

## Chapter 51

# PETRONELLA (NEL) PRINS VAN DER MEULEN

Delft

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**VM = Vivian Moses; NP = Petronella (Nel) Prins van der Meulen; SM = Sheila Moses**

**VM:** This is a conversation with Nel-Prins van der Meulen in Delft on the 29th of May, 1997.

Can I start by asking you what your early education in science was and, therefore, how you came to be in Calvin's lab.?

**NP:** I did study at the University of Leiden, I took chemistry with Professor (*Egbert*) Havinga (*Editor: Havinga had been a visitor to the Bio-Organic Group at an earlier period.*) As organic chemistry was my main subject and biochemistry was my second subject — it wasn't possible to study biochemistry as the main subject at that time, which would have been my preference — then Professor Havinga had connections with Professor Calvin, they knew each other. He sort of made it possible for me to come into contact with Professor Calvin. Havinga made it possible for me to work with Professor Calvin. I had a grant from the Netherlands Medical Foundation and a travel grant. I have been able to study for a year at the Berkeley lab. I had finished my studies, which we call "doctoral exam" in Holland, but I think it's comparable with a master's degree in the United States. So it was right after my study that I came over.

**VM:** Had you made any previous arrangement with Calvin about what topic you would work on

**NP:** No, we didn't. I just arrived and he sort of told me that it might be interesting for me to take that subject of finding the radicals that would be involved in photosynthesis. I started on that part but there was no equipment to work with; there had to be a lot of work done on it. My physics background wasn't very strong; that was partly because of the war where I had missed the first parts of physics and sort of picked it up in university, which is not a very solid base. After, I think, about two months or so I quit that part: there had to be too much work on the equipment and not the research itself.

So there was another subject which I had been working on later on and that was much more in my line and I enjoyed doing that.

**VM:** Which was what?

**NP:** That was investigating the influence of some inhibitors, enzyme inhibitors, using the building in of  $C^{14}O_2$  into algae and then seeing when you use the inhibitor what was the change in the labelling of the compounds. By sort of shortening those experiments you could find out where the inhibitors would attack, which enzymes would be inhibited and so you could find the place where they were working. That was mainly what I have been doing using the working methods of Calvin with algae and  $C^{14}O_2$  and then chromatography, finding out what was the difference between the compounds being labelled in the normal set-up and when you put in the two inhibitors.

**VM:** What were you looking for?

**NP:** Just to find which enzymes were stopped by these inhibitors.

**VM:** Did you have any particular reason to suspect which enzymes might be stopped?

**NP:** Not so much in the beginning, I think.

**VM:** So it was very much a “shot in the dark” to see what would happen.

**NP:** To see what was the change and then, by reasoning and then changing conditions, find out where the inhibitors would work.

**VM:** How did you learn everything? Did you work with someone when you first got there to learn all the techniques that were in use at the time?

**NP:** When I started on this subject, I sort of learned the techniques of chromatography which were used in the lab. I think mostly it has been Al Bassham that introduced me into that. Then I started...well, my own variation of the techniques that had been used before.

**VM:** I think you said you arrived there early in 1956 and you stayed about a year?

**NP:** Yes.

**VM:** I'm interested in what happened. How did you travel when you went to America?

**NP:** By boat, which was the cheapest way at that time.

**VM:** And across the country?

**NP:** By train across the country.

**VM:** When you got there, was there an apartment waiting for you or did you have to find one? What happened?

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**NP:** I stayed at International House; this was arranged beforehand. Calvin wasn't around at that time so I had been about a week or so, I don't exactly know, but I have been about a week in International House before he arrived in the lab. When I arrived in Berkeley, I was a bit sick so I needed that week anyway to get well again.

**VM:** So, you actually started working after Calvin arrived and you were back in the lab. and met the people there?

**NP:** Yes.

**VM:** If I can ask you just a couple of questions about the first piece of work that you did: you said this was something in which you really had no experience, working in free radicals in photosynthesis.

**NP:** No, I had no experience.

**VM:** How come that you and he agreed that you should do this with no experience?

**NP:** Well, he thought it would be nice...in a way it was a nice suggestion and it could have worked out maybe well if the equipment had been around. But they were still building the equipment by themselves, there was not a fixed apparatus like you had a few years later. He sort of built his own equipment and if it didn't work quite as it should... So there were difficulties in the equipment part which was technical and physical and this was not something I could cope with very well.

**VM:** Who was doing the building?

**NP:** I think it was Power Sogo.

**VM:** I don't remember; this was not something I worked in. And he did that by himself?

**NP:** Yes, he sort of built it himself. It wasn't an apparatus that came from a factory or so. He did it himself. It was in the very beginning time of this kind of investigation.

**VM:** When you settled down to work in the carbon-14 part, you worked, presumably, in ORL, in the old wooden building. Do you remember who you worked with, where you were?

