

# An interview with Hugh Davson

Conducted by Malcolm Segal and Tilli Tansey

At St Thomas' Hospital Medical School, London,  
13th March 1995

This is the transcript of an interview of the Oral Histories Project for The Society's History & Archives Committee. The original digital sound recording is lodged with the Society and will be placed in its archive at The Wellcome Library.



Hugh Davson photographed by Martin Rosenberg at St Thomas' in 1995.

- HD: About my schooldays. Well I went to one of the ordinary London public schools. My relations with my father, I suppose, were always rather hostile and looking back on it, I think he rather envied me rather than anything else. But if anyone had to stand up and battle with him over, say the right to play tennis on Sundays, it was always I who took up the cudgels. My elder brother was much more tactful and just stayed quietly in the corner.
- Q: You were the youngest, were you Hugh?
- HD: No I was the middle of eight. Which was quite useful really. It means that you are never jealous of anybody above you or below you. You just have your pecking order – eldest first always and if money was given to the whole family, say it was a pound note, well the eldest would have five shillings and the youngest would have sixpence and I would probably come in for two shillings. But it was always an established pecking order, which I think is one of the advantages of a large family. The only disadvantage is that you are not as well off as your colleagues at school were, because the money has to be divided amongst eight, instead of amongst one or two.
- Q: What did your father do, Hugh?
- HD: He was a general practitioner. A very successful one.
- Q: He was prosperous was he?
- HD: Oh yes, in those days an ordinary GP who was fairly good would earn a thousand a year, but my father managed to knock up three thousand a year.
- Q: It was the stimulus of eight children?
- HD: So he was able to send us all to universities.
- Q: Did you have servants and things? Which part of London did he practice in?

HD: Well I was born in Maida Vale and then he thought he would improve the class of his practice by moving to Hampstead and so we moved there. The matter of servants – well I would never be allowed to clean my own shoes. If my mother saw me going off to school with grubby shoes, a servant would be hailed at once and she would have to clean them on my feet and it made me a communist from a very early age really, just to see these poor little girls having to refer to me as Master Hugh of course.

Q: Did you have a carriage and that sort of thing?

HD: Oh yes, my grandfather had a carriage. But my father was more innovative and so he had a motor car. They were French cars in those days and I forget what they were, but they lasted forever. And if he wanted someone to go with him on his rounds to stop the car from being stolen, I would probably, if I was not going to school, be sitting there. And then when he came out of his patient's house, my job was to go and crank this car. Can you image turning an engine this high and if it backfired, it knocked you over. I can remember that, it wasn't a treat at all, but you had to volunteer for it.

Q: What was the school like?

HD: It was a good school in that they didn't flog you. My father alternated with us; he didn't want two boys of near age to go to the same school, so one went to St Pauls and I went to University College, and then St Pauls and so on. But St Pauls flogged them mercilessly, and even the monitors were allowed to beat the boys, but mine was a more modern one and they never touched me.

Q: Were things pleasant at school? Did they encourage you?

HD: No, one hated school, because the schoolmasters then were so utterly rude to you. They could make fun of you in front of the whole class and if you answered back, well God help you. You can understand what a horrid life being a schoolmaster was, year by year churning out the same stuff. But some of them were really unpleasant characters and they'd take pleasure in making fun of you. So they often took it out on me, because I never did any work you see.

Q: But you were quite successful weren't you?

HD: Well, only towards the end I started to pull my shoes and socks up. So for the two years before Matric (that was the equivalent of the O levels, but much stiffer exams – you had to pass in all five subjects, if you failed in a single one then you had to take it all over again). It's not like the O levels today; when my daughter passed, she passed in about ten subjects, and I just couldn't believe it. She's always held it against me, because I was so incredulous that she had passed! But you see, having performed badly to begin with I suppose, my father had a patient who was a businessman, and so the businessman said to him if you'd like to have one of your sons in my business. It was rather the equivalent of the Stock Exchange, you go as an apprentice and you earn nothing for five years and after that you make a decision.

Q: Was that the Tea Exchange?

HD: I think it was the Baltic Exchange. It was corn and shipping. There you could learn the whole business, an intelligent person, within a month or two, then you were just left doing silly things like accounting and bookkeeping and finally, fortunately, they fired me. And I think if

you want to go through my history, it was a matter of a series of accidents that I came out where I did. You remember that in one of Aldous Huxley's novels there is a schoolmaster there, a Mr Captain Grimes, I think, and he was accounting how he'd become a schoolmaster. First of all he went to business, but he defalcated there, so then he was put on his feet again, by being put into something else, and then he finished up "I was finally put on my feet by being made a schoolmaster here". I think I have been put on my feet more often than anybody else. So I have been put on my feet more often in a way.

HD: When they fired me you see I had to think of something to do. My elder brother suggested that I should go to college, because he was already studying medicine, but I didn't want to do medicine, so I did chemistry instead.

Q: How did you get in to do chemistry then?

HD: In those days you didn't have to do anything.

Q: Did you do Highers or anything?

HD: No, no, if you got Matric, you could go to any university you liked in those days. So at the age of sixteen I got my Matric I could have gone straight to University College and started medicine at sixteen and finished at twenty-one. That would have happened if I had gone straight there. In those days, you didn't really have an interview, you just filled up a form. As long as your father was willing to pay the fees, that was all that mattered.

Q: So he paid the fees?

HD: Oh yes. So then I did chemistry and then I realised that I was quite good at it. I was determined to get a First Class which I did. But then, like a fool, I admired the Professor of Chemistry very much, he was called Ingold [Sir Christopher Kelk Ingold FRS, 1893–1970], and I was so interested in electronic theory of valency I wanted to work on that, but in a theoretical way. He took me on, because with a first class degree there was a bit of competition for people, I then went to see him and he went up to a place like that [bookshelf] and took down a file and in the file was a problem. He said that's your problem – to hydrogenate some miserable compound, but first of all you had to synthesise it. So I spent about six or nine months, trying to synthesise it with nothing going right. I was dependent then on getting a grant, as my father wasn't going to pay my fees anymore, so I had to have a grant, so with a First Class Degree you had a certainty in your second year of research, but he refused to put me in for it and put some inferior person in instead.

