

VIDEO INTERVIEW TRANSCRIPT

Seaton, Anthony: transcript of a video interview (16-Aug-2016)

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Seaton, Anthony: transcript of a video interview (16-Aug-2016)*

Biography: Professor Anthony Seaton CBE MD DSc FRCP FRCPE FMedSci (b. 1938) qualified from Cambridge in 1962. He trained at Liverpool in general medicine, cardiology, and neurology. After senior posts in respiratory medicine in West Virginia, USA and Cardiff, he became Director of the Institute of Occupational Medicine in Edinburgh (1978-1990). He was also Head of the Department of Environmental and Occupational Medicine at Aberdeen University from 1988 until his retirement in 2003 (now Emeritus). His research from 1969 to 1990 largely concerned asthma and occupational lung diseases, and led to the development of UK protective health standards in coalmining, asbestos work, and the silica, wool, and polyvinyl chloride (PVC) industries. Throughout his career he worked as a National Health Service (NHS) Consultant, and taught respiratory and occupational medicine. He has written seven books and over 300 papers on respiratory and occupational medicine, and other topics, and has lectured on these subjects internationally. He was the Editor for *Thorax* from 1977 to 1981, and in 1999/2000 he was President of the British Thoracic Society. He chaired the UK Government's Expert Panel on Air Quality Standards, and sat on the Committee on the Medical Effects of Air Pollutants from 1991 to 2003, and the Royal Society's Working Group on Nanoscience and Nanotechnology from 2003 to 2005.

[1]. BECOMING A DOCTOR: FAMILY INFLUENCES AND RENÉ DUBOS

It was knowing that my father was a doctor. I hardly knew my father, because he went away in the war shortly after I was born. But I knew he was a doctor, I knew what doctors did, and it must have been the first thing I ever said was 'I'm going to be a doctor.' And when I went to my first school at the age of four, I announced that I was going to be a doctor, and from then on I was known at that school as "The Doctor". My father was a doctor, my grandfather was a doctor, my great grandfather was a doctor. So the family tradition was very strong, but no one ever put any pressure on me to become a doctor. It was just something I decided, and in retrospect it was the only job I knew. I didn't know there was any other job. My mother had been a nurse, but she was a housewife all the time I knew her. So that's why I became a doctor, and never regretted it.

I went to university, Cambridge, for the pre-clinical work. And then to Liverpool for the clinical three years. One particular episode was a lecture by our Professor of Medicine, Lord Cohen - very distinguished man - and he, in this lecture, referred to a book that had just been published that year or the year before, by René Dubos, who was a famous philosopher of science, a microbiologist, a soil microbiologist. He referred to this book, *The Mirage of Health*, and he recommended that we read it. We weren't a terribly academic group of people in Liverpool Medical School, but for some reason I went and got this book, one weekend at the local bookshop, and read it. And it opened my eyes to man's place in the environment of the planet. It's something that influenced me more than I can say, really. Everything I've thought about in medicine ever since has been derived from an understanding of man's place in the environment of the planet. It's led to all sort of good research ideas over the years.

* Interview conducted by Professor Tilli Tansey, for the History of Modern Biomedicine Research Group, 16 August 2016, in the School of History, Queen Mary University of London. Transcribed by Mrs Debra Gee, and edited by Professor Tilli Tansey and Mr Adam Wilkinson.

[2]. BECOMING A DOCTOR: TREATING PATIENTS, AND THE NHS

My idea of being a doctor - my ambition - was always to be a doctor without quite knowing what sort of doctor. As I went through my student years I wanted to be a hospital doctor, but I couldn't make up my mind about what sort of hospital doctor. But I was always interested in understanding patients, and why patients fell ill.

I was very much committed to the NHS. I remember medicine before the NHS, I had my tonsils out for example. It was an unpleasant experience in a nursing home before the NHS. I remember my mother having to pay the bills of the doctors, and that sort of thing, and I remember my first essay at school, at the age of about six, I was asked to write an essay having been told that doctors were going to be nationalised. I wrote an essay in favour of it. So I've always been a great supporter of the NHS; I never did private practice, and I was against private practice. But I took on a huge clinical load, and as a young doctor in those days you were one in two, one in three on call. There was no overtime payment or anything like that. You got away for two weeks every six months for a holiday. You were lucky to get a weekend off. The pressure was huge on you. You had to make your own career. If you wanted to do any research you simply had to do it in your spare time, and you didn't really have spare time. So research in the early days for NHS Consultants as opposed to academic Lecturers was very much finding the opportunity, making time, weekends, when you were off, things like that. Very difficult to fit anything in to your normal working day.

