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**Sir Stanley Peart FRS in interview with Max Blythe
Oxford, 28 February 1995, Interview Four**

MB Sir Stanley, in this fourth interview in the series I'd like to follow on where you arrived with Dr Askonas last time. You discussed a lot of the, of the work going on at St Mary's in the medical unit there. Primarily I'd like to hear what you thought were the great achievements of the, of the unit in those 31 years.

SP Yes. Well I think the first was, obviously, something I'd taken on from the very start of my research, and that was really looking at phaeochromocytomas. Those are tumours of the adrenal gland. That was my very first piece of research, so it remains dear in my mind. And that arose in a way out of the work on the sympathetic nervous system, and what was released when the nerves to the spleen were ... if you remember the work that I did in Edinburgh with Gaddum¹ and Marthe Vogt, so you see that was my start. And of course I often reflect that if I'd spent the rest of my life working on tumours and what they contain I'd have really probably done rather better. Because, you know, when you look at it now these endocrine-type tumours have got so many substances which in actual fact only reflect their presence in various parts of the body; you know, particularly in the brain, the gut and everywhere else. And they really would have been an absolute goldmine of research. Particularly as I like separating substances – you know, my previous background. And I often reflect that that would have been a very good life. In fact I did touch on it, because I worked on carcinoid syndrome, which was again a tumour out of the gut with the flushing. And that ... again, you see, those tumours contain a mass of substances whose function ... at that time we wouldn't have known what the function was. But there they were, and they were only reflecting again what was present in the gut and elsewhere as it turns out in the body, so that they would have been again another little goldmine, you see. So that they were interesting. And I often think of ... of that in relation... You know, one thinks of opportunities missed, because I guess really rather than thinking of achievements I actually often think of opportunities missed.

MB I mean, is that a real lament? Is that a real lament?

SP Oh yes, I think... Yes it is actually. I think ... you know, that I regard as an opportunity missed.

MB Because you got deeply involved in looking at flushing and patients being given alcohol, and ... in interview circumstances, and noticing how many seconds it took for the...

SP Oh absolutely. I'm very, I'm very ... I'm rather pleased with that observation, you know, because that was a clinical observation of the time it took from sitting down and embarrassing the patient so to speak by being there and asking them, and then observing the flush came about 90 seconds later. And I thought ... that started

¹ John Henry Gaddum.

me thinking. Now that's the sort of observation that, you know, one makes every now and again. You make a lot of those sort of observations, and you follow up some of them, and they turn out to be nothing particular. But that one, you know, pleases me, because it did. Now of course again, I think, there's an opportunity missed. I took that as far as I thought I could. I showed that it wasn't ... with my colleagues – particularly Bob Robertson², who was my ... together with Jehoiada Brown, who was my first lecturer in medicine – and we took that as far as we thought we could. We could actually I think have taken that rather further, if we'd pushed it hard. We did a great deal, and we showed what was coming out of the tumour – that is into the blood stream from the tumour – we showed that quite convincingly, and discovered how to stimulate the tumour to release substances. But there were a lot more substances there to be demonstrated.

MB What was the chain? You stimulated the tumour ... and what was the, what was the route of command in that endocrine chain?

SP Oh well, what we ... what we thought from the observation that embarrassing the patient so to speak caused a release, that made me think well maybe this is a nervous system reaction, that somehow the tumour is being stimulated by a nervous reflex. In other words, is it possible that nerve endings would be close to the tumour in the liver, and therefore stimulated? And I thought well it's highly likely that what you're seeing here is a sympathetic discharge, due to being embarrassed ... that the noradrenaline at the nerve endings released would stimulate the tumour, that would... Because the tumours if you remember in the liver – particularly, you know, the secondaries are in the liver – and that that would then release substances which would go into the circulation, and that it would... The stimulus would be here, down through the sympathetic nervous system, to the tumour in the liver, release of the substances, round the circulation, and would then arrive at the skin to produce a flush. So the flushing substance would be released. The same argument went for alcohol. David Grahame-Smith, who was again one of my research fellows, who did all that major work on the alcohol release, we worked on the same principle that alcohol would release, maybe release something from the gut which then stimulated the liver secondaries through the portal vein, and then out it came into the circulation, and...

MB This massive localised vasodilation?

SP Yes, that's right. Very.

MB That must have been quite impressive to see. I've never seen...

SP Oh, oh, it's remarkable! They go like lob- ... you know, like boiled lobsters.

MB Right over the face?

SP Yes, that's right. And it's very, very striking. They'll even flush on the hands of course too, I mean ... but the face is a better flushing area. Darwin actually, I have

² Stanley Peart presumably means James Ian Summers Robertson here.

to remind you, wrote a little monograph on flushing, actually³. Not many people would know that, actually!

MB No. I'm one of them!

SP But he did, actually. And flushing as a manifestation of an emotional disturbance, well known. The mechanism of it is still not terribly well known, I think. But there are lots of other substances now released at nerve endings which people believe are probably responsible for flushing actually, particularly the ordinary blushing in the skin actually. But that was one line, and I think I probably ... I could have made a bit more of it than ... than we actually managed to do at that time.

MB Has this field gone a long way, I mean, in other places?

SP Oh, absolutely.

MB I mean, I know little of the story.

SP Oh yes, yes.

MB I mean, products of...