HD: So I then went to Professor Drummond [Sir Jack Drummond FRS, 1891–1952] who was a biochemist with whom I had had a bit of contact, because I had attended some of his lectures and we were interested in the permeability of cell membranes, because he gave a lecture on that, and Danielli [James F. Danielli FRS, 1911–1984] and I both happened to be at it. It was the effect of calcium on an estuarial worm and when the tide changed it was able to adapt itself to the change in tonicity by having calcium there. So we thought up a structure of a cell membrane that would allow the effects of the calcium on it. The calcium would pull it tighter together. Drummond then took me on. Although he was just a vitamin chemist, he very kindly gave me laboratory space and told me to get on with it. Well, I had never seen a cell before. I can remember sending off to ox butchers, the best source of red cells. But first of all, you had to work out a technique for analysing – I chose potassium and sodium. Then I had quite a hard job there, but I managed to get going and I went along

quite well, and then it was a question of getting another grant and the only way, it was the depths of the depression, was for me to go and assist a successful eye surgeon and do his research for him. He had done some, but then become a professional surgeon and so he wanted to continue research under his name, but with me doing the work. I put my name on the papers as well. First of all, with his first, but after a time a plucked up the courage and put my name first.

Q: How did you meet Danielli?

HD: We were both fellow students. He was always better than me in the sense of passing exams. The results were always the same in all exams. There was a chap called Brightmore, who had an absolutely photographic memory. There was no competing against him at all. He could read something and recite it straight back, so he was always top and Danielli was second and then there was me. So it was always alphabetical, Brightmore, Danielli and Davson, but I couldn't really compete because I hadn't gone through the mill as Danielli had. He'd got a scholarship first – you have to be very well trained for exam purposes for that. Whereas I, of course, with my father willing to pay the fees I didn't have all that dreadful grind and I think so many students, in those days, were ruined by having to take scholarships. The only chance a poor boy had was to go through that and the schoolmasters must have been very clever in bring them on.

Q: So what happened to Brightmore?

HD: I've no idea.

Q: He just disappeared?

HD: I know he went into chemical engineering.

Q: But Danielli, how have you two got together?

HD: We were both in the chemistry department and as postgraduates we chatted together.

Q: He was working for Ingold as well?

HD: No I should have gone really to this other man called Adam. He was the surface chemist.

Q: Oh N. K. Adam?

HD: Yes, and he influenced us both very much. He came to lecture at University College just at a very critical time, just before we graduated. So that gave us a knowledge of surface films and that formed the basis of our thinking for so long. Well we are still right in a way, but, of course, the film was a much more complex system.

HD: To get to the next accident, to take up the eye as well. Do you remember Dr Johnson when he was on the Thames when the boatmen used to shout insults to each other all the time and he managed to produce the best insult of all time. He shouted "Sir, your mother under the pretence of keeping a bawdy house, is a receiver of stolen goods". So under the pretence of doing work on the eye, I was still working on permeability of cell membranes. But I did quite a bit on the eye, and then the time came when I had to get a teaching job and this job as Associate Professor of Physiology in Canada turned up at Dalhousie, so I applied for that and got it. So I went over there, but I spent the summer in America first, and as I crossed the frontier into Canada the war was declared.

Q: Was that Woods Hole?

HD: I went to Cold Spring Harbor, so did a man called [Eric] Ponder, who's a great drinker and he and I spent nice little evenings in a pub there.

Q: What experiments did you do at Cold Spring?

HD: On red cells. Still on red cells there. So we had to keep our own rabbits in a hutch, but you met quite a lot of interesting people there.

Q: At Dalhousie?

HD: I was the Associate Professor there.

Q: You had to teach all physiology there didn't you. Many of you?

HD: Well, there were just two of us. The chief took the first years, I'd do the second years and then we'd alternate. It was a matter of three lectures a day every week and then two practicals. But I got more research done in those two years that I spent there than anywhere else. You just arrived at nine o'clock, gave the lecture. At 10 o'clock you were in the lab and working and all the facilities were available to me, because the chief was completely useless. He had done no research, and never had you see. So that all the money that was available for research in the department, I had at my disposal.

Q: Who was the Chief?

HD: A man named Weld [Charles Beecher Weld, 1899–1991, Professor of Physiology, 1936–1965].

HD: Charlie Best [Charles H. Best FRS, 1899–1978], he was the most influential physiologist, and Weld was one of his pet students so he had pushed him into the job. But we had quite a good relationship there. When we started losing the war, I couldn't bear to be out of England at the time, so I very foolishly of course gave up the job and came to England and worked for the Ministry of Supply for four years. So after the war it was a question of going back to Canada, because the job was being held open for me. But my wife couldn't bear the thought. I remember in the middle of air raids we lived in Chelsea and as we were cuddled in the cellar, and I remember saying to her "well it's better than being in Halifax isn't it?"

Q: When did you meet Marjory, Hugh? [Majorie Heath, society portrait artist, m. 1931.]

HD: Well she was in the Slade School of Art. I picked her up there and we got married secretly when I was still living at home and that made my financial matters rather pressing and also she started having a baby rather too soon. So we started married life on the government grant then for research workers was £2.50 or £2 10 shillings a week, and you paid a pound and a bit for rent and the other pound and a bit went on food and everything else. So it lasted for a year, we did very well. We didn't borrow at all. Then I got an MRC grant to do work with the ophthalmologists and so that kept us going quite happily.

Q: Was that before the war or just after?

HD: Oh yes, before the war. Then I got a Beit fellowship before the war too. I can remember going to the chief for the Beit, for after three years you could then go on as a Senior Beit Fellow, and I went to see him, Professor Elliot he was called [T. R. Elliott FRS, 1887–1961]. I

said “is there any chance of my getting a renewal for the next three years?” He looked up and said “Well Davson, you know, you haven’t been doing any physiology”. The permeability of membranes wasn’t physiology in those days at all.

HD: So that tipped the balance, because I didn’t really want to go to Canada. Then I went there and then when I got back I linked up with Duke-Elder again and we founded this Institute of Ophthalmology, at which I was to be looking after the research on the eye fluids, which I did.

Q: That was in Judd Street was it?

HD: Yes, we started off at University College and moved to Judd Street, when the building was got ready for us. Then it turned out that I wasn’t very compatible with this man. I won’t say what a scoundrel he was, but if ever you want his character, if you read Macaulay’s essays and there is one on Barère that is the French Revolutionary. He describes Barère as really the worst character conceivable, in detail, and every detail fits this particular person. So to save me the job of saying anything, if you like to read it, it’s Barère. You may remember Robespierre, Danton, Barère. Robespierre had his head chopped off and Danton too, but Barère he should have had his, but he managed to sneak out of it.