**NP:** Well, I think...you know how it looks, the lab. You came in, then you had a sort of a small office part where Al Bassham had a bureau or something like that, and then you went through a door and came into one of the rooms and I had on one of those tables I had my two metres of table and the part of the wall that belonged to it and the things down there that belonged to it. There you had to do all your work except for the chromatography you could use the special room.

**VM:** Do you remember who was next to you?

**NP:** No, I don't.

**VM:** What do you remember of the atmosphere of that building at the time?

**NP:** There are a few things which were very nice. The first thing, that was when I arrived and started to work there, I was given a key so I could get in and out of the building every moment of the day I wished to, which was something for somebody who had just finished his student times, it was something very special. I enjoyed that. I worked quite often because I had to take out chromatograms on all parts of the day. I was there sometimes at night. There would be night watchers around with their lanterns and it was a very special atmosphere. Then the Geiger counters that were rattling around, normally very quietly, but if they brought in some phosphorus they would rattle away quite happily. Those were some special atmospheres but on the whole the people were very nice with each other and very helpful. When I had problems there would always be somebody to help me out, to know what to do, to find where things were and so on or to find the right person to ask. One of the things which was a very positive side of the whole atmosphere of the group was there were so many foreigners around that they organised trips every now and then and this got some very special atmosphere, too.

One of the things which I remember very well also is that every now and then there would be — quite often, I think, at least once a week — Professor Calvin, Dr. Calvin, would come in and he would ask what everybody had done, look at the chromatograms if you had some new ones and then compare, he would see what was special about this, talk about it with you. This was very nice. He was always interested in your progress and would give some advice and would talk it over. And in this you would do with everybody else around, which was very nice too. That was informal and a very nice part of working there.

**VM:** Was this different from the life that you had led in Leiden before you went there?

**NP:** Well, yes. But also because I had been a student and hadn't been working on myself. I had been assisting in the practical work of the younger students but I had not done any research in the lab. there except my own special subject for finishing the studies. There you had a connection with two or three other people that worked in the same fields, and Professor Havinga then, but not this whole group because he (*Havinga*) had very different subjects and so we also worked in different rooms. Here it was all crowded into one very small and, in a way, very unhealthy laboratory. If I now realised that we were doing chromatography in the room where everything was saturated with the vapours which you should stay away from, I'm still happy that everybody has been healthy for such a long time. Also the other workers, apparently, because they are around! I think I have had a lot of benzene taken in, inhaled at that time...

**VM:** And probably C<sup>14</sup> as well.

**NP:** C<sup>14</sup> as well, I guess, but you didn't smell that; benzene you did!

**VM:** I certainly agree that the building was crowded and old and...

**NP:** But that also gave it a very special atmosphere. You had to do it together with what there was and you had to, well, to give some room to your neighbour and so on.

**VM:** You think that part of the whole atmosphere in the group and the way the group developed was really influenced by the building in which they worked?

**NP:** I guess in a way, yes. It had some sort of a pioneering atmosphere. Not everything was there. You had to make the best of it. This, of course, people who can't stand that will leave. I think it was, in a way, positive but only because, I guess, the work was interesting that people were doing there. If the work hadn't been interesting and you had those circumstances, you wouldn't stay. The work was interesting and take all that because everyone saw it was interesting you got this special atmosphere.

**VM:** Did you find that Calvin was very good at new ideas? You say that he was interested in what you did. Was he perceptive, was he quick to see the significance of the results that you gave him?

**NP:** Yes.

**VM:** Did he steer your work or did you really decide yourself what you were going to do and then tell him?

**NP:** No, it was a sort of exchange, I wouldn't quite remember. I didn't quite feel that I was only doing what he said and I didn't feel hampered that he wouldn't like me to go on. I think it was just...well, seeing him quite frequently and talking about the work that things went along that line. I also did talk with Al Bassham because the work was quite near to his experience and his subject.

**VM:** So really Calvin and Bassham, the two of them, were the people that you most interacted with.

**NP:** Yes, I most interacted with and with the others every now and then, but not on my own regular work.

**VM:** Presumably you gave seminars, or at least one seminar, in that Friday morning series they had?

**NP:** I guess so, but I don't remember.

**VM:** You don't remember that Friday morning business?

**NP:** Yes, well, I remember, but I don't know whether...I must have been talking there.

**VM:** You left there at the end of '57...'56?

**NP:** The end of '56, beginning '57 somewhere around Christmas time, January: somewhere around there.

**VM:** You were present at the Christmas party, I think; you showed me some photos of the '56 Christmas party. Did you have a farewell party as well, when you left?

**NP:** I guess so.

**VM:** Too long ago?

**NP:** Too long ago.

**VM:** Then you came back to Holland?

**NP:** I left in a way that I experienced as pleasant and I had a dinner with Mr. and Mrs. Calvin and some other people which was near the end, near the time I was leaving.

