

## Chapter 55

### SIR EDWARD (TED) P. ABRAHAM

Boars Hill, Oxford

August 25th, 1997

**VM = Vivian Moses; EA = Edward Abraham; SM = Sheila Moses**

**VM:** This is a conversation with Edward Abraham in Oxford on August 25th, 1997.

Can I start by asking you how you came to go to Calvin's lab.?

**EA:** I had a Rockefeller Foundation fellowship and the work that Calvin was getting involved in was of general interest. Also, I think I was interested in trying to make some use of isotopes. Those two things together were really responsible for me going to Berkeley.

**VM:** What had been your original scientific education?

**EA:** My original scientific education was, I suppose, organic chemistry. I read chemistry here...

**VM:** In Oxford?

**EA:** In Oxford and at the end of the war I had become rather more of a biochemist than a simple organic chemist. The work that Calvin was doing was, in fact, very interesting.

**VM:** What was your position at the time when you went? You were still in Oxford, were you?

**EA:** At the beginning of the year of the war opening, I was in Stockholm, again with the Rockefeller. I was in Stockholm when war broke out. The department there was run by Von Euler who wanted me to...and it was a curious department in a way, it was a mixture of Swedes, of Jewish refugees from Germany and people...well, even one or two confirmed Nazis, some of them quite nice people but they were confirmed Nazis! So it was a curious...And Euler wanted me to stay because at that time in Sweden it was generally thought that the Germans were going to win the war and that Sweden might keep out of it, that England would lose the war. So he thought this would be attractive to me. But I said "no, my duty, if you call it that, was to return to England".

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**VM:** What level of development were you at the time? Were you a graduate student in Sweden?

**EA:** I had just got a D.Phil.

**VM:** So, in effect, you were a postdoc.

**EA:** Oh yes, I was a postdoc. Von Euler had a place in the laboratory. He had the top floor more or less which was his house. At the one end there was a picture of King Gustav but at least one person who didn't like Von Euler very much said if you turn the picture over there was one of Hitler on the other side; which one showed depended on who came to dinner!

**VM:** Did you ever turn it over?

**EA:** No. Well, I was no position to do that. I don't know whether that's true: it may or may not be true.

**VM:** So, anyway: you came back.

**EA:** Anyway I came back across the Atlantic eventually from Bergen. It wasn't very easy to get back. I had a...all this is irrelevant, really. I had a...before I left Stockholm for Bergen, to try to get back, I got an infection in a swimming bath and I went to England and I seem to have an infection in the foot". He looked at it and said "well, I can tell you that unless you take these tablets the only way you will get back to England is in a wooden box".

So I did take them and they were...I didn't know at the time...they were one of the earliest sulphonamides, not penicillin, that wasn't known at that time as something that was useful. So I got back and went back to Robinson...

**VM:** He'd been the person you'd been working with before? Robert Robinson?

**EA:** Well yes, he was I suppose. He was the Wainfleet Professor of Organic Chemistry, was one of the great organic chemists of the day, I suppose. When I got back people were thinking of what kind of experiments could be looked into which might be useful for the war effort. Robinson said "I think if you go and see Florey (*Sir Howard Florey*) and he would be interested in your background, and he would be, that this might be something that he would get you into. That's how I came back to Florey and started work on...forget what it was...£300 pounds a year or something like that.

**VM:** In the penicillin project?

**EA:** Yes, after a short time. We were looking into...Florey was interested in some aspects of shock and wound shock, and so on but it looked as though nothing was going to come to that. The department was very poor (*at the time*).

**VM:** That was Pathology, was it?

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**EA:** In Pathology.

**VM:** He was Professor of Pathology as I remember.

**EA:** Florey was. He had fairly become Professor of Pathology from Sheffield. He was an Australian by birth and he wanted to do chemistry, actually...(but) the Australians told his father there weren't any jobs for chemists, worthwhile chemists, in Australia then; he'd better do medicine. I remember Florey saying to his...in College...Bertie was my son...tells me that he wants to do...I think it was physics. But I said to him "you had better do medicine. Then you won't starve". He did medicine.

**VM:** What was your position in the department? Did you have a staff post?

**EA:** No, I didn't, no; not at that period of my life. There weren't any staff; well, the School of Pathology there was Florey about and Chain (*Ernst Boris Chain*) who had recently come. Neither of them had staff. Florey had...was virtually the only person with a staff post..