Q: When you came back across from Canada, it was quite dangerous wasn’t it?

HD: Oh yes, they were sinking ships at a tremendous rate then. Fortunately, the Americans had just come into the war and they didn’t believe in the convoy system. I came in a convoy and you had two or three destroyers looking after you. The Americans didn’t believe in that, so the Germans immediately concentrated on the American shipping and left us in peace, so it wasn’t too bad. It was a frightening experience mind you.

Q: [Your daughter] Caroline was quite small then wasn’t she?

HD: Oh yes, she was about seven or eight I think.

Q: Made a big hit with the officers didn’t she?

HD: Oh yes, our ship was full of Australians who’d been training in Canada to join the Air Force and so when they trained there then they came to England for operations. So I can remember it well. I taught her how to play to chess. So she had this chess board, and I taught her, if you know the game, you can mate a person in three moves. And I taught her this mate and it’s called fool’s mate and she’d go hunting these chaps “have a game of chess will you?” and you’d see the sweat pouring off these chaps.

Q: When you came back to UC then, when did you write The Permeability of Natural Membranes?

HD: Well that I wrote before the war. I didn’t intend to take a doctor’s degree at all. But when I got this job in Canada, it came to me that I should have a doctorate, so that I had to do a DSc, but to do a DSc, you had to have an MSc first. So I wrote The Permeability of the Cell Membranes as a thesis really. Then I got my MSc the winter I went to Canada and my DSc the following year. Then I suggested to Danielli that we should combine together to make a book of it, so we split up the chapters and that’s the book. Yes I can remember we had great difficulty in publishing it. Danielli offered it to Cambridge, and meanwhile I was in America and I offered it to a very advanced American company called Interscience and they accepted it and it’s a pity really they didn’t have it, but Danielli said it would suit him better.

So although Cambridge Press had been saying nothing at all for a year or so, as soon as they had a firm offer from someone else they actually took it. But they were very sluggish and complete swindlers and they sold the American rights to their own subsidiary, which was Macmillans, so they sold the American rights for twenty pounds, which they were to have half of, so Danielli and I had five pounds each for all the American sales. Well that book was repeated again and again and again, but we never got any money out of them.

Q: When you came back then, where did you work. You went to Porton Down didn't you Hugh.

HD: Yes Porton Down for two years, but the danger of using gas by then was over there was no chance that the Germans were going to use it. So people were really sitting round, just keeping out of the war virtually. They were having a comfortable time in the country.

Q: You did a lot of work on shells didn't you?

HD: Yes, that's when I quit Porton and that's an entirely different matter. I then came to London to the Army Operational Research Group. It was a new organisation, so full of young scientists, whereas Porton was full of permanent government scientists, which was the absolute bottom. If you take class in those days before the war, the top people, one or two, went into research, the next swathe went into industry, the next ones went into school teaching, and the real bottom went into Government science. They were all in the top places – Lovatt Evans, for instance, he was my professor at the time. He was under some miserable person with a BSc and nothing else you see.

Q: And when you were working with the government scientists in London though Hugh, tell us the story about the infrared batallion unit.

HD: Yes, well one of the jobs was to develop the use of infrared for night work. So there were various devices for it. One you had a receiver, so that you put these binoculars up in front of you and you illuminated what you wanted to look at with an infrared source, which one termed as a search light. If you have ever tried to keep a search light going, it's very hard work. It wasn't an electric bulb, its two carbon arcs and to keep them always at the right distance was a tremendous business. So we had this search light and then after the war, I had a letter from the War Office, would I come and help them with their enquiries and I didn't know what I'd done wrong, but I thought perhaps that I hadn't got a signature for this search light. So that when I went to see them they said well you know what you have come for and I said yes, I think it was the search light. It turned out that I had been a communist when I was a student, and they wanted to know more about the activities of communists as students, because the Philby case had just come up. They thought if they knew how we behaved, they would know how Philby would be behaving at the present game. So that was my contact with them when I was helping them with enquiries.

Q: Didn't you analyse a German infrared division or something?

HD: Well yes, when the Germans had pretty well been overrun, the British captured their equipment and sent it over to England and I was in charge of making it work and demonstrating it to Generals and so on. So I had to learn how to drive a tank and all these army vehicles in the dark. You simply had a pair of binoculars which you looked through, so you are driving in complete blackness but you can see other people because you illuminated through your headlights.

Q: This was in London?

HD: Yes, or just outside. The office was in Roehampton, a girls' school. There's two roads, Clarence Lane is one, Priory Lane is the other, and it's just at the junction. And in the early parts, when petrol was scarce, the nearest pub you see was at the end of Priory Lane, so it was a good half hour's walk to lunch and back.

Q: Who were your colleagues?

HD: They were just people who'd been roped in, usually rather young scientists.

Q: Nobody you can remember. Nobody who has become famous?

HD: Oh no.

HD: So then, after that I joined up with [Sir William Stewart] Duke Elder [FRS, 1898-1978] with MRC funding it.

Q: And they built the Institute of Ophthalmology?

HD: Well, it was an old hospital, one of the eye hospitals converted. So then when I broke loose, I built up quite a nice team of people like David Morris and so on, but then I got to a point where I couldn't stand it any longer, so just to keep my integrity, I had to leave and fortunately the MRC didn't fire me quite, because I really expected to be fired, which is rather awkward with a girl at a public school and so. But they didn't do this. So I said I want to go back to University College, they'd have financed me, but they wouldn't give me any help at all. I could have a part-time secretary and an instrument-maker, Mr Purvis. If they hadn't given him to me, I don't know what would have happened. He was a most valuable person who I had trained at the Institute, so he came with me, and one girl technician. So I realised then that this is another of the times when I was being put back on my feet. When I went there it was a tragedy to me to have to cast aside everything that I had built up, but then I felt that I couldn't compete against younger people, because they were all working on my ideas, so I then thought that I'd better work on the cerebrospinal fluid instead of the eye fluids, so that really was a blessing in disguise because I had laid the foundations of the ocular fluids. The reason why there are so many people seeing today who would have been blind otherwise is because really of the work that I initiated as far back as well before the war. Although I made fun about working for Duke Elder I was doing quite serious work on it, and so by the time I had left the Institute, the basic knowledge was there, not entirely due to us but due to the Americans as well, but I had been well ahead of the Americans, because I had started in 1930. Jackson [Peter] Quilliam [1918–2003] was the first paper, I think, on the blood aqueous barrier. You see, the mathematics of all these barrier senses is really derived from my original two compartment equation. You'll find it in a paper on the blood aqueous barrier of the cat. In order to be able to change the concentration of potassium it was no use giving a cat an intravenous infusion. You'd just kill it, so we had an isolated cat head. In artificial circulation, real cat blood was put through it and finally we cut the head off with this new circulation, put the head on a tripod and then made your experiments and finally took the fluid from the eyes. I can remember at the Biochemical Society, I gave a demonstration of it. Can you imagine? A cat's head blinking away, the ears twitching.

