Tuesday, 24 April 2012
Lister as Pathologist

DR SAM ALBERTI: Ladies and gentlemen, welcome to the Royal College of Surgeons. My name is Sam Alberti, I work here in the museums and libraries and it's my great pleasure to welcome you to the climax of our Lister commemorative season with a wonderful talk by Sir Roddy MacSween on Lord Lister as a pathologist.
Now you will hear a great deal about Lord Lister over the next 45 minutes or so. I will just say a couple of words about Professor MacSween. He was educated at Inverness and Glasgow where he later became Professor of Pathology and consultant pathologist to the Western infirmary there specialising in the pathology of the liver. He was president of the Royal College of Pathologists at the end of last century - actually that makes it sound so long ago – in the 90's! [laughter] He was chairman of the Academy of Royal Colleges and member of the GMC, amongst many other roles and responsibilities. He is famous as a textbook author and as editor of the Journal of Histopathology. It is appropriate, perhaps, that we have someone from north of the border in our Lister series, despite what our colleagues at King's College might tell us I understand that Lord Lister did spend some time in Scotland! And it will be on his work as a pathologist that we will hear about this wonderful talk and some wonderful illustrations. Sir Roddy. [applause]

SIR RODDY MACSWEEN: Thank you very, Sam I think that's the first time I have been introduced and told that I'm going to give a wonderful lecture. I hope I justify that billing! In reference to my Scottish background, it is entirely appropriate because Lister did his seminal work in part in Edinburgh, but he published his seminal work on suppuration and abscesses and compound fractures when he was in Glasgow as you will hear. I think first of all we should try and put this in perspective. I know that many of you are lay members and not medical, but we ought to see whether Lister really qualifies to be a pathologist. My interest in this arose as a result of having access to Lister's microscope. He had worked in the Royal Infirmary and they were transferring the microscope from the Royal Infirmary to the Hunterian museum at Glasgow University and I was asked to look at it and to my delight there was a little packet of stained sections and slides in the microscope box and I thought, my goodness, this is marvellous, we have some of Lister's original microscopic preparations. But of course I was sadly out of date because Lister was working in the 1850s and 1860s and really histopathology and stained material didn't really appear until the turn of

the century.
On the other hand, morbid anatomy, or the undertaking of post-mortems, was common from the Middle Ages and people like Rokitansky in Vienna were able to report on a series of 30,000 autopsies. So Lister did undertake autopsies when he was in the college of surgeons here and he qualifies here certainly as being a morbid anatomist. Now, the other important component of pathology of course is the examination of tissues, of stained tissues and this is where you become a histopathologist as well as a morbid anatomist. Now, the truth of the matter is that the staining techniques which we now use really evolved at the end of the 19th century, and dyes like haematoxylin and eosin were not introduced into the 1890s and 1900s. The discovery of staining cells and tissues arose accidentally, because anatomists were injecting gel tin carrying dyes such as carmine into vessels to outline the blood vessels and various tissues and they noted that carmine in particular leeched out of the vessels and stained some of the nuclei adjacent to the vessels and out of that arose experiments looking at various stains which would stain the tissues and provide a slide in which the details were outlined. But before that, there was an interest in examining cells and this was done largely as a result of cells which were spun down from fluids or the preparation - - or touch preparations - - where you took tissue and you put it against a glass slide and then you examined that while it was mounted in water or in acetic acid which seemed to outline the details of the cells a lot better.
Now, Lister did not have access to these, but he did use tissue preparations, as you will see, to examine some of the cellular details and he was familiar with cellular pathology because Virchow in 1860 had produced his book on cellular pathology and Lister was familiar with it and in fact he wrote to Virchow and said that Virchow had swept away the false and banned theory of a structuralist blastema and established that organs consist of cells which are derived from existing cells as progeny. Now that sounds a bit complicated but what he was saying was all tissues comprise cells and the cells present in any tissue had come from a progeny that had been there since the organ was formed.
So in summary, therefore, Lister was an accomplished morbid anatomist, and in addition he had some familiarity with cytology, but he was not a histopathologist. The other aspect of this which is important is that we are talking about the 1860s and 1870s when surgery was restricted to tissues which were outside the thorax and outside the abdomen and therefore he dealt with the limbs, with the head and neck, with the thyroid, with the breasts, with the genitalia and it was just at the beginning of the stage where ovaries were being looked at and