SP Peptides, well, it's gone...

MB ...produced by tumour cells...

SP Yes, it's ... oh tremendous, tremendous literature on this. I should have thought Steve Bloom at The Hammersmith has done as much as anybody, and more in many respects, to establish it. The Swedes, people like Hökfelt⁴ in Sweden have done a great deal there. You know, that follows in the tradition of Euler⁵ and so on, you see, with substances liberated at nerve endings.

MB And logically this then becomes a diagnostic area?

SP Oh yes. Very much so. I mean, that's one of the ... I mean, Steve Bloom has made that a very special area for him actually, the diagnostic area. There are all sorts of substances, like those are intestinal peptides, and VIP [vasoactive intestinal peptides] actually, which occurs not only in the gut, but it ... you know there was frisson of excitement when they discovered it in the corpora cavernosa of the penis, you know, that sort of area. And so that ... the term 'regulatory peptides', where the gut peptides scattered along the endocrine cells of the gut also exist in large measure in the brain, so that the connection there has been really well studied. So that it has been a tremendous area for a peptide chemist. And of course it's gone so far that people will ... extracting peptides for which they did not know the function at the

³ Stanley Peart is probably referring to: Charles Darwin, *The expression of the emotions in man and animals*, London: John Murray, 1872.

⁴ T Hökfelt.

⁵ Ulf von Euler (1905-1985) was awarded the 1970 Nobel Prize in Physiology or Medicine with Sir Bernard Katz and Julius Axelrod 'for their discoveries concerning the humoral transmitters in the nerve terminals and the mechanism for their storage, release and inactivation.'

time, and then subsequently a function has been attached to them by further study, physiological type studies and so on. So it really is an area which...

MB A massive avenue.

SP Yes. But that's why I say 'Well...'

MB But one ... one down which you did not go.

SP I dabbled. I dabbled; I put, I got my feet wet but then I didn't let anything else get wet. So that's an area.

MB Can I just say did you...? You published ... those early experiments, you published up on that?

SP Yes.

MB In the later fifties?

SP Oh yes. Yes. Those ... yes, that's right. I still like the pictures that we had, you know, because it was very difficult in those days to get coloured photographs printed in the ordinary journals. But we did, actually, so that...

MB Where were you publishing? *The Lancet*?

SP Well, that was ... the major paper around that went in the *Quarterly Journal of Medicine*, because they would accept colour plates actually, which were essential.⁶ But it's just that it was opening a door which if I'd looked through a little more carefully I could have seen, with a bit more imagination, that that would have been a good line to follow. But at that time, you see, I was busy trying...

MB Other doors.

SP ...to do other things. Right, I'd got other doors. And particularly the one relating to renin, angiotensin, and the relationship to high blood pressure, because...

MB Can we take that on board now? That renin and angiotensin kind of area, with blood pressure. Because it had reach, far-reaching effects, because your staff went on to Glasgow and built a unit there that was monumental in that field.

SP Oh yes, indeed. Absolutely.

MB Can we summarise that blood pressure work, in, of the Mary's days?

SP Yes, because what we were doing as a group then was tackling the problem of, well, what is the relationship between renin and angiotensin, to high blood pressure? Because that seemed obvious. There's the kidney, renal disease, particularly

⁶ JIS Robertson, WS Peart, TM Andrews, 'The Mechanism of Facial Flushes in the Carcinoid Syndrome', *Quarterly Journal of Medicine*, 31 (1962), 103-123.

narrowing of the renal arteries as shown by Goldblatt⁷ in the first place, because he did the first experiments of narrowing the renal artery in the dog and showing that the blood pressure would rise. Those of course had gripped people's imagination, and of course the search for us at Mary's was, well now, could we pick out these patients? And we spent a lot of time trying to pick out patients with what's called 'renal artery stenosis', as a cause of high blood pressure. Because of course most people said 'Oh, this is a minor process in man.' And, you know, it's very interesting to me to have watched the field evolve. And as people look at more and more patients, with more refined methods than we had available, they're detecting that in the later stages that renal artery stenosis is really quite common as a cause of high blood pressure. And all the effort made to reverse it, which we became engaged in... First we got engaged in the problem of how do you diagnose this condition? And there were people in the States, particularly there was a chap called Staney⁸ who was a genitourinary surgeon who'd developed the technique of catheterising the ureters on either side. Now what an undertaking, you know, to have to do this for a patient that you suspect had got this condition. And how do we suspect it? Well that's where I did my first bit of collaborative work with my colleague the professor of surgery, Charles Rob, who's still going strong in Buffalo in the United States, because he emigrated there having had a very successful career as a paratroop medical officer in the War. And he was like that. He was a tremendous ebullient chap. And we had been impressed by the use of the stethoscope all round patients, and we wrote a paper together on the use of the stethoscope in detecting narrowings in major vessels around... That was in a way quite interesting, because nobody seemed to be doing it, despite ... you know, you think about Laennec⁹ who we were discussing earlier using a stethoscope, you know, in the early part of the nineteenth century. Now, the use of the stethoscope to detect narrowings was not very common. But we went over it all, from the carotid, through the chest, into the abdomen, and all ... and into the legs. And when you listen you can hear these narrowings, because they make a very loud '*bdree*', in other words a loud noise, which you can hear, pick up through the stethoscope. And it...