**VM:** On what basis were you employed?

**EA:** I think I was paid by the Medical Research Council.

**VM:** Was that still the case by the end of the war when you decided to go to Calvin?

**EA:** No, things were about to change then in that at that time the work on penicillin at Oxford, in the School of Pathology in fact, had demonstrated that penicillin was an important substance and it became very important during the war because it looked as though, if enough of it could be made, it would be of great importance in curing large numbers of troops. It became an American-Anglo-British project, too. There still exist the papers that were exchanged between American...there was a large number toward the end, there were some hundreds of American and British companies trying to produce large amounts of penicillin.

**VM:** At the end of the war you went to Calvin in which year was that?

**EA:** In 1948.

**VM:** What was your position then, what was your position in the department?

**EA:** In the department in 1948? I think I had a better...what looked as though a more likely or a secure position. But I wasn't — let me think. When I became...I think that's... no I don't think it's in my *Who's Who* or anything...It was all rather vague until, well about the time I went to Berkeley, I suppose. It looked as though there would be a more permanent position. It was first of all what was called a "research officer" and then it was a reader and professor and so...

**EA:** Yes.

EA: Yes. Calvin...well, I suppose Florey got it for me. But Calvin was using isotopes, radioactive isotopes, and this was something of general application. (We stayed...no that was later, a later visit, we stayed with the Calvin. They had a flat there in Berkeley.) And then Calvin came here as a visiting (*Eastman*) professor (*in 1967-68*). I remember he came up here (*to Abraham's house*). My memory is that he was rather cold; it was in winter. I took him to dinner in College. He was partly...Calvin was partly responsible for...I mean, later on, when we started finding cephalosporin compounds and so on, he...Calvin came here as a visiting professor and I said "with some royalties we'd got we were hoping to set up, among other things, a visiting professorship here; have you any views on this?" And he said, "I think, there shouldn't be so many restrictions as applied to the visiting professorship I had". And this one is still going but I'm not sure how...So we or I took some notice of (*this*) and I think the visiting professorship that I set up, which didn't require the visiting professor to give thirty lectures or this kind of thing, and it was much more relaxed and it could be....hopefully the visiting professors could have general conversations with people and do what they really wanted to do. I think the way this was structured was to some extent at any rate, due to what Calvin said to me when I spoke to him about the project.

**EA:** No, I don't think so.

**EA:** I went by sea, I'm sure, on one of the *Queens*, I think it was. Then the Rockefeller people in New York said "did you want to fly to Berkeley or do you want to go by train?" I said I would rather go by train because I would see much more that way. So I went by train to Berkeley.

**EA:** Yes, I was by myself.

**EA:** No I think I stayed at a place called International House in Berkeley, which you probably know. How it was that I...or who it was who said this is a good place to stay in, the food was reasonable and it's not expensive, and so on. I don't know. I spoke to

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some people from Berkeley on the train; maybe they...I don't know. But International House — they still write to me.

**VM:** Well, they're still there.

**EA:** They must be: I mean, they ask for money so they must be! They are not within our scope, actually, but I'm sure...

**VM:** You went to the lab. and you met everybody, you met Calvin and you met the others probably?

**EA:** There was a man called Heidelberger who was there.

**VM:** Charlie Heidelberger.

**EA:** Charlie Heidelberger, yes.

**VM:** Who else do you remember as being there at the time?

**EA:** I think Charlie Heidelberger particularly was the person I did some experiments with. The others, if their names were read off, I'd probably remember them clearly.

**VM:** Let me ask you the next question. Do you remember which building you worked in?

**EA:** The Donner.

**VM:** There were two buildings there you may remember. There was the Old Radiation Lab., which was a wooden building, where the photosynthesis work was going on and that work was led by Andy Benson.

**EA:** Oh yes, well I remember him.

**VM:** ...and Al Bassham — do you remember Bassham?

**EA:** Yes.

**VM:** In the other lab., I think there was Bert Tolbert and Dick Lemmon.

**EA:** Tolbert, I think, was some sort of organiser in the department. I didn't have any...There were still government restrictions in 1948. For example, I couldn't be in the Donner at night.

**VM:** Oh really?

**EA:** They had armed guards on the place. Eventually, from the Atomic Energy Commission, I think it must have been...or through them, I got permission. That was, in fact, the day I was leaving — probably an accident but that's how it happened.

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**VM:** So you worked with Charlie Heidelberger. What did you do?

**EA:** We did some radioactive work with radioactive biosynthetic work which was of interest to me.

**VM:** Chemical work?

**EA:** Yes, chemical work.

**VM:** Presumably you published some of that at the time.

**EA:** It was a little paper published on that. There were other things...I'm trying to remember what they.... There was some catalytic reactions which were potentially dangerous in the sense that they might go wrong and the place would blow up. So there were special precautions with relation to this. Calvin came in; as you say, he was not domiciled, shall we say, in the Donner but he came in quite frequently and people consulted him quite frequently; I think that's how it was.