Q: It would be instant death, I think, these days.

Q: Who was it at the Medical Research Council who supported you to move?

HD: It was all rather grudging support. It was Himsworth [Sir Harold P. Himsworth FRS, 1905–1993, Secretary of the MRC 1949–1968] and I think really if he had had any sense he would have just said look here you've done all the work at this place, you'll tell Duke Elder to go to hell and you'll take over. But unfortunately, I put myself in the position where I was the Deputy Director and he was the Director (end of side one)

HD: We were never short of money were we?

MS: [Malcolm Segal had been Davson's PhD student at UC after Davson's departure from the Institute of Ophthalmology] No. The funny thing was that UC in those days didn't bother to charge us any money for anything. One year, I remember, we had been using three rabbits a day, five days a week, and all the isotopes, and MRC wrote to Hugh saying that they'd cut the grant from £50 to £25 a year, as he hadn't used any of his money. UC had been paying all the bills. There was so much money around nobody worried.

HD: I think it was also false accounting, because suddenly they said I owed them for £50,000, and I was scared in case they tried to make me pay it. Eventually, they took up the bill, but I suppose year by year I had been receiving this account to say that we are allowing you £50 this year, and I thought it was the postage.

Q: When you moved to UC from the Institute, how did you do that Hugh.

HD: Well, that had to be done rather surreptitiously, because I needed quite a bit of my equipment and I can remember Charlie Evans, he was the Head Technician at University College and had always been a great friend of mine. He hired a vehicle and one Saturday morning we went into the Institute and pinched anything we could, including an operating table, and ran away with it.

Q: And set up at UC?

Q: Were there any repercussions?

HD: No, no.

Q: Could you say something more about Mr Purvis?

HD: Malcolm could probably tell more, because Malcolm worked more closely still with him. But whenever I wanted to do some new experiment, I would discuss it with him and he would design the apparatus for me. Then he would come and help us to use it in the laboratory. The trouble was always that he would take the apparatus away to improve on it. Remember that dropper when we wanted to measure the rate of flow through the brain? We wanted to perfuse the cerebrospinal fluid through the ventricles and so we were establishing a pressure and we just wanted to know how fast the stuff was dripping in. So he devised an electrically recorded dropper. But then it always had to be improved, and it took us a long time to get the experiments done.

Q: We kept the old model, you see, the initial model – the knock-up one, while he built the new one. And the day the paper was published Charlie turned up with the final superb model which I keep. And then there was always fun with Charlie and holidays. That big American car.

HD: Yes. I did a sabbatical year – the MRC gave me permission. It was the first time they gave me any help. There was a medical at Oxford, Bradbury [Michael W. B. Bradbury, 1930–2013], who had read my book on the ocular and cerebrospinal fluids and he had seen the work on the cerebrospinal fluid in which he was interested. And so he asked if he could come and work with me. Well the MRC had always said No he’s not going to have anybody working with him. He must look after himself. It turned out politically sound, because the Professor of Physiology at University College was G L Brown. Now he had gone to Oxford as Professor and had found Bradbury there, who obviously wanted to come and work with me and it suited him to send Bradbury to me. So he was sufficiently influential with the MRC, that he made the MRC give Bradbury a grant, which then enabled him to work in my lab, while I went off as a Visiting Professor to Kentucky.

Q: What did you do there Hugh?

HD: Well I set up an Institute. They wanted an Institute of Ophthalmology. So I founded their Institute for them. Just a few years ago they celebrated 25 years of it, so they invited me over to celebrate it. I took Purvis with me [C. E. Purvis]. Purvis and his family came as well. So they paid for him. He was appointed Instructor in Mechanics, I think, because then they could then pay him free of income tax, you see if he had an academic position. So he was either Lecturer in Mechanics or Instructor. Then he bought himself one of those enormous cars. In those days, the American car was getting bigger and bigger and this one was a very old one. Do you remember what it was?

Q: A Chrysler – a huge Chrysler.

HD: Yes either that or the other one – the General Motors one. So he not only used it in America all the time, but he then put it on the ship and brought it back here. Then, of course, on summer holidays he always had to have his six weeks (which I think you were allowed in the MRC). He always had to have the whole of that. And of course, he was so invaluable in the lab, I used to fume at times when he used to take his holiday very strictly indeed. But then always when he had finished his holiday he would ring up and say “I need a week’s rest after this”, so you had to wait another week for him. That was his only failing.

Q: He was a very thin man, a little tiny man, and he used to take this big American car to bits, this huge engine out, and rebuild it all the year, and it would always break down in Germany, or somewhere, and he would always meet a similar sort of person to him, and they’d rebuild it in Switzerland or somewhere like that. Then he’d need a week’s holiday to get over it. He built these lovely transducers for measuring pressures, very small pressures in the eye, made with a quartz fibre and a bronze dome, with a light lever. And, of course, these would break and until he was back to make these again, Hugh would get rather upset because the whole experiment was held up.

Q: When you were at UC, who did you have working with you?

HD: I relied entirely on foreigners. The first one was called Spetziane [Eugene Spaziani] – he was recommended from Los Angeles. And then, after him, came Chuck Keeman [Charles R. Kleeman]. He was a Professor of Medicine [at UCLA].

Q: There was Mike Pollay, wasn’t there?