MB It was a kind of turbulent feel about it all. Is there...?

SP Yes. Strangely enough, it's still neglected by doctors, you know. But it is ... the way in which we started to be able to pick up, by listening over the abdomen, and correlating it with the other changes that you could discover by other techniques like radiology, that there were narrowings. At that time you may remember arteriography was a developing science. We were lucky at Mary's in the fact we had David Sutton who was very good at this. Now in fact in this country the first person to use the technique to show up a narrowing in the carotid artery was ... my colleague then later to become a very dear friend, that's Harold Edwards, who was a neurologist. As a registrar at that time he injected the carotid artery with the dye, which ... this process had been developed in Portugal, of showing up arteries with a radio contrast dye, and he showed the narrowing of the carotid artery in a patient. And that patient, the result of removing the narrowing, which was done by Eastcott¹⁰ at St Mary's with my then boss George Pickering the professor of medicine... They'd got this patient that they pursued this matter, and showed the narrowing, that when you removed it – because

⁷ Harry Goldblatt.

⁸ TA Staney.

⁹ René Théophile Hyacinthe Laennec (1781-1826). Laennec devised the stethoscope in 1816.

¹⁰ Harry Hubert Grayson Eastcott.

this patient was having little strokes on the relevant side to the carotid artery – that removing it cured his symptoms, which was a first. And that ... that arteriographic technique was widened to take in all parts of the body. But it was quite an undertaking to do it. But we used it. David Sutton, we collaborated very closely, and showed the narrowings in the renal arteries, because we were looking for good cases of clearly demonstrated renal artery stenosis, to see whether renin and angiotensin were playing a part in these conditions. And there's no doubt that my young colleagues then – Brian Robertson¹¹, joined by Tony Lever, who went off to form this MRC Glasgow unit¹²...

MB Glasgow unit.

SP ...pushed this area further than anybody else at that time. They really achieved great things. And, allied to an assay for renin in the peripheral blood, they were able to show the correlates, in various conditions including heart failure and so on, in a way which was quite remarkable.

MB It's a fascinating undertaking. This must have been in your first kind of five or six years at...

SP Yeah, well that all started...

MB in the medical unit.

SP ...all developing, you see, at that time. And they, as I say, they worked so hard. Like, for example, it was a time when ... with each of those people I was undertaking something, though now I couldn't of course have undertaken that and done my other ... performed my other functions if they hadn't been actually doing the work. It's always like, you know, that question ... you know 'Who does the work when you go away on these visits?' Actually it's the same people who do it when you're here, actually! And it's very true, actually. But with each of those particular people... And I've followed that principle always, that I've liked to work with individuals. All my life, you know, with ... just individuals, and to carry out a piece of work which I thought might be important, and which they thought was important enough to want to work with me on it, and to try and achieve things that way. So that, in this field of renin and angiotensin related to narrowings of the renal artery, that got us going. And all that bulk of work, which particularly was carried on in Glasgow subsequently...

MB Stemmed from that.

SP ...stemmed from that, actually.

MB What was it like on the ground then? Did you have a laboratory? Did you have...?

SP Yes.

¹¹ Stanley Peart presumably means James Ian Summers Robertson here.

¹² MRC Blood Pressure Unit, Western Infirmary, Glasgow.

MB ...a set of rooms or, for that unit?

SP Well, we started off of course with what George Pickering had left, which was not very great. I remember I used to work in one of the shops which face on to ... a converted shop which faced on to Praed Street actually, at St Mary's. And that was all right. But fortunately soon after I took on the chair the medical school was minded to provide me with much better laboratory space. And so we got new laboratory space, which has now been converted of course into something else since I left. But it was nice laboratory space in which we ... nice open-plan laboratories. We were delighted by this, and we got going in those laboratories in a very nice way. So that was a real help in getting on with the work.

MB I'm trying to get a feel of that space. Did, would you have a dozen people working there at any one time?

SP Oh yes. Yes.

MB More?

SP Yes. Well, fortunately we were starting to attract people from overseas, you know. And one of the great pleasures of running a unit is ... well it's a measure actually of whether you're, whether you're doing anything that anybody else in the world thinks is of any interest and importance, because they want to come and work with you. And of course over the years that's been a pleasure for me, because it's one of the reasons I had such a strong feeling for Australia, because I used to get a lot of Australians over.

MB I remember in your interview with Bridget Askonas that you were saying that you almost kind of had a permanent parade of people from Italy, Greece and Australia!

SP That's right.

MB I thought you slightly short-changed yourself, because it was wider internationally than that.

SP Well, yes, there were the people from all over the place, but ... the States, some from the Middle East, some from the Far East – I mean, Hong Kong, Singapore – and... But principally that solid group of people from Australia and New Zealand and the States. That provided a way in which you could actually run a unit, you see. Because one of the problems of trying to do too many things really – that is teach the students, look after patients, and be responsible for the research – was that you didn't have enough people to be able to do that with the ordinary university staff, you see. So that when they, when you had a lot of research fellows coming over that just made all the difference, you see, so you could get on with that. And you had projects which they all took part in, and it then made it work.

MB Talking of the international situation, not only did people come to you but you started in that period to go more widely internationally, and to have more links. You went to more conferences. That was quite an important development of career.