[3]. NEUROLOGY REGISTRAR AND CONFLICT WITH PRIVATE PRACTICE

I was a Registrar in neurology and general medicine. I'd done it because I was interested in neurology and wanted to learn, and you made your own career in those days. You had to apply for jobs. If you were lucky you got the one you wanted. I got this job in which I learnt a lot of neurology. My boss at the time was very much into private practice, and at that time there was a generation of doctors who had worked before the NHS and regarded themselves as honoraries, they called themselves "honoraries". My boss was one of those, and they seemed to think that they didn't actually have to come in and do their sessions, they let their Registrars and Housemen do the sessions. I was stuck with a boss who, though he was a very good neurologist, and when he did turn up he taught me a lot, but a lot of the time he just left me to do his clinics. On one occasion my wife was in labour with our first baby, and she had a difficult labour, and I rang him before the clinic, and said 'Can I go home a bit early this clinic?' The clinic would have finished at about five o'clock. And he said 'Well I'm not coming in myself, I'm afraid. I'm busy.' And this was his usual thing, I was quite used to that, but on this occasion I thought he'd make an exception in the circumstances. My wife had a very difficult labour, eventually a forceps delivery in the early hours of the morning, and I had his whole clinic to do, which kept me until six o'clock, worrying about her. And so I thought I'd get my own back on him, and I started, in the letters to the GPs [General Practitioners] and the Consultants who had referred, because other Consultants referred patients to him. I wrote 'I saw your patient in the unexpected absence of Dr X.' And someone got back to him and told him this, and you didn't say that to Consultants, in those days you had to treat them with the greatest respect, and I didn't, and anyway, I suspect it was Cyril Clarke, who was our Professor of Medicine, and Cyril, someone had told him and he called me on one side and he said to me 'Seaton, the proper way of starting your letters is 'I saw your patient on behalf of Dr X,' and I said to him 'Well I'm sorry, if you're not going to come up to this clinic, I'm going to say what I bloody well think,' and I continued to write that until I got another job. But he said to me, he looked me in the eye and he said 'Don't ever ask me for a reference.'

[4]. A MEMORABLE PATIENT (1): THE MRCP EXAM AND ASKING WHAT YOU'VE FORGOTTEN

I took the MRCP [Membership of the Royal College of Physicians] very early in my career; I took it when I'd only been qualified for 18 months, and that was the minimum time. I didn't expect to get it

because the pass rate then was 10-15%. But I got it through a great piece of good fortune.

I had a friend - as we all did in those days, when we were hoping to pass the Membership, we got a colleague, a slightly older colleague, junior doctor also - to coach. I did the same for younger people after I got it. And he said 'There's one thing you must remember when you've seen your long case,' as we called the patient you saw for half an hour, 'Don't forget to ask them if there's something you've forgotten,' because the patients of course have been examined by many students or candidates before. So I got my long case, and I examined him, and it was an easy one, he'd had, from a medical point of view, he'd had a stroke, he obviously had high blood pressure, he'd got all the signs of that. So I did all the things I should have done, then I remembered at the end to ask this question. I said to him 'Is there something I've forgotten?' He said 'Well, doctor, just one thing. The others have been taking my blood pressure.' And I'd clean forgotten to do it! I mean I knew it was high, his heart was big, he had all the signs of high blood pressure, but I'd just not measured it. And thank goodness, that man, I owe my career to him, and I don't even know who he was.

