obtained his Doctorate. The divorce deeply hurt Den Dooren de Jong. If Beijerinck sympathised with his distress, he was only able to show it by writing frequently and trying to distract his protégé by recounting recent observations on *Bacillus megaterium* and discussing the second edition of D'Hérelles book 'Le Bacteriophage' that was published in 1926. However, Den Dooren de Jong had his hands full with his personal problems and his work in Rotterdam, and he did not seem interested. To the horror of the Beijerincks early in 1927 he arrived in Gorssel on a motorbike he had recently bought. He had come to borrow from Henriette biographical data about the younger

days of Beijerinck as a student and researcher which Kluver needed for his speech at the Golden Jubilee celebration of Beijerinck's Doctorate in June. In that same month, Den Dooren de Jong had an accident on his motor bike. Fortunately he was not seriously injured. Beijerinck wrote how frightened he and his sisters had been and that they wondered if it would not be better to get rid of the motor-bike. And so it happened.

In September, Den Dooren de Jong was still very distressed and on the advice of his doctor he took a rest cure to recuperate. The Beijerincks urgently advised that he should take his time to recover. If he wanted to have a cup of tea with them, he would be very welcome.

Den Dooren de Jong recovered rapidly and by the end of that year he had regained his energy. Once back to work, he also began a new line of fundamental research on bacteriophages to the great pleasure of Beijerinck. He sent his very best wishes for 1928, but remarkably added that he hoped that Den Dooren de Jong would have many happy hours at home. This was presumably because Den Dooren de Jong had told him that he would become engaged to Ir Ali Ris. The couple married in November 1928.

The lively correspondence between Den Dooren de Jong and Beijerinck continued, and Den Dooren de Jong regularly visited the Beijerincks in Gorssel. He kept Beijerinck informed about the results of his experiments on the bacteriophage of *B. megaterium*, and Beijerinck replied with enthusiastic comments and suggestions.

Around that time, Beijerinck began to suffer seriously from physical problems and it was found that he had a rectal tumor that unfortunately was not operable. The development of the tumor and its treatment affected his energy and stamina, but not his spirit: his interest in the progress of the phage experiments remained unabated.

In the course of 1929, Den Dooren de Jong obtained the first results of his pioneering work on the nature of the bacteriophage. The conclusive proof was that D'Herelle's theory of the ultramicrobial nature of the bacteriophage was untenable. This forced the Dutch adherents of that theory to revise their opinion on the nature of the bacteriophage completely, and was a great triumph for Den Dooren de Jong. Kluver recognized the high quality of the experiments, and gave Den Dooren de Jong full credit. Beijerinck, of course, was very happy, and wrote 'It is a great pleasure for your old master to see how you are now becoming his master' and that it was a great joy for him to see that the bacteriophage complied with his original definition of a virus. Ill foto in de tuin Beijerinck's condition deteriorated rapidly, he became weaker and he realized that his life was coming to an end. In one of his last letters to Den Dooren de Jong he wrote: 'Now that the year 1930 is ending, I want to thank you once more for the excellent way you have kept me informed through the years about the developments and progress in microbiology, and how you have let me take part in the great leaps forward you have made by your research in what I consider one of the central problems of microbiology' On the first of January 1931, Beijerinck died just short of his 81st birthday.

Den Dooren de Jong was deeply affected by the death of Beijerinck, by which he lost a beloved master and a greatly admired friend who had had such an important role in his life. For the rest of own life Den Dooren de Jong continued to tell of his warm memories and his admiration for Beijerinck. Old friends and colleagues remember how, when talking about Beijerinck, he would imitate him and look at you with great piercing Beijerinck eyes and say that in his opinion Beijerinck should have received a Nobel prize.

In 1965, Den Dooren de Jong and his wife started the Beijerinck Virology Fund. One may assume that his great admiration and affection for, and the decisive role of Beijerinck in the life of Den Dooren de Jong made them agree that a fund to promote research in virology would be a proper destiny for their estate, since they had no children. With this Fund, they paid a final tribute to one of the founding fathers of Virology. The Den Dooren de Jongs were able to attend the first two award ceremonies for the Beijerinck Virology Prize together. After his death in March 1972, Mrs Den Dooren de Jong did the honours until advancing age prevented it. She died in January 2000 .



Louis and Ali den Dooren-Ris with Henriette Beijerinck in the garden of the house in Gorssel.
Ca 1935, In the background the house keeper Mrs. Portheine.

4. ACCOUNT AND ACKNOWLEDGEMENT

The day after Mrs Alida P. Den Dooren de Jong's death, the Royal Netherlands Academy of Arts and Sciences (KNAW) was informed that she had bequeathed her entire estate to the KNAW, for the support of the M.W.Beijerinck Virology Fund. The cremation took place in Arnhem on January 19, which happened to be the day on which she would have become 101 years. I attended the memorial service on behalf of the KNAW. In the afternoon of that day I, together with the responsible notary, went to the Den Dooren de Jong's flat in Wageningen. I wondered whether there were left some papers and documents related to the biography of Beijerinck written by Den Dooren de Jong and to the foundation of the Virology Fund. Indeed, I found sufficient interesting material to fill a suitcase with papers. The next day I took the suitcase with its contents to the Department of Biotechnology of the Delft University of Technology and entrusted it to the care of Dr Lesley Robertson, the Curator of the Beijerinck-van Iterson-Kluyver archive. Later, in the archives of the Boerhaave Museum in Leyden, I found 240 letters and postcards (Arch. 184 a 1) written by Beijerinck to Den Dooren de Jong in the period 1921 till 1931, that had been given to the Museum by Den Dooren de Jong in December 1964.

I have obtained supplementary information from the biography 'Martinus Willem Beijerinck, his Life and his Work', in volume VI of the 'Collected Works of M.W. Beijerinck', published in 1940. The minute-book of the Netherlands Society of Microbiology was also interesting. It begins with the inaugural meeting in 1911, and contains hand-written reports of the meetings, and cuttings from different daily newspapers from the period 1920 till 1938 with comprehensive reports of the meetings and the papers presented. Further, Dr Robertson showed me some interesting letters from the Kluyver collection. Finally I have had a talk with Dr J.K. Schönfeld in Rotterdam who was a staff member with Den Dooren de Jong, and who was co-author of the obituary published in the *Nederlands Tijdschrift voor Geneeskunde* in May 1972.

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A. van Kammen

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