**VM:** You were yourself not married at the time?

**NP:** No, I wasn't married.

**VM:** Then you came back to Holland and resumed your scientific career here at the time.

**NP:** Yes, I started to work with TNO then...

**SM:** an you say what TNO is.

**NP:** TNO is an Organisation for Applied Scientific Research.

**VM:** Here in Delft?

**NP:** Here in Delft.

**VM:** Is it part of the university?

**NP:** It is not part of the university, it's a separate institute.

**VM:** You were there for some years?

**NP:** I have been working there for, I guess, about five years.

**VM:** What happened then?

**NP:** In the meantime, I married (in '58) and in '59 I got my son and in '61 I got my daughter and in '63 I was expecting the third one. And then I couldn't quite keep up with the research. Also, when I was expecting the third child the young girl that had been helping me in the home and taking care of the children while I was away was going to marry herself and wouldn't go on working with me. I could not find somebody that I could trust three children with, at that time. So, I decided I had to

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break and care for my children for a while at least. I always thought I will go back into research when the children are in school.

So, when the youngest was four years and would go to kindergarten, I looked around for a job and asked my professors, especially the one in biochemistry. He made it possible for me to find a job in Leiden (I think it was in *(indecipherable)* — it was quite a nice *(indecipherable)* — and everything was almost organised and I would start work about one and a half months from then. I had the literature and, well, trying to read myself into the subject because it was a new subject and I had to do quite a lot of reading. You know in biochemistry things develop so very quickly so all the methods that I knew I had to jump into that.

I found that I couldn't combine having enough attention for the children with this research work. It was so interesting, it so takes your mind, that I couldn't be open for the children at the same time. I found myself saying when my son was saying "Momma this" or "Momma that", "Wait a moment, Momma's working" and so on. I had all those little moments that I saw that this is not going to work, I can't do that. If I am not there for my children at that moment, they will not come to me when they need me in later trouble. So this was a very crucial part of my life and I had to decide. I had always thought that at least I couldn't do it, I couldn't divide myself between the things. So it had been very difficult. My husband had quite a heavy job, he couldn't work less or anything like that. He became soon after director of the Hydraulic Research Laboratory in Delft. He's older than I am so his career came before mine.

I decided at that time that I had to choose between children and research and so I decided it had to be the children. I went to my professor and said that I could not take the job. He was taken aback, he was mad at me. He said "why didn't you know before?" I said that I didn't know before and I explained to him what made it clear to me that I couldn't cope with these things together.

So that was the end of the research. I knew that if I didn't jump into it at that time, which was four and a half years after I stopped, well things develop so quickly, that I wouldn't be able to take it up later on very likely. Then I decided, after half a year, that I wanted to do something out of the house, something that would not occupy myself that much. So I started to take a few hours at secondary school teaching chemistry, just to see whether I liked that or not. It turned out that I had no experience in it before but I could do it and I quite liked and I could very easily work part time and would be free when the children came home from school and would have holidays when they had holidays and all the problems were away. What was most important for me, I could teach and, of course, you have to do some work next to that but I could just do that any time — it didn't occupy my mind. It was something that could be done sometime but it wasn't something that would going around in my head — that's what research did, it went around in my head and I had to think about how to cope with this, how to do this and that. With teaching, I had no problems; I could easily separate home and the teaching job. I have been teaching for twenty years in secondary schools.

**VM:** The research that you did do, I guess when you did your master's work here and in Berkeley and perhaps later, were all exciting times of your life?

**NP:** Yes, I liked that very much.

**VM:** Have you been back to Berkeley since those days?

**NP:** Only...I have to think when it was; I think it was '92.

**VM:** That was the first time?

**NP:** The first time; I have been back in the United States but not in Berkeley before.

**VM:** Did you see the round building?

**NP:** The new building? Yes, I had a short look into it. I had never worked there so it didn't say anything to me. I had no emotional connections with that.

**VM:** And of the people whom you knew...

**NP:** There was only Ning Pon around and nobody else.

**VM:** Nobody else at all?

**NP:** No.

**VM:** That must have been rather disappointing.

**NP:** That was a pity, yes. But I was sort of prepared that many of the people weren't around any more.

**VM:** So it seems that you have a fond memory of those times at any rate.

**NP:** Yes; I have a very fond memory. It is long ago. It has been a very nice year of my life and very interesting. Well, I worked after that in research for five years and that was the end of research. In a way that's a pity but on the other hand...well, sometimes you have to make choices.

**VM:** Children have their compensations. It was very kind of you to take time. It was nice to have seen you again after all that period and to find my photograph in your book, even though you weren't quite sure who I was.

**NP:** I will write it down now.

**VM:** OK; thanks a lot.