[5]. A MEMORABLE PATIENT (2): AN INDUSTRIAL PAINTER, SOLVENT EXPOSURE AND BRAIN DAMAGE

All through my career I did continue as a doctor, as a clinical doctor, though my responsibilities in the latter part of the last 12/13 years of my career were small. But I continued as a doctor all my career. I always thought that for a medical scientist it's quite useful to be medical, a lot aren't nowadays of course, we rely very much on non-medical scientists. But to be in contact with patients does occasionally give you ideas, and I've got a couple of examples I could talk about. One was a patient who had a neurological complaint that no-one had been able to diagnose. It was a mixture of various diseases, motor neurone disease, multiple sclerosis, and it looked like a number of different diseases, but no-one had ever found out what it was. I was asked to see him by a lawyer, actually, because he was claiming for an industrial injury. And I realised that what no-one had ever asked him was what his job was. I went in to some detail in his job, and he was being exposed to very high concentrations of organic chemicals. He was a painter, and he was painting in the military, and he was painting inside submarine tubes, the tubes for torpedoes. And he was exposed, we estimated his exposure was very high. So I thought, I knew a lot about solvents, and their effects on the brain, but there was a great deal of argument about whether solvents could actually cause serious brain damage, or perhaps cause things like multiple sclerosis or motor neurone disease. A lot of debate about that. And as a result of that I managed to get a research grant to study all the painters in that workplace. To cut a long story short, we found some very positive and interesting associations between solvent exposure and neurological damage. That led eventually to a big grant, a European grant, to study chemical exposure in Parkinson's disease, in five countries across Europe. That wouldn't have happened, unless I had an early interest in neurology, which I was able to take up in the last decade of my career, doing epidemiology and neurology. It has now led to an interest in the environmental causes of dementia, which I'm pursuing with friends in my retirement. So that's one example.

[6]. A MEMORABLE PATIENT (3): A SHALE MINER AND PNEUMOCONIOSIS

Another example was a patient I was asked to see after an operation on his chest. He'd collapsed, there was a minor complication which I was able to help the surgeons sort out, and when he came round from his illness, recovered from his operation and the complications, turned out that the operation had been to remove something in his lung, which happened to be pneumoconiosis, rather than cancer, as they had thought. Pneumoconiosis is a dust disease of coal miners, so I asked him what coal mine he worked in, and he said he didn't work in a coal mine, he worked in a shale mine. At the time it was not known that shale mining, which was extinct actually, the industry had closed about 20 years before. But it wasn't known that it caused pneumoconiosis, so I burrowed around and found some more cases of pneumoconiosis in shale miners. This was the time of the oil crisis in the 1980s when the Arabs had put the price of oil up, and the Americans got very panicky and started exploiting shale in the Rocky Mountains. They wanted information on the hazards of shale mining,

and I was able to get a grant from the US Department of Energy to study the effects of the shale mining on people in and around Edinburgh, which had been the centre of the shale mining industry from the 1850s up to the 1950s. So that was another example of the link between a patient and a research grant. I've always been a believer in having someone in medical science who's actually in contact with patients.

[7]. OCCUPATIONAL HEALTH: ASTHMA AND DIET?

Briefly, the asthma in the population, the prevalence of asthma in the population fluctuates. And in my lifetime it has fluctuated upwards - more and more people seem to have developed it. This has happened in the past, actually, but it wasn't always appreciated, but it fluctuates. That tells you that there must be an important environmental influence, and back in the 1990s, early 1990s, it occurred to me that the most likely environmental influence was diet, because I'd seen diet change from a good diet after the war, our diet was planned of course, it was planned to give us just enough of what we needed, and there was no excess, because there wasn't any excess food in those war years and post-war years. And then I saw the rise of junk food, the fall off of eating fresh fruit and veg, and thought 'There's something happening here.' You'll be aware of the Barker hypothesis that things that happen when you're in the womb have an influence on you later in life, for example it can affect your risk of getting high blood pressure. And it occurred to me that that might well be the case with asthma. And thinking about it I thought it was probably lack of fresh fruit and veg, and the vitamins in them, that would be responsible for the rise in asthma, so that started off a research programme which is still going, and there's something in it. It's not entirely right, but vitamin E seems to be important. And perhaps selenium; that's two things we've shown, if you don't have enough of those when you're pregnant, the child has a greater risk of getting asthma, and it's as much as a three- or four-fold risk of getting asthma, so it's quite a strong effect apparently. We don't know exactly what it is, but it's the foods containing vitamin E and selenium particularly, and vitamin D to some extent, that seem to have an influence on the risk of asthma. So that's one environmental observation that I made, that turns out to be at least half right.