HD: Yes Mike Pollay, a neurosurgeon. Then his chief finally came, Kelsey Welch, a very famous professor of neurosurgery. László Bito, an American [born in Hungary, 1934], and he was going to come to England. But I said I am going over to Kentucky and you obviously don't want to go to Kentucky, but he said "Yes, I want to work with you, so I'll come to Kentucky". So he did his post-doctoral one year with me in Kentucky. Then when I came back to England he came with me to do a second year. Yes, he has done a lot of very good work on prostaglandins, mainly.

Q: Bill Oldendorf? [William H. Oldendorf, 1925–1992.] When did he come?

HD: Bill Oldendorf yes. Well it was not so much later, because while I was in Kentucky, so it would be 1963 to 1964, I spent about two months at UCLA in Los Angeles and while I was giving a lecture, Bill Oldendorf, he was a neurologist, happened to walk by and he said that he heard an English guy talking. So he thought he would go and see what he was talking about. And he sat down there and he said to somebody "Who's that guy talking?", and somebody said "Well, it's Hugh Davson". He said "If you'd told me William Shakespeare had been on the stage, I couldn't have been more astonished and pleased" and so he came round to me immediately afterwards and asked if he could come and work with me. I think Oldendorf has written somewhere in one of his books of how he met me first. So he came over and did a year. That was really a very profitable year for him, because he learnt about cell membranes and permeability. Before that he had just been a classical neurologist, specialising in x-rays. But then he grasped the principles of measuring the blood-brain barrier so well that he developed a technique of his own which has now become the Oldendorf technique.

Q: Tell us about when he came to Devon to meet you Hugh in your cottage.

HD: I had a cottage in Devon which was about 8 miles from Barnstaple railway station, so we met him at the railway station. My wife was driving the car and I said "I've got my dog with me, would you like to walk?" Eventually we started off and I realised that he would never get up the hill – it was a very steep hill – and I told my wife the way I was coming, but I realised that if I did that I couldn't get him there. So I branched off and took a different route, and then we got lost and I can remember pulling him through hedges. Then we got onto a railway line and suddenly I could hear the train coming along the railway line. I got him off the track in time.

Q: He was rather a portly gentleman, wasn't he?

HD: The search party had been sent out for us, because we were so late and they finally picked us up about half a mile from the village. So he always refers to that as his Death March.

Q: Yes, it has extended now from what was 8 miles to about 15 or 30.

HD: He was telling Majory, my wife, about it and he said when Hugh said "would you like to walk 8 miles?" I thought well at least I've got Hugh to myself for several hours. He's got to listen to what I've got to say.

Q: He was initially one of the people that thought up the PET scanner didn't he?

HD: Oh yes, I was just looking at your encyclopaedia – Hounsfield – if you look there he was the person who got the credit for the x-ray brain scanner, but Oldendorf had devised a mechanical one, without a computer, and patented it. So when EMI came out with theirs,

he went along to them and said “What about me “ and they said “look your patent is no good. Then I saw him about a year later at a meeting, he said “ you know when I got back to America I went to a lawyer who managed to screw \$100,000 out of them and the consultants... But then he was done out of his share of the Nobel Prize – I couldn’t understand, because he was really counting on the money.

Q: Yes, because he had his own one for a while didn’t he and lost a lot of money. Your second book was?

HD: Yes, *Physiology of the Eye*. Well when I was working with Duke-Elder I also taught the medical people who were studying for the diploma in Ophthalmology. There was a DOMS (?) it was called and I had to lecture to them on the physiology of the eye and refraction of the eye. I always found the best way of learning something myself was to write a book on it. So I wrote this *Physiology of the Eye*, which is still going strong. If you want a bit more history about the books: When I’d succeeded with the *Physiology of the Eye* I was with the Managing Director of Churchills. We were going down to see the printing of the *Physiology of the Eye*, so I suggested would he like a General Physiology, about three or four hundred pages. So he sent me a contract for that and after about a year, I realised that it was going to be rather nearer a thousand pages, so I went and argued with him. But everything was so short, paper was so short, it had to be cut down. So it was only about 600 pages. I just really wanted to write that book. It was for no particular purpose. Then, of course, it was always compared with Bayliss’s. But I realised that mine was so much better than Bayliss’s!

Q: And then you wrote the Physiology of the CNS and aqueous humor?

HD: Yes. Well then when I moved from the Institute of Ophthalmology, I then took up the cerebrospinal fluid. Well then, the way to learn about cerebrospinal fluid was to write a book on it. That was, I think, a very brilliant account of the cerebrospinal fluid. The thinking then was completely chaotic. Every conceivable idea was put forward as to its origin, the way it was secreted, the way it was drained and what the nature of the blood brain barrier was. But I think that if you read my account there it stands out today exactly true. The only modification has been, we didn’t know where the actual blood brain barrier was. I came down to the fact that it was between the blood in the capillaries and the tissue. But why those capillaries should be different from other capillaries – there was no anatomical reason for it. But I can remember being argued with at the Royal Society of Medicine and an anatomist got up and said “you are quite wrong, these capillaries in the brain are just the same as the muscle capillaries”. I said well you go back and find a difference. And eventually they did. Not this particular stupid man, but a man named Karnovsky. You remember Karnovsky’s horse-radish peroxidase? Did he ever get a Nobel Prize?

Q: No.

HD: He really should have. Not only did he enable us to sort out the blood brain barrier, but the materials revolutionised anatomy. The whole anatomy of the nervous system is followed from that.

Q: And the transport, the tracing of nerves.

HD: They were just so silly with Nobel Prizes. Danielli and I could have had it or might have had it for structure of the cell membrane. But, in those days cell membrane didn’t matter. It was a completely unimportant part of the physiology of the organism. Elliott was a

revolutionary in a way. He came forward with the humoral conduction of the nervous impulse, yet he told me that I hadn't been doing physiology because I was working on cell membranes.

Q: Yes, it's quite funny really. When I was a student there was an essay "Prove that there is a cell membrane". Then you edited Starling [the textbook by Ernest Starling, later edited by C. Lovatt Evans, *Principles of Human Physiology*].