SP Yes. Yes, it was. Of course you must remember the area in which I had my particular interest, in high blood pressure, was ... high blood pressure wasn't a very popular subject, you know. My, it wasn't regarded as being tremendously important, you know. There was cardiology, there was some disease of the blood vessels ... you know, where surgeons were learning how to repair them, and bypass obstructions and things like that. But it was difficult, you know. Vascular surgery was sort of in its infancy, and I was lucky that I was working alongside people that were really very gifted at doing vascular surgery. You know, people like Kenneth Owen and so on, who, with whom I had a very close working relationship. And the physician/surgeon combination was very pleasant and very good, and very good for a hospital to have that sort of collaboration between medical units and all their surgical colleagues.

MB I'm focussing at present I think on what would be the first half of the sixties, is that ... that period?

SP Yes, that's about ... that's a very important period, because then things started to burgeon. And the work on high blood pressure started to bear fruit because we started to be able to pick out patients who had got renal vascular disease as a cause of their high blood pressure. We hadn't the slightest idea at that time what was, the rest was just ... called essential high blood pressure.

MB What fascinated me though, I'm just fascinated by this perspective you showed at that time on hypertension not being so exciting. I mean nowadays, I mean you look back and you think it must have been. But it wasn't.

SP Well you know the Hypertension Club(?), which we all joined, all over the world, the first meetings of that body were, you know, 50 people. Now 5,000 to 10,000 people attend what it's grown into, which is the International Society [of] Hypertension ... the European Society [of] Hypertension. All round the world, all round Europe, you find societies for the study of hypertension in each of these countries. But, you know, so they've got thousands.

MB Where was the nucleus(?)...

SP When we started...

MB who set it up...?

SP Well there were ... George Pickering, Irvine Page of course, and I... You know, luckily about ... just about three years ago, or four years ago now I suppose, we had a commemoration for Page's 90th birthday. And he unfortunately died soon after that. But at least we had the pleasure of giving him this memoriam, so to speak. And it was, I was lucky enough to be invited to really, you know, bring that together, with my colleague in New York, Bill Manger, who incidentally is the world expert on pheochromocytoma! So, you see it does sort of start to hang together ultimately. Your contacts keep coming back in different areas but ... old Page at that time, you see, there were certain centres which were really very interesting, you see. Going back, you see, in Cleveland... Cleveland was the place where, when I was working in the area that was the area where the competition was coming from in a big way, you

see, in the States. Cleveland was the place where Leonard Skeggs was working on angiotensin, and Page had worked on angiotonin with a chap called Bumpus¹³, and that Goldblatt was still active with Haas, Erwin Haas, who extracted the pig renin. And of course I was busy myself in the laboratory with my colleagues, trying to purify renin you see as the enzyme which created angiotensin. And I worked away at that for many years, and one of my disappointments is that I never really got that to its final stage. I actually feel that I did actually have in my hands completely pure pig renin. It was ... but I failed, in a biochemical sense, to prove it completely. I thought I'd done it in ... in some, what I thought were very nice experiments. But that was superseded very rapidly by the fact that human renin in the next, within the next ten years, was to come out from the study of tumours existing in the kidney which produced almost pure renin. And that was extracted and therefore antibodies to human renin were produced and so on. So that that went down that line very nicely.

MB The kind of classical proof of research.

SP Absolutely.

MB But you fed into the maze, because it's a very subtle endocrinological maze.

SP Yes, it is.

MB I mean you...

SP And I mean we were doing...

MB ...and there was something quite...

SP We were doing a lot of work then. But as I say Cleveland was the main area of competition, where there were these three or four groups working very hard and producing first-class work in that area. And of course that was one of the areas which I did go to quite early in my career. And I got to know Page then, quite well, so that when I was asked with Bill Meyer to – they had this symposium in honour of his 90th birthday – that was, you know, the whole circle had turned actually in a very nice way. And of course I look at some of the photographs I've got of that early Hypertension Club with ... you know, you could take a picture of all the members on one film, which was ... interesting! But, you know, as I say it has grown. And very properly, because high blood pressure is one of the major killers in our modern society, in north-west...

MB And did this particular theme of research, did that see you right through your professorial time at Mary's?

SP Oh yes. It never ... yeah, and it still...

MB That was the core. That must have been the core.

SP High blood pressure was the core, actually, and...

¹³ F Merlin Bumpus.

MB It started with your good association with Pickering.

SP Yes.

MB And went right down that line.

SP That's right. And of course my ... a lot of my clinical work there, and the sort of clinical work I used to do at the Western Ophthalmic Hospital, which of course is full of ... you know, referred problems which are related to vascular disease and blood pressure, you see. That's why I've always been interested in that area, because it was then, again, another opportunity if I'd had enough time and energy to do it, and it... But ophthalmology was an area which was ... I, in my view somewhat sluggish. I mean, the applications of ophthalmology were excellent. I mean, you know, the good clinical work being done. But the degree of ignorance about what was causing all these conditions was considerable. And nobody seemed actually to want to tackle the problem. It's only slowly taken off in this country in terms of the research effort put into it. It's because ... if I dare say this I think it's been in the hands of the surgeons for so long that they weren't imaginative enough to want to ask that basic question, you know 'What causes this?' They could deal with glaucoma, they could deal with cataract, surgically, and they were beautiful surgeons, but...

MB So you went into a field where there was no really established research culture?