[8]. AIR POLLUTION, FIBRINOGEN AND HEART ATTACKS

In the 1980s it became obvious that people were dying of heart attacks during air pollution episodes, and the question was why. And no-one really had any good ideas as to why. And it occurred to me; it was serendipitous we'd been discussing it at a committee meeting on air pollution, and I went home rather tired that Friday evening, got home, and *The Lancet* had just arrived. And I picked it up and there was an article in it by Kay Tee Khaw who was Professor of Gerontology in Cambridge, looking at fibrinogen levels in the blood, through the year, and noting that they changed, and they went up in the winter. And reading this I thought 'What is it that's causing these changes in fibrinogen?' Fibrinogen is a marker of inflammation. It occurred to me that a marker of inflammation and infection, which is what they were thinking of in that article, but why not air pollution? Air pollution is tiny little particles, rather the same size as bacteria, that you inhale in large numbers, and the idea came to me that there is something that the body thinks is bacteria coming in, it puts up a defence against the bacteria, and that's an inflammatory reaction. That inflammatory reaction then causes fibrinogen to be produced, that's a clotting factor that causes heart attacks, because it's a coronary thrombosis. Very simple idea, but based on my knowledge at the time, that air pollution was actually millions of tiny tiny particles the size of bacteria. And at the time air pollution was measured in terms of the mass, the weight of it. And in my article that I wrote in *The Lancet*, I said it's not the mass, it's the number of particles, and the body is presented with a mass of things that it thinks are bacteria, and it produces an inflammatory reaction to protect against that. Side effect of that is increasing blood clotability, and that increases the risk of heart attack. And it was a "eureka" moment actually; I remember it to this day, as it occurred to me. I went straight on to the phone to my friends, two of my Registrars at the time, and the chap who worked with me at the Institute, who had worked with me in toxicology. Got them together in the pub the next day, the next evening, we had a pint of beer each and talked about it. Then I went home and wrote it, sent it to them for their comments and

changes, and sent it to *The Lancet* the next day. And it's been cited 1,600/1,700 times so far, and is still being cited. And that was the sort of medical triumph of my life I think. That was the thing that I think of as being the best day of my life, the day I thought of that idea.

[9]. THE INSTITUTE OF OCCUPATIONAL MEDICINE, EDINBURGH

I suppose the achievement that I am most proud of was the Institute of Occupational Medicine. It was a multi-disciplinary institute. It gave me an awful lot, it educated me in working with other scientists in different disciplines, younger people, older people, from physics, chemistry, environmental sciences, measurement sciences. We had a big staff of these people. We were owned by the Coal Board, but we were a charity - a research charity. We were paid by the Coal Board. As time went by and the years where Mrs Thatcher was Prime Minister - which coincided almost exactly with my directorship of the Institute - the Coal Board was closing itself down, or being closed down, and we were going to be a victim of that. And my proudest achievement was to have solved that problem, and to have enabled it to become independent as a self-funding charity. And we succeeded in that in 1990, and it is still going strong now. Entirely self-funding, doing research into occupational and environmental issues.

[10]. RETIREMENT AND CLOSURE OF THE DEPARTMENT OF OCCUPATIONAL HEALTH

I suppose the only major failure has been my Department in Aberdeen, because it was a new Department when I took it over. I built it up and it built up a nice reputation in air pollution research and environmental research.

It had built up quite nicely and the time came to retire, we had a good programme of neurological research going on in relation to solvent exposure. We had a programme of air pollution research. I persuaded the University, which was pleased with the way we were going, to make a proleptic appointment of my successor, who came and overlapped with me for a year. But within two or three years he resigned to go down south again, and the Department closed, and that was a big disappointment to me, very big disappointment. But two of the people from the Department are still very active and doing very well, and pursuing the sort of research that I started. That's the only thing that comes to mind that's a disappointment, I think.

For someone who's been as busy as I have over my life, retirement should be a shock. It was cushioned very much by being on, for a year or so, the Royal Society Nanoparticles Committee. Then getting my colleagues together and urging them to start writing research grants in nanotoxicology, and how to measure nanoparticles, and assess exposure to nanoparticles. And that was something I did with friends at the Institute, which I went back to after I retired. And so I kept a sort of interest in research, which I'm continuing now in Alzheimer's disease, and environmental factors. I continued my hobbies, one of which has been writing essays, I write essays regularly for publication now, on all sorts of environmental and political topics. And art, which I enjoy as a hobby. I still feel that there aren't many mornings when I wake up and think 'What shall I do today?' For retirement I think when you wake up and you think 'I've got nothing to do today,' that's the time to die.

[11]. CHANGES OVER A CAREER; VALUE OF THE NHS

Changes in medicine. The biggest change in medical research has been the takeover of everything by genetics. I had the opportunity of going into genetics with Cyril Clarke very early in my career, and turned him down, which was a bad career move. But it just didn't fit with what I was interested in. I was interested in the environment, although latterly it has become obvious to me that the environment is an important determinant of the genome. And that's not been widely appreciated, though I've understood that for at least 20, probably 30 years. So no, the biggest change has been this influence of the human genome on research, and the need to put genetics into research grants to

increase your chances of getting them. So for an environmental researcher, that has been a harmful development. It's made it more difficult to get research grants, particularly if you're somewhere away from big centres.