**VM:** So you were one of those; you consulted him frequently?

**EA:** Yes. He was the sort of boss, if you like, of that show.

**VM:** You say he was not the boss?

**EA:** No, he *was* the boss of that particular...But where Geoffrey Wilkinson was was on The Hill and he...well, his work was still more or less secret I think with Seaborg.

**VM:** Was Lise (*Schou*) Wilkinson in Calvin's lab. at the same time as you?

**EA:** I don't remember meeting. My first memory of Lise was in England here and that was partly...well, I don't know partly but I met Geoffrey Wilkinson the first time at The Royal Society after he came back and Lise was, as you know, was a Dane and my wife was Norwegian so they had a contact, if you like.

**VM:** So you didn't know Geoffrey in Berkeley?

**EA:** Oh yes.

**VM:** Oh you did?

**EA:** Yes, I did. In fact he took me on very interesting car drives: to Yosemite, for example, we walked up to the top of the (*immediate?*) Yosemite and slept, after slinging our rucksacks high enough to avoid the bears. Then he drove me on the other side up to a lake, which was quite high and we slept out. I always think of that as perhaps the coldest night I have ever spent. And the he drove me...he did a number of other...took me on other trips and so on. His work was still secret as far as I was concerned. He went over in, what was it?, '43 I think it was.

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**VM:** I seem to remember that you were one of the early postdocs. in Calvin's lab. Can you remember: were there other people, other visitors there at the same time as you?

**EA:** Visitors? There...no in Calvin's lab.; I go back to...Well, Calvin asked me to stay, actually, and I said "well, but that wasn't in..." I had decided I was not going to stay, anyway, and I said that I think...oh yes one of the preconditions that the Rockefeller Foundation made was that I should not stay. I told this to Calvin and there's an easy way out: he said "oh, that's no problem and we could easily get around that".

**VM:** When you were there, as far as you remember, were most of the people Americans? Because later on it certainly became a very international group. Was it like that when you were there?

**EA:** They were almost all Americans. This was, what? 1948.

**VM:** Maybe the international character developed rather later than that.

**EA:** I mean later we went to Berkeley on visits several times. I went to the Round House which wasn't in being when I was there.

**VM:** What did you think of that as a building?

**EA:** Well, it was interesting. I thought there were different opinions from different people as to whether this was the best way of organising people. Some people thought it was good and some people didn't think it was.

**VM:** How did it strike you? After all, presumably here in Oxford you have always worked in conventional buildings, square, oblong buildings with rooms off corridors. That was a very different, open plan type of thing. What sort of impression did it make when you saw it? On you?

**EA:** I was uncertain whether it would have appeared to me, if I had worked in it, to be the idea. I simply didn't know without work. I mean, the idea was that people should have...there should be contacts between people which were valuable and that this was a way of getting them together. I don't know. It's still very much in being, isn't it?

**VM:** But it's has changed its character.

**EA:** It's has changed its character.

**VM:** A great deal.

**EA:** That wouldn't surprise me.

**VM:** Well, because the group that occupy...the people that occupy are no longer the unitary group that they used to be. It has inevitably become fragmented and bits of separation in the building. For that it's not a good building because it is intended as an open unitary building and once you try to divide it, it's not successful, I think. Much less

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so than it used to be. However, in your time in Berkeley you presumably visited at least sometimes the old wooden building, the Old Radiation Lab. Do you remember that building?

**EA:** That was the...the Donner, the Radiation Lab.; yes, I do remember that. It wasn't very far from the Donner.

**VM:** That's right; but that's where Calvin had his photosynthesis work going on.

**EA:** Yes, that's right.

**VM:** And I don't know whether you remember but that was pretty much open plan. And I think it stemmed from that idea, from that environment that the concept of the round building grew.

So how long did you stay in Berkeley on that trip?

**EA:** Not long; I mean for other reasons I wanted to go back; I suppose six months, or less.

**VM:** Working all the time with Charlie Heidelberger?

**EA:** Yes.

**VM:** When you left Berkeley, did you come directly back to Oxford?

**EA:** Yes, I did. That was understood that I should come back. By that time, it was getting... a certain number of people in the Pathology Department were looking forward almost certainly to permanent jobs. I think Chain probably...but then Chain left, he and Florey did not get on exactly

**VM:** That's when Chain went to Imperial? he went to Rome...

**EA:** He went to Rome and Chain, the last time I met...Oh yes, and he had a fine establishment in Rome with flats and so on. I remember, I think, the last time talking to him in Rome he said he'd been asked to return to England, he'd like to return to England, but he said "can you tell me how one can live in England without paying any income tax!" And so I said "well, actually, I'd like to know, but I have not discovered no way myself by which that can be done".