SP No, that's right. And of course I just didn't have enough time. I can say that and not...

MB Did you go once a week, half a session a week? What, was that the kind of attachment?

SP Well, no, it was a whole day a week actually, of that actually. But, and of course I ... it's very easy because you just walk down the road, Praed Street, to the Western Ophthalmic Hospital on a Monday morning, see all these patients... There were vast numbers of them, actually. And I used to take, you know, as part of their education I used to take my fellows along, and they used to come with me. And the students used to come with me. A vast array of interesting problems which you could actually look at and see. You could see the trouble with the blood vessels at the back of the eye and so on. So that, tremendous...

MB And that really fed into your research some useful lines?

SP Oh yes, indeed. Well, I mean a lot of the patients had a raised blood pressure, so they were grist to the mill, so to speak! But I mean they were also people that you could treat and do something about, except it wasn't very clear what you could do about the trouble at the back of the eye. But that was the time of course when we used to see what's called 'malignant hypertension'. This is a particularly serious form of raised blood pressure in which it gallops along. And in fact what one knows is that they've got tremendous trouble with their little blood vessels, which you can see at the back of the eye, they ... and they ran a very downward course. Of course they were the sort of group of patients in whom the effect of drugs was first demonstrated, that

you could stop that, the progression to fairly certain death within two years, once you'd diagnosed it. And they, by the use of drugs you could stop that progression.

MB You're talking about anti-, antihypertension...

SP Antihypertensive drugs actually, yes. I mean, that was where the Paton/Zaimis¹⁴ discovery of hexamethonium was first applied, you see. And those were the patients I was seeing. Now, malignant hypertension in this country, as in the United States, has become a much rarer condition. I mean I used to see masses of patients with the condition initially, when I first was qualified, when I first started to practice clinically. Then it gradually for some reason got rarer and rarer. It may be that treatment, however imprecise it was initially, and it certainly was difficult and imprecise, actually did take the edge off it so they didn't turn up like that. I think that's too easy an explanation actually. I think there's some other more subtle reason for it, because we still are not sure why they present as they did actually. But a very, very serious condition. But nevertheless that was one of the things that came out of the ophthalmology link. And I often think 'Well yes, if you had your time again, you could choose an area to investigate, ophthalmology is wide open.' It still is wide open for deeper investigation. And it's one of the areas in which I've tried to push people into looking at it and seeing well, look, here's an opportunity. But I haven't had too many takers actually, as it happens. It's slowly changing now. But it's taken all those years for it to change.

MB We've got to talking about patients, which I wanted to arrive at.

SP Yes, surely.

MB We've arrived a bit early(?). Let's take patients into our view at this stage, could we? Because we've had a lot of conversation about research, in the interview before and in this interview, but you had a strong love of patients that we established very early on and that never went away?

SP Never.

MB And I want to know how you balanced the books, really. I think we could talk through that for five minutes or so now. Because you had a busy unit, lots of research interests, kind of lots of plates in the air spinning. But you found time for patients. How was that possible? I don't think it is now.

SP Well, it's more difficult now obviously. But I kept a very broad interest in patients. And I mean it was a very important part for me, because in essence when you look at it it's obvious that that's why I didn't stay with pharmacology in Edinburgh, I mean, and why I didn't stay with it after I'd been at Mill Hill actually. I came back all the time to patients, because I just felt an allegiance to them. I just felt very satisfied when I had done something for a patient, and made a diagnosis which made all the difference to their lives. And also I just liked, you know, talking to them and listening to their problems, trying to dissect out what really was the matter. Because that is something which goes on always. However modern technology develops, the ability to be able to sit down and listen to somebody – and I emphasise

¹⁴ William Paton and Eleanor J Zaimis.

listen to somebody's problem – trying to dissect it out is just as satisfying for me, mentally, as any research programme where you have to ... have a hypothesis to start with in a sense and then you try and solve that problem that way. Well here you are, you're being dealt a problem. First you have to decide well what is the problem? Now the only way you can see the ... see a problem is either you can see it in, by looking at somebody, and you can often see a solution when you look at somebody, or you listen to what they say. And you then learn that language is multifaceted, you know, that when people use a word ... I often use the phrase 'Well, a word is just a flag actually, waving there.' Now, you have to decide what's attached to the bottom of the flagpole, because people's use of words is different, and in different areas it's different. That's why it's very important that medical students are drawn from a very wide background. Because language varies enormously, and once you get a bit of ethnic mix it ... the ability to communicate or to understand what you're being told depends upon, you know, a very wide knowledge of what the words actually may mean. And the words do not always mean the same thing, by a long long way. I can't emphasise that too much, because communication first is going to always be important. It doesn't matter ... the high-tech comes later. Trying to define the problem as you listen to it is what's important. And, you know, that's what's at risk of going out of medicine. It's only at risk if people become super-specialised. But, you know, that's the risk.

MB But also time puts it at risk, I believe. Time constraints nowadays.

SP Yeah.

MB You gave long ... from all that I know you gave long periods of time to patients that left everybody in the queue a bit further back. How did you cope with that? I mean nowadays people ... people try to rush people.