In terms of medicine there have been dramatic improvements in medicine from my early days, absolutely dramatic. I'm a beneficiary of cardiac interventions, myself. I had a heart attack when I was President of the Thoracic Society, the day I was giving my presidential lecture *etc.* I managed to cope with it and my brother took me off to his hospital, and I eventually had a stent put in. But the improvements in medicine, which are so ill-appreciated, I think, by the population, who just hear bad news about the NHS. The NHS is a wonderful institution that gives cut-price first-rate medicine for everyone, wherever they come from. So the changes have been so dramatic it's difficult to crystallise them into anything other than how lucky we are, and how lucky my generation is actually, to have lived through the war, to remember what it's like having bombs dropping around you, to go through the days of privation, of real hardship post-war, rationing, mother scraping to get food together for your large family. Even in the professional family. And actually to see how the welfare state - let's not gloss over it - the welfare state has made life so much better for my generation and every generation since. And sad to see how little it's appreciated by younger people now, who rather take things for granted. Recommendation? Go and live in America for a short time and you'll soon realise what the NHS gives you, or the welfare state. And sadly, it's a feature of many of my post-retirement publications, sadly it's Government failure to appreciate this, and the population getting more interested in, well, selfishness really, taking things for granted, not realising you have to pay for it.

[12]. FUTURE PROBLEMS AND DIRECTIONS: CLIMATE CHANGE, CONFLICTS AND COGNITIVE DECLINE

Some things are predictable, but scientists asked to predict are notoriously unsuccessful. That's well known. But there are some things that can be predicted. One is climate change, that's happening, I've had a mission since I retired and since before I retired, to explain climate change to lay audiences, to try to pass the messages round, and I'm glad to see that's happening. We have to prepare for climate change, we all have to do something about it. Everyone personally has to do something about it, and has to try to persuade others to do something about it. There are some very positive things happening now, thank goodness. Wind, wave, tidal power, things like that. And that is something that the young generation has to confront. We're responsible for it, our generation. It is a heritage which we're passing on to the younger generation, they have got to get used to times not being as good as they have been. Children born now are not going to be as well off as we are, I think. And that's ok, because we know people can adapt, that's what it's all about: health and illness are related to adaptation, to the environment, and the human species is having to adapt. One way to adapt is by migration, and we're seeing that now. And it's not just the human species, it's all species migrate, and that's not something that you can stop, it's something you have to be able to keep under control, and accommodate too. So that's a prediction, that is going to cause more wars, more disputes, more disputes for land, for energy, for food, for water. The other thing is the aging population. My last interest in my life is what environmental factors influence cognitive change in older people. From a research point of view, if I was starting now, that's where I'd be. Looking at environmental influences on cognitive change. And I've got some ideas.

[END OF TRANSCRIPT]

Further related resources:

1. Christie D A, Tansey E M (eds) (2005) *Short-Course Chemotherapy for Tuberculosis*. Wellcome Witnesses to Twentieth Century Medicine, vol. 24. London: University College London.
2. Hart P D, Tansey E M (1998) Chronic pulmonary disease in South Wales coal mines: an eye-witness account of the MRC surveys (1937-1942). *Social History of Medicine* **11**: 459-68.
3. Jones E M, Overy C, Tansey E M (eds) (2016) *Air Pollution Research in Britain c.1955-c.2000*. Wellcome Witnesses

- to Contemporary Medicine, vol. 58. London: Queen Mary University of London.
4. Ness A R, Reynolds L A, Tansey E M (eds) *Population-Based Research in South Wales: The MRC Pneumoconiosis Research Unit and the MRC Epidemiology Unit*. Witnesses to Twentieth Century Medicine, vol. 13. London: University College London.
 5. Tansey E M (intvr); Tansey E M, Beanland S (eds) (2016) *Moore-Gillon, John: transcript of an audio interview (29-Apr-2016)*. History of Modern Biomedicine Interviews (Digital Collection), item e2016126. London: Queen Mary University of London.
 6. Tansey E M (intvr); Tansey E M, Beanland S (eds) (2016) *Moore-Gillon, John: transcript of a video interview (29-Apr-2016)*. History of Modern Biomedicine Interviews (Digital Collection), item e2016127. London: Queen Mary University of London.
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