**VM:** You spent the whole of the rest of your career in Oxford, did you, in the Pathology Department?

**EA:** Well, except for visits to places like Australia and the Middle East, and so on. We saw a good deal of the world in one way or another.

**VM:** But this has always been your base?

**EA:** Yes.



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**VM:** You have now retired, have you?

**EA:** Very much so because one retires at the age of, what is it? 65 here at that time. I am 84!

**VM:** Oh really? That was nineteen or twenty years ago that you retired.

**EA:** That's right, that I retired. But I haven't retired — I've kept a room until very recently in the School of Pathology and I had a secretary; that's how it is. I thought when we bought this house, which was about thirty years ago, that if I had nothing to do when I retired at least, if I was fit enough I could do something in the garden, because it has a wood as well as a garden attached to it. But it didn't turn out quite like that.

**VM:** Were you not fit enough or you didn't have the time?

**EA:** Well, I had other things to do which were concerned with the department and other things. It wasn't that I was looking for things to do in the way I thought I might be.

**VM:** You progressed up in the usual way through the academic scale and became a Professor of Pathology, were you? What was your title, formally?

**EA:** Professor of Chemical Pathology.

**VM:** Have you maintained any contact with the Berkeley people over the years? You say that Calvin's been here.

**EA:** Calvin's dead now, of course. The last time we saw him in Stockholm, I think. Heidelberger is dead. The other people...no. I don't think; oh...Mary, the secretary: what was her name? Mary, Mary...

**VM:** Marilyn.

**EA:** Marilyn.

**VM:** Marilyn Taylor.

**EA:** Marilyn Mack...was it Marilyn...?

**VM:** Taylor.

**EA:** She might have got married. I wonder if she got married during my...? Anyway, I... She occasionally wrote to me.

**VM:** She is collaborating with us on this project. She's still here and she's helping with some of the transcriptions and some of the finding people for us. She's still very much part of the scene.

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**EA:** She can't be young any longer?

**VM:** None of us is young any more! She's no older than the rest of us.

**EA:** Oh, I'm not surprised. But I think the last letter from Berkeley, certainly the last one I replied to, was from Marilyn. That's perhaps true of a number of people who went through Berkeley.

**VM:** When was the last time you were there and you say you saw Calvin was in Stockholm.

**EA** I saw Calvin in Stockholm because we went to Sweden at a time when there was a Nobel Prize giving. He went to that as an old...and I got invited because we were there so I met him there. He seemed to be all right. That was after we stayed one time when we were in Berkeley. They asked us to stay; they had a flat below and...what's her name?

**SM:** Genevieve?

**VM:** His wife?

**SM:** She was from Norway, too.

**EA:** I see; well, she was very nice to us and she organised, you know: when we wanted to go to the airport, well she turned on a car and it came. We had meals with them and so on. Perhaps at that time; it was a long time ago...I don't think Calvin was seriously ill at that time. I don't think he was going around in a wheel chair; he had an electric wheel chair at one time, didn't he?

**VM:** he had an electric wheel chair but that was not, as far as I remember, because he was ill but because the lab. had become separated and they'd had to move down to the Life Sciences Building after they pulled down the wooden building and before the round one was built. He had a wheel chair (this electric trolley) to travel from his office in the Chemistry Building down the hill and back again. He had always, or at least for many years, had a weak heart and I think it was for that. I don't think he was specifically ill. Once the lab. moved back together, then I think he stopped using it. And, of course, when he died recently, although he had been failing in recent years, he was 86 years old, nearly 86 when he died. So he was not a healthy man but he was not seriously ill for much of his life.

When you say you saw him in Stockholm at a Nobel Prize celebration, was this his own Nobel...?

**EA:** No, it wasn't.

**VM:** It was later than that?

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**EA:** It was later than that. It was...somebody from this country. Anyway, he seemed in, you know, fairly good shape.

**VM:** Oh, I think he was apart from illnesses, odd illnesses here and there, until fairly recently he was in quite good shape. I thin that particularly after his wife died, he was very upset with that for some time but that was ten years ago now.

**EA:** She looked after a welfare club, or “Newcomers Club” it was called in Berkeley and we were...as we became interested in a newcomers club here I think partly in connection with what we’d seen in Berkeley.

**VM:** Well, the tape’s almost coming to an end. So I think I’d like to thank you very much for digging down into your memory. Obviously, some of it is a long way away now. It’s interesting to hear what you have said and we’ll see how it will build into the story that we are going to write. Thank you very much.

**EA:** All right.