SP Well, yes. It's very interesting actually. I think it ... when you start hearing the noise going on outside your room actually, because people are getting a bit cross that they're being kept waiting, I often think well, if it's important for people to see me, it's not too... It's not arrogance at the bottom of it, it's the fact that you have to solve a problem at a time; you can't just brush it off. A lot of people ... I mean in general practice this is a tremendous problem, because you've got rooms full of a lot of people, and you've got to sort them. Now many general practitioners have got round this by picking out those who obviously, as they think, need deeper investigation, deeper thought about their problems, then they give them an appointment to come back in the near future to be seen at greater length. Now that's a good approach. Now, I ... I couldn't actually easily do that. I just had to work on the principle that right, I'll try and get the first questions absolutely clear. What is the problem with this patient? And hope that the people that came later, and had to wait to see me, would bear with the fact that I'd give them just as much time and it would just go on as long as it was necessary to do so. So my outpatient sessions would just drag on, much to the chagrin of the nurses and everybody else. They would drag on. And ... because I was so obsessed with the idea that you must get that first problem straight. What is the matter? What ails the patient? If you don't get that right, then of course you...

MB All the rest is wrong.

SP All the rest ... you know, it's rather like rubbish in and rubbish out of a computer, isn't it? You don't get the right answer.

MB You've painted a rather nice picture of that interface with patients in your outpatients.

SP Yes.

MB How did the process go on? So that by referral they became almost parts of your experiments, in a research sense?

SP Well, yes. I mean that ... once you said, with a patient you're trying to get to the bottom of their problem. It is difficult, because you're driven by the wish to find something out. And you then have to balance up this question: Is what I'm doing justifiable? Are the processes which I will use in a research sense to get to the bottom of this problem, are they justified for this patient? Now, it's very easy of course, particularly when young, to get carried away and ... you know, into areas which, you know, you ... are difficult. And you would say 'Yeah, you're being too enthusiastic' as you stand back and look at it, and say 'Well, you know, you might just be going over the edge.' This will always be a problem, no matter what sort of little committee is sitting on the question of whether you should be allowed to do this or not. There'll always be that edge where you are really basically making the decision as to whether it's improper or proper to do certain...

MB Is it quite a difficult fence to sit on? I mean, you're really making decisions about whether a patient you care about becomes a little bit of a guinea pig in an experiment that's not quite clear.

SP Yes, absolutely. It'll always be with people that want to do clinical research. And their ... their fellows of course are always sitting in judgement. The only correct solution is to have everything that you do open and discussed. And you must discuss it in a group. You must actually discuss it in a group outside your own immediate area. In other words in a healthy medical school/hospital environment, what you have of course is discussion of what you're doing, your presentation of results, with people in the habit of saying 'Well, you know, do you think that was justified?' And of course that's the principle I've tried to follow, but it's...

MB Did you set up a meeting every week, or...

SP Absolutely, yes.

MB And one of the things that came across from what I know of those meetings is that people did dissect into what they think went wrong, as well as what they thought was going right.

SP Oh yes.

MB That must have been quite difficult on occasions. It would be nowadays because of all kinds of legal implications that have entered the arena. But you with

colleagues were saying that 'Probably this patient did badly because of this choice.' You were actually laying your...

SP Yes, that's right. Now the only way of doing that, as I ... as I got more confident as I got older, was to expose in a sense what one did wrong oneself, in one's own opinion, you know. And that I ... you know, I know that sounds terribly pious and so on, but it's true, you can actually school yourself into saying 'Well look, I didn't do that quite right.' Now, it is vital for young people to see that whoever's running the show will actually admit to his mistakes, actually, I mean... Now, that's easier said than done, actually. Because you don't want to have to do it too often because, you know ... I mean, because you then start to question your own judgements about things if you are always doing that. And you can destroy yourself by, you know, that sort of process. But it is very important. And I found on the unit that that was, I'm sure, appreciated. And people got into the habit of being able to do it. And the young would then do it, and ... you know, you could stand criticism, because you've got to be able to stand criticism of your actions. As I say nowadays with ... what you might call 'legalised audit' it is, it is more difficult, and with the lawyer sitting behind eager to pick up, you know, admissions that you didn't think you did it quite right, you would be very foolish if you said that. Now that's a shame in a way, because nobody's infallible after all. And yet you're expected to be infallible. And of course once you get a procedure, a process, a medical approach written down as if that's the only way, then of course it becomes even more difficult. So I've always fought that.

MB A few sentences ago, the word 'judgement' came in. You talked about the importance of showing one's judgement and where it fell short. How did that judgement exercise? Did you kind of shave in the morning, thinking of issues? How does judgement actually take place in a medical arena? I mean, do these things happen when you're driving a car? I mean, how do you formulate what will happen to patients? You can't always do it on your feet in a clinical situation, I guess.

SP Well, you're always...

MB Is it running all the time?

SP Well, it's running all the time, isn't it? I mean, you know, the diagnosis that you haven't made, that you're still concerned about... I'm still doing it now to be honest because I've got friends who've got problems, and I dis- ... you know, and I discuss with them and I think about, you know, well what could be the explanation of it? You see it's a continuous process. And again you're always being assailed by doubts about whether that's the right, the right thing to have done. You must be. Once you cease to do that of course you become very dangerous, in my opinion. So that, you know, you've got to have some self-doubts actually about these things, and always be approaching the problem and trying to remain flexible about it. I mean, you know, I think that's the difference, you...

MB Does this carry over into your, into your private life a great deal?