HD: Yes, that was a mistake. I got forced into that. G. L. Brown had been asked by the publishers if he would edit it himself. Well he obviously wouldn't do it himself, but he called the department together and said would anybody volunteer for it. Well I was busy writing my *General Physiology* – another edition of it. So no one volunteered at all, so eventually I said to Mrs Eggleton [M. Grace Eggleton, 1901–1970] who was beside me, "Would you help me, and we'll do it together?" So she said yes and so we took it on for two years. It was going to be an edited job and I remember giving the job of the central nervous system, which was about a third of the book, to Whittaker at Edinburgh at the time. When we were almost going into proof, he wrote to me and said "Well, I'm sorry I can't do it" and I realised that the whole thing would collapse if it wasn't done, so I stopped doing my research work for about three months, and I wrote up the whole of the central nervous system and that was a magnificent effort really, when you think about it. Because if you look at it, I consulted the original literature on all important points and I'd begun by knowing practically nothing and it was one thing that I hadn't given any lectures on or else I had done so in a rather elementary fashion.

Q: Do you think that it was an advantage you not knowing anything.

HD: Yes I think so, certainly I do. One of the things that made it possible really was the American Physiological Society had started their Handbook. The first five volumes were on the central nervous system and they had asked me to write about the cerebrospinal fluid, so that I gave them an article, and in return for that article they gave me the first five volumes, so I had them at hand.

Q: The other thing that intrigues me is the setting up of the Institute. You were asked to go out to Kentucky and you set up an Institute there. What do you think makes a successful institute. That's two you have set up.

HD: It was called the Institute of Eye Research I think. What has happened there is that the Professor of Physiology, called Rehn, he worked on the stomach, secretion of acid in the stomach. Well the Professor of Ophthalmology wanted to have some sort of Institute of Research, so he went to Rehn and said do you think if we asked Davson he would come. And he said well how can you ask Davson to come to an absurd place like Kentucky, and he said well if you are going to shoot for something, you might as well shoot for the moon. He came over and told me that and I was so touched, I thought I would go there. But of course, all they wanted was a name, because I was quite well known for my work on the eye at that time. So as long as I signed the necessary forms for getting grants of money. So I spent a great deal of time touring America – I was quite popular at the time – everyone wanted me to give seminars. I bought this new car and by the time I'd been there a year, I'd got fifty thousand miles on the clock. I'd decided to drive to California. If I gave a lecture in California, I drove all the way there.

Q: A good way to see the countryside. Do you think America's been much more receptive and appreciative of your work, than the British have?

HD: Oh yes, Americans always are. They always are more appreciative of everybody I think. That's what I like about them. When they founded this lecture, the Hugh Davson Lecture, I wrote back and said what wonderful people you are. You are not only very good yourselves, but you do recognise merit in other people as well. I'm sure no Royal Society or any other Society, would think of establishing a lectureship in England in honour of an American or German. It would always have to be in honour of an English person or Scotsman.

Q: What were your relations with the Royal Society. That was always a bit stormy wasn't it?

HD: My name was put forward in the usual way. Professor Lovatt Evans put me forward. But then I felt that they were not electing me and I realised in the end, of course, that I had written a rather poisonous review of a book called Progress of Biophysics. It was very badly done indeed and I put my name to the review as I always do and two biophysicists, one was at Kings, who were the editors of it and they ganged up against me. And, you see, the Royal Society can stop anybody, if you get just two or three people to blackball a person, he's had his chips. Professor Drummond was treated in exactly the same way. They got him because he was acting as an adviser to the vitamin firms like Glaxo. So he was blackballed. Then when the war came, the Government made him Scientific Adviser to Ministry Food. Then, of course, he was knighted after the war and then the Royal Society came along cap in hand – would you like to be a Member. Fellows have asked me if I would like my name put forward again, but I think if they have insulted me once, they can't have the honour. But it would be nice to be ranked with, say, Isaac Newton – so that's the only thing I thought about.

Q: When you finished at UC Hugh, you went to America for a year didn't you?

HD: Yes, that was when I retired. I had to retire at the age of 65. Then I was given what was called a Fogarty Scholarship. That's almost the American equivalent of a Nobel Prize financially. In fact, when I was there a Nobel Prize winner wrote to me for some advice, and I said well if you are thinking of having a Scholarship like this, I should think again because it's not very comfortable here. And he wrote back and said well I was put forward for one, but I was rejected! And he was Sir John Eccles, Nobel Prize Winner. They paid you the highest salary they could and they kept you free for almost the whole year, and then you could more or less go where you liked in the way of giving seminars and lectures round the country. I think I wrote one of the volumes, we had started on an Introduction to Physiology which went on and on and on. It got to five volumes. But I wrote one of them there. I think it was the muscle one.

Q: Then you had a big meeting there, didn't you as well?

HD: Yes, of course. It's all done at government expense. So I organised a symposium, because I was getting lonely in America, so that I could bring all my friends out and we'd have a symposium there. And, of course, they didn't know who I was inviting, so to my technician I said please invite Dr So and So. I gave her a title.

Q: Charlie as well?

- HD: Oh yes, Charlie as well. He was the head technician at UCL and then my little girl Gillian, she came. [Gillian was Davson's technician]
- Q: Charlie looked very distinguished didn't he?
- HD: Yes. He was the most distinguished Englishman.
- Q: Everybody thought he was a professor from England. It made his life really. Because it was the biggest thing that ever happened to him. He had seen the academics go off to conferences and Hugh had taken him to this very important conference in Washington.
- Q: This was Charlie Evans?
- HD: Yes.
- Q: He'd been at UCL for many years?
- HD: Oh yes, I can remember him as a boy when I first went there.
- Q: He wasn't your technician was he?
- HD: Oh no, he was a departmental one.
- Q: But you had a personal technician as well?
- HD: Yes. He counted towards it, when the MRC were financing things.
- Q: Then you went to Kings then didn't you.
- HD: Yes. Then I was going back to UC. In those days the MRC would give you an appointment, but on half a professor's pay and the law changed about employing people, so University College had to employ me. They offered me the job as Assistant to Professor. So I told them what sort of impertinence is this. Are you asking me to be an assistant to anybody and you can make me an Honorary Professor or nothing at all. They started arguing about it. So I went along to my former colleague, Mike Bradbury, and said would they make me an honorary professor at Kings and they said yes they would. So I arranged to shift from UC to Kings, but when I got everything settled there, all my apparatus there, the Kings people started playing the same trick again. At University College, before I left, they said alright we'll make you a professor, but we'll call it a Visiting Professor. But I had already arranged to go to Kings and so I felt it was a little bit wrong to do it. But to be done down in that way was rather annoying, but of course it didn't matter much to me. But Malcolm actually fixed it, so I'm now a Visiting Professor here.
- Q: An Emeritus Professor. You were made a Fellow of the UC weren't you. That's quite an honour.
- HD: Of yes, about '56 I think. Do you know the Fellowship of University College.
- Q: Only that it's quite an honour isn't it?
- HD: The only advantage is that they give you a free dinner once a year. They had a Professor called Annan. He later became Lord Annan [Noel Gilroy Annan, Baron Annan, 1916–2000]. Well he would make an after dinner speech going on for at least an hour and so that put an end to my dinner. So I've never been again. Because you see if they don't give you enough to drink – they are so mean – one little glass of sherry beforehand, perhaps a glass of port