SP Oh well...

MB When you go away from the wards?

SP That would be for others to judge, I guess, actually.

MB This thinking through situations, I just wondered whether it's...

SP Yes. Well, yes. Oh, I think it's a habit of thought.

MB So it eats into leisure time.

SP It's a habit of thought. Well, it's going on subconsciously all the time, of course, because up pops ... you know very well that process where you push it on one side and then up pops a word which you can't ... recollect, you know, an hour before, but it comes into the forefront of your mind.

MB And also are there patterns... There are times of day for me when I can probably think a lot better, and I milk those times, because sentences when I'm writing will come out easier then. Did you have times that you found were the productive times that you...?

SP Oh yes. Yes. But of course your, you actually, with the sort of life you have to live in these circumstances ... because, you know, apart from the patients which must come first in all these activities... You must be giving the best performance you possibly can, for patients. I mean everything else then becomes secondary to that. The research becomes secondary, teaching students becomes secondary, except teaching students is linked with the care of the patients and that's tremendously important. That's why in my opinion you need to be very broad in your approach clinically, because for students it's vital actually, otherwise you become a little technocrat in a narrow area which is one of the risks of medicine, isn't it, as a whole. But all the time you must be keeping all these processes going, and there's no time ... I didn't have time to set aside, I just had to be doing all the things, so my life was on the whole active practically all the time. But, you know, that's why ... my only approach to try to do these things was to extend the hours at the beginning and the end of the day, you know.

MB So you had a great facility for thinking on your feet?

SP Well, you have to have actually. And you also have to have a certain amount of stamina to keep going through all these things, you see.

MB Tell me about all these things. We're winding down on the, on the medical unit and all that, all that happened in that period. We've talked of two main themes, I know there were others. You were into kidney transplants and...

SP Well, that grew out of, that grew out, of course... The kidney transplant was an important area of my life actually, because ... that's reflected in the fact that the... Probably the nicest thing that happened to me on my retirement was a party given by the renal transplant patients and their families, when I left Mary's. And there they were. And there were people going back you see 25 years, you see. And more, even at that time in 1987, you see. So that there they were. And that's a great thrill. And,

you know, they used to ... you know, give you things, mementoes. And it really, the attachment you form with those patients, because you had to see them through so many real crises in their life actually, and that was a tremendous thing for me actually. I mean it was one of the things which kept me going actually, because once you get that sort of link with a patient, you know, it's one of the great thrills of medicine to be honest actually, to do that.

MB So that slender but not unenthusiastic beginning with Roy Calne when he was a registrar, that also ... that theme went right on through your Mary's days?

SP Oh yes, well, when you think of what patients with renal failure actually do owe to Roy Calne and his work ... you see, the first major drugs which affected the issue, which are azathioprine and prednisolone(?), I mean, there are a lot of people... Even though I notice with some interest that he says 'Well, you know, transplantation is really an antisocial measure nowadays. We should be looking after control of population.' Well, sure we should. But we should also look after patients with renal failure, which he does rather well!

MB And did [his] spark, his input, initially come from the States? Was he...?

SP Oh no, it came from him.

MB He was really the originator?

SP Oh well, no. He was, he was the chap that wanted to establish renal transplantation. You see, from Medawar, with that immunological discovery of skin grafts, you see... Now that's important, you see, Peter Medawar¹⁵ was a very important influence on that.

MB Classical.

SP And then when you think about how renal transplantation took off; well, in the States it certainly did. We were all enthused by the twin transplants, you know, the identical twins and the way in which the kidney could be transplanted. And that was that. And we thought well, that's interesting. But it was only when cadaveric transplantation became a reality that we could see the way. So there was I of course being confronted by patients with renal failure for whom I could do very little, except dialyse them. And of course that was where of course the advances made by Kolff¹⁶ in the artificial kidney came in, and then I followed the line of peritoneal dialysis. And that was, that was another thing which was very exciting, because we started it off, and we were really pretty unique in the country actually to do it even though the technique had been established elsewhere.

MB Did that work well?

¹⁵ Awarded the Nobel Prize in Physiology or Medicine (with Sir Frank Macfarlane Burnet) in 1960 for the 'discovery of acquired immunological tolerance.'

¹⁶ Dr William Kolff invented the first artificial kidney using cellophane and metal drums during the Second World War.

SP It worked very well actually, yes. I mean, other of my colleagues, you see James Mowbray was the chap on our unit who was very interested, and we used to ... tote great ten litre containers of ... of saline and potassium, all the balanced ... electrolyte solutions needed for peritoneal dialysis around. And in fact one of them toppled off one of the shelves in Albert Ward(?), you know, where we were and crashed on the floor. And one of the nurses got her foot cut by the glass actually, and sued the hospital and was given a fair sum in compensation actually! So that was borne in on me rather hard.

MB An unusual hazard of research.

SP Very. Because we were trying to get in the line of being able to maintain patients on the peritoneal dialysis for long, long periods instead of just the acute process. And we did manage to send one or two patients home on peritoneal dialysis, you know, at that time. But of course infection was the great curse of the process at that time. It still is a difficulty, but a lot of advances have got round the, a lot of the problems. And now I like to see ... there's a nice peritoneal dialysis unit at St Mary's, a nice self-contained area, with lots of grateful patients, and it's a major activity at St Mary's actually. Just as haemodialysis, which came in later, is also another major activity at St Mary's. So that, all this really grew out of those early ... processes, and the early attempts with our renal failure patients. So that that was another area which, you know, I really feel very pleased about. But I refer back to that retirement party, which gave me a tremendous thrill.