to last through a sea of long-winded people. I think it was Karl Marx who described Jeremy Bentham as a “leather-tongued democrat”. I said I don’t want to hear this leather-tongued bureaucrat talking. But Annan, have you heard him? Oh, he goes on and on.

Q: No. But I have read his book.

HD: Oh, he has written a book has he?

Q: Yes, it’s quite entertaining, actually.

HD: He had all the servants waiting to clear the tables and he went on and on.

Q: You were very instrumental in bringing a bit of democracy to UC for women weren’t you Hugh in the Professors’ dining club.

HD: Yes, in the Professors’ dining club. They had a dining club and not only could professors be there, but people who were elected could be there. Any professor was automatically a member, except the women. I kept on at the annual meetings, suggesting that they should change it. I found that the best way to get the rule changed was to promise them a cheque for £100 for the wine fund. And it worked.

Q: This was 1970, 1975? Dame Kathleen (Kathleen Lonsdale) wasn’t a member – a Nobel Prize winner [sic] – but she couldn’t be a member of UC’s Professors’ Dining Club.

Q: Democracy seems to have been a very important part of your career?

HD: It’s been a handicap in the sense in that coming from a reasonably wealthy family to see poverty. So that I joined the Communist Party, which I should never have done really, because it means that you are booked forever. My name was down in the police records and then passed to America. During the war, or just after the war, they passed all that sort of information. So that, whereas I had been able to go to America backwards and forwards, once that information had been given, this is after the McCarthy business, then I had to have a special visa and so on.

Q: When did you join the Communist Party?

HD: Well, we had own cell at University College actually.

Q: This would have been in the thirties?

HD: Yes, about 1930 or 1931.

Q: Because you’ve read all the three books of Karl Marx haven’t you? The two ones in German.

HD: Oh yes, I was a theoretician, but you soon got tired of it. Such a gang of scoundrels those Communists were.

Q: But at that point, a lot of intellectuals, a lot of students were joining the Party weren’t they?

HD: Oh yes. But at the time, Labour seemed to be just incapable – we’d had a Labour Government – and they’d done nothing for the working classes and the ideal was that only a revolution could improve the lot of the working classes. It was really the war that brought such a thorough change.

Q: Your big hobbies Hugh?

HD: I have no hobbies.

Q: Yes you have. Shakespeare is your big interest in life.

HD: That's just ordinary living isn't it? That's not a hobby. I thought that playing tennis was a hobby. So I have no hobbies, I'm just fond of Shakespeare and Gibbon's *Decline and Fall of the Roman Empire* – they're just literature. I'm just what would pass as an educated person that's all.

Q: Have you always been interested in ... [literature and words? Did you think of making your career in that direction?]

HD: But at that time you were either a schoolmaster or nothing else, but if one could have taken a university course and felt that one might be able to write a novel, but there was nothing like that at all. In those days, you had a choice of medicine, science was rather unusual, so it was either being a schoolmaster as far as the Arts was concerned. Well there was medicine, the army, the church, I suppose that's about all there was.

Q: Did you ever feel tempted to write a work of fiction? Did you ever start one?

HD: No, no, no. I'm quite sure, it would be like, have you read Bernard Shaw's novels for instance? That's the sort of novel I would write.

Q: But you love reading don't you, and fine music. And your wife was a professional artist?

HD: Yes, she was a portrait painter.

Q: So you had both sides very much in your life.

HD: In fact, you must all come to my house one day and you can see her paintings.

Q: I would love to.

Q: Hugh gave me one of her early nudes that she painted you see. It was all rolled up, so I had it restored, and the shop who had this rather large buxom nude said to my wife who's very slim, "Oh is this a portrait of you?"

HD: Well, she has done three of his family. I bullied her into doing Malcolm. I pretended that he was paying for it. He paid for the other two, so I wanted her to do him before he died.

Q: Where's the portrait? You have it?

MS: Yes, Yes.

Q: Did she paint portraits of many physiologists?

HD: No. She would have done Bill Oldendorf. She's usually done families – she's very good at children. She did Kingsley Wells, but certainly she was incredibly good at children.

Q: Yes she painted Giles I always remember. She painted straight in oils, she didn't draw or anything and the first sitting she'd painted it really. She had three more, but that was just filling in the background. But the whole face, the eyes, particularly she was wonderful with eyes wasn't she.

Q: How appropriate!

Q: What I was meaning to say was that she could capture a look which was a private look which you, as a family member knew, and other people wouldn't. My mother hated it because she said he never looked like that. I said but that's how he was. He's got this wistful look. He's a very quiet boy and she captured it. And that one of Danny she captured. Danny came out rather devilish that one. I'm not sure he ever liked that painting.

HD: Well she made him look very handsome though didn't she?

Q: I don't know. I think there's another side of Danny none of us ever knew about.

Q: You must have seen some tremendous changes obviously in physiology? Looking back now, you've had a very chequered career? What do you think would happen if you were starting now? What do you think about physiology now?

HD: It's very difficult for a person like myself, because I'm very individualistic. I don't think I could join up with a team. Well to be starting again with Ingold. And it looks as though that's the only way research can be done now, isn't it with modern techniques with cDNAs and northern blots and western blots and so on. You notice that there is always about seven or eight people on a paper now. So it must mean that there are quite big teams working together.

Q: What was UC like with people like people like Katz and all that after the war. Was it very exciting?