MB Great moment.

SP It really, it really did. So that was a nice area.

MB It's been a great help to have your appraisal of those main themes going through the work and saying that was a, that was a good outcome, and that may have been dodgy, but this was also good, to have that kind of appraisal. What about colleagues? We've seen your view. What happened, can we have your view of colleagues? Some of them went on to do quite remarkable things from that unit. Perhaps we could label a few of the colleagues who you were really fortunate to recruit.

SP Yes. Well as I say the ... there are a number of, there are a number of areas which I think I'll just comment on. And this is about a philosophy of how you deal with bright young people coming up actually, I think. The very best in the field of hypertension and so on were undoubtedly the group that went off to Glasgow. That was so. Quite a few of the people that have been with me from overseas, who were there early, some of those have done remarkably well. I mean Graham Boyd, who went back to Australia ultimately, and was responsible for the first, one of the first decent radioimmunoassays for angiotensin, went back. He's now in Hobart, Tasmania as professor of medicine there. Bob Carey who worked with me, who became the dean at Charlottesville [Virginia], he's ... and he did extremely well in endocrinology and became professor of medicine now. In fact, I like to think that there are an awful lot of these professors of medicine around the world that were with me at one time. And, for example in Australia as well there's Bill Louis who was with me, and he is the professor of pharmacology, clinical pharmacology in

Melbourne. And so that these ... those sort of people are very interesting to me still. I still see them occasionally. But the Italians that came... And they often came with very little ... you know, because it was very difficult at that time for Italians to leave Italy seriously and to get back into the stream, you know. Because academic medicine in Italy at that time was really, was not something people would want to go into. So they were unusual if they wanted to do anything different from just earning their living as physicians. But they came, and I've been delighted by the success they've had, you see, when they've gone back to Italy and they've fitted in. And most of them have gone into chairs of medicine up and down Italy, you know ... Milan, Perugia and so on. So that this is ... that's a great pleasure.

MB Is there a whole parade of people coming...?

SP Yes.

MB ...over the years?

SP That's right.

MB Kind of family job?

SP That's right.

MB Now, what I really, concluding this section, would like to tease out a bit was how did you manage to keep hands on? I mean, you were catalytic for many of them, because you came in and supported them in a catalytic way, but you also managed to keep some bench-hands on. That must have been quite a difficult art?

SP Yes. Well, of course it would probably be an exaggeration that I managed ultimately to do that. I mean I ... my contributions eventually were really completely intellectual rather than hands on, you see. You know, I'm always proud of the fact that I could put a very fine cannula in a rat's carotid artery for measuring its blood pressure. Or even cannulate lymphatic, you know, of ... in a rat's kidney or a dog's kidney, I mean that sort of stuff. Because technically you must remember that I did have, I nearly became a surgeon at one stage you know and I did my primary Fellowship when I was very young and, you know, I was attracted by doing things with my hands. And I was proud of the fact that I could manipulate things and do very fine things. Now I can hardly see without my glasses! Even with my glasses I don't see as well now, obviously, to do these things. Nor is the control as fine, you know. Things you just do like that, you can no longer do as you get older, and therefore your ability to do that is limited. I did enjoy very much the manipulation of laboratory things. That's why I loved separating substances. I liked the ... I just loved using all those techniques for separating peptides for example. I just used to like doing it, and getting the results running off the column, and assaying what came off the column in various ways. You know, I loved doing that. And of course I could well have made my life doing that, but my, it ... you know, these are the conflicts you've got to resolve, and you have to put them in priority. My priority was patients, actually, ultimately. But I had to have the research, and I had to have people with whom I could communicate all the time in actual fact. And I was lucky enough to get that, you see. So that I would never be absent from the laboratory seriously in the

day, when I was around all the time. I would see people in the morning and the evening. I would always drop into the laboratory in the evening. Whatever I'd been doing in the day, if it had been full of patients and students, I would always come in and discuss the results. I was never out of touch with anything that I was in ... that I would put my name to ultimately. I mean, that's important, because if you just become one of the names on the paper, that's the end. You've got to have had a real input which influenced the results. And that ... I think I managed to achieve with all the people with whom I've worked. And that's been a real pleasure. The interaction all the time, actually. I mean, and of course the older you get, the more important is that interaction, I mean, with young people. I mean, you must try your ideas out, and they must feel able to challenge your long-held beliefs, you know. And that's again rather like admitting your mistakes. You've got to show that you're ready to accept, you know, a criticism of your view and, you know, in a free and easy way. And I think on the whole that's the way we did operate. Of course that's one of the great illusions everybody has about themselves, you know, so that I've got to be cautious! You'd have to ask somebody else, you know, whether that was really true or not. I can only...

MB Well, that's been a fascinating round up of the things that were happening at Mary's in that medical unit in those years. We're coming to the point of changing a reel now, and afterwards perhaps we can start to look at some of the synapses you made with Royal Society interests and other bodies, because it wasn't just Mary's, it was, it was wider. We'll come back after the change of reel, and start widening out.

SP Yes, sure. I'm happy to do that.