HD: Well Katz was right upstairs with A. V. Hill. There were two professors and A. V. Hill was the Fullerton Professor, so he didn't do any teaching and it then became the Department of Biophysics, so Katz was always up there with his people and you didn't see very much of them at all. Then we were all in individual rooms and we usually just met at tea, usually at about eleven o'clock, which was an awful nuisance, because no one did any research except us really. You'd just started your experiments by eleven o'clock. I remember getting into trouble when a rather unpleasant character named Wilkie [R. D. 'Doug' Wilkie 1922–1998] was made Professor finally when I was there and his objection to me was that I was occupying space and I didn't attend these functions like tea in the morning. But his real objection was that he was a nobody and Andrew Huxley had been Professor, and Andrew Huxley wanted to give up the Professorship but stay at University College in the department, so that he would have had Andrew Huxley there, me there, and very little space for himself there, if he had needed it. So the first thing he did when he was appointed was to try and get me out. I remember I was told that he had circularised the whole department, saying "Do you really want Davson to stay?" They said we'd sooner have him than you!

Q: Tell us about the yard of ale story.

HD: Yes. It was a competition. Have you heard of the yard of ale. Well I was fairly good at it and I used to win it regularly each year, but then when Huxley was appointed I was told afterwards that he wasn't a drinker of beer at all, so he'd set it up in his laboratory on a retort stand just to get the angle right, but filled it with water and just practised with water.

Q: This was at the UC Christmas party?

- HD: So I went along quite carelessly. I didn't bother to abstain from drinking a lot, because that is what you should do to have a completely receptive stomach. So I was pretty full of beer anyway. Then I got my angle slightly wrong and it went down my face, but he won it with seconds to spare and year by year he did until finally Pascoe who organised it and acted as timekeeper and he cheated and made me win it.
- Q: Oh, I think we'd better expunge that.
- Q: Anything else?
- Q: No I think we've covered most of the points that we wanted to.
- HD: *The Physiology of the Cerebrospinal Fluid* – it followed from *The Ocular and Cerebrospinal Fluids*, so it is still going strong. We are hoping to see some proofs or the latest edition.
- Q: In the next two or three days. They've been promised to be here.
- HD: Oh good. Have you been on the telephone? You see, these people we'd arranged that we would hand the manuscript to them on January the 1st, not this January, but a year ago. Well then, when we gave it to them, they flew it over to America. But can you believe they flew a xerox copy over. Can you imagine a xerox copy being the same. There's always mistakes in them. So that wasted a few months and it came back again. So finally we agreed to put all the illustrations right. I wrote to him and said look here I think you have been making such an awful fuss, I don't think your company is capable of producing a book, so would you please give me a schedule. Then if I agree with the schedule, you can then have the manuscript. They gave me a schedule, month one was last April. This March now is month 11 I suppose isn't it? And by month 11 the book was supposed to be out. Yet we haven't seen a galley proof yet.
- Q: A common story. Do you come into St Thomas' every day and are you still working there now?
- HD: No my work is mainly reading and the library here's not very good. It's mainly to be sociable really.
- Q: That's a very important part of science though isn't it. Communication of ideas. Can I ask you one final question. Out of all the many achievements, and you've achieved enough for several careers it seems to me. What are the things you are proudest of?
- HD: The actual recognition that I am proud of is this Lectureship. [The American Physiological Society's Hugh Davson Lecture.] It feels that it is a very adequate reward, far better than an FRS or a Knighthood, and as to what I have done I don't know. I've always been more of a humble dot myself. It has always surprised me that I have achieved anything, but I suppose the *General Physiology* was the best thing I've done.
- Q: That's in your writing, but I think the big thing has always been the number of people you have helped, you have taught and inspired.
- HD: Yes that was always my idea. Never to get anything out of people, but to give them everything, so it always surprised me with, for instance, Andrew Huxley and Mike Bradbury, that he wasn't going to employ Mike Bradbury, because Mike Bradbury wasn't going to be to any use for his research.

Q: That happens quite a lot.

HD: Yes. It happens quite a lot with successful people. I remember I was on the Committee of the Hurlingham Club for some unknown reason and once a year they entertained the Wimbledon Stars to a luncheon party and then they demonstrated their tennis at Hurlingham. As a member of the committee I got a free lunch with them, my wife as well, and she was sitting next door to the manager of the American team and, just making conversation, she said "it's very nice meeting all these famous players". "Mam, if you want my opinion they are one lot of heels." And that's what you'll meet if you go round looking at distinguished people – you'll meet a lot of heels I can assure you.

Q: Yes one does, and I think the comments about people who get FRSs and Nobel Prizes are valid. This is one of the reasons why I wanted to make sure that we interview people who don't necessarily have those external awards, because in future time historians are only going to have that. Unless we can provide the records, they are going to think that science is completely Nobel Laureates, and they get a very skewed idea. It's not like that.

HD: My treatment was quite absurd, because we had a complete imbecile [who was made an FRS]. When they make an imbecile an FRS well?

Q: You don't want to be part of that club.

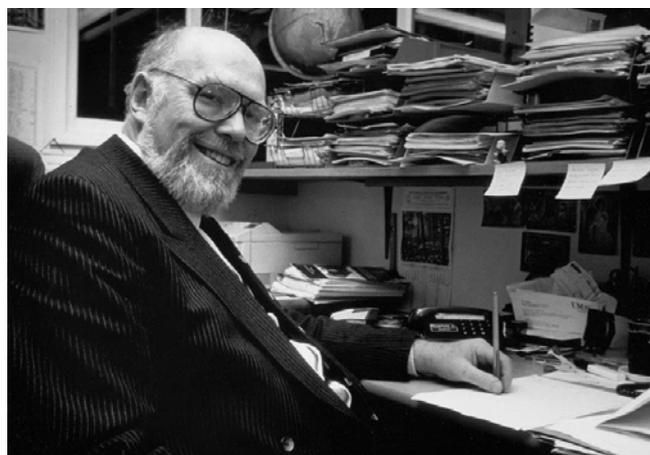
HD: Well, of course, it is a handicap. I could do much more for younger people if I were. You can always get money out of them if you are an FRS. That was my only disappointment really that I wasn't able to help people that I should have been able to.

Q: I'm sure you've helped people a tremendous amount.

HD: Well, in a limited way. I suppose a willing and impotent person is a better one than a potent one and unwilling isn't it?

Q: Yes I'm sure that's right.

Q: Thank you very much Professor Davson.



Malcolm Segal photographed at St Thomas' by Martin Rosenberg in 1995.



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