ovariotomy was being introduced and this was done by sticking needles into the ovaries particularly cystic ovaries in females and taking out material from there, that which were being looked at but he really did not have access to the kind of tissue specimens which are normally now sent to the pathology department. So that was the limited area in which he was working.
This is the Lister room in the Royal College of Physicians and Surgeons of Glasgow. Here we see the Lister room - - oh sorry. Here we see a plaque for Lister and here in the background is the table on which he operated when he was in the Royal Infirmary. So we have established proof that Lister was in effect a Glaswegian. [laughter]
Now I think it's important to look at the chronology of Lister. He was born in 1827, in Essex, and we will go over some of this later on. He came to the University of London in 1844 - - sorry. In 1844 and he studied at the University College Hospital. He was a Quaker and non-conformist and therefore he could not get into Oxford or Cambridge, nor could he get into the well–established London teaching hospitals. Instead he went to UCL which was referred to as the Godless college because they admitted non- conformists.
He then became a house physician and house surgeon at University College Hospital, and he graduated in 1852 and simultaneously became a fellow of this college. He was later to serve on the council of this college and at one time he became eligible to sit as president but he opted not to, because he didn't approve very much of institutions such as this, which he thought were largely responsible for awarding degrees and really didn't undertake significant clinical work.
He went to Edinburgh in 1853, and this was as a result of the contacts with Professor Sharpey at University College Hospital had with Edinburgh and in particular with Professor Syme who was the professor of surgery at Edinburgh and he went there initially for a six month period but in fact one of the next tranche of house surgeons failed to turn up or didn't take up his post and Lister got a second six months appointment. Fate was certainly playing a hand in things because the University College Hospital had also approached a Dr MacKenzie, who was expected to come back to University College Hospital and become a lecturer. He unfortunately - - this Dr MacKenzie - - he unfortunately contracted cholera during the Crimean War and he left a vacancy at a lecturer level which Lister got and this was in 1855. That was in Edinburgh, sorry. He came to Glasgow in 1860 and was there for nine years and he was appointed initially as the Regius Professor of surgery and he did not get a clinical appointment until a year later because the professor of surgery or the clinical professors did not necessarily have immediate access to beds. It

depended on the managers and the managers were extremely powerful in determining who was the Regius Professor of surgery. He had a bad time in Glasgow. When he applied for the chair in Glasgow there were seven applicants, five of whom came from Glasgow and two of which came south of Glasgow one of which was Lister himself and he was appointed and the press took this up and said they couldn't believe that Glasgow had to go to Edinburgh to get their regius professor of surgery. In addition the managers did not take kindly to Lister. He made very considerable demands on bed facilities and access to the clinical material which they were reluctant to give him. He had important associates in Glasgow, in particular William Thompson, who was the professor of natural philosophy and who was to become Lord Kelvin and it is interesting that they both became presidents of the Royal Society and Lister succeeded Kelvin as president of the Royal Society in 1895. It was in Glasgow, as I said -- it was from Glasgow that he reported the important paper on compound fractures, abscesses and suppuration.
A series of paper appeared in the Lancet and they detailed the success that he achieved as a result of introducing antisepsis or antiseptic conditions when the surgery was being carried out and this was revolutionary and people thought "Aha, this is remarkable that we are now able to operate with some kind of aseptic so far as the wounds were concerned" and this is what established his fame, of course.
He then returned to Edinburgh in 1869 to 1877 and then sought a post in London. He was unhappy in the Scottish scene and had applied for a post in London and applied for another post at one of the London hospitals and he was trying to get out of Scotland, in particular he was anxious to get out of Glasgow where he was far from happy. He then came back to London for the period 1877 to 1900 and he was the professor of clinical surgery at King's and he retired in 1903 and he died in 1912 in Kent. He had married Agnes Syme, Syme's daughter and this of course added as a further attraction for him in Edinburgh. She died in 1893 in Italy and she was buried in West Hampstead cemetery. When Lister died there was a proposal that he be buried in Westminster Abbey you he declined this and he wanted to rest instead beside his wife Agnes in Hampstead. And this is the gravestone. Not very well looked after. I went out there to see it and I thought, maybe the London college should do something about maintaining the appropriateness of such an important ...
Now, if we look at Lister himself, he was born in 1827 in Kent. His grandfather had been a wine merchant who had come from London to Glasgow and established a very prosperous wine business. His father was also involved in the wine trade but he was quite an accomplished

scientist and in particular he was interested in microscopy and he made major contributions to the development of the achromatic lens and achromatic objectives and he was made a fellow of the Royal Society in his own right in 1832. He and young Lister were very close and they maintained exchanges of letters between the two of them until his father died in 1880. This is the house - - sorry. This is the house in Essex where Lister was born and he clearly had a very comfortable existence as a member of the house. His father was also a distinguished linguist and his father was also a very good painter. All these things Joseph took an interest in. His father was also a distinguished watercolourist and this is a page from Lister's diary as a young man in which he is - - sorry - - showing a picture of one of his starlings and then there is a detailed history of the lineage of the various species of bird and you can see the delightful and detailed drawing of this starling.
There was one other instrument which he used, namely the camera lucida. I don't understand optics, but essentially the painter here is looking with half an eye on the paper in which the drawing is taking place, and at the same time looking at this lady and he is super- imposing aspects of the lady's features on to the drawing in front of him and it was possible to do the same with histological materials. These are the optics of it, we need not go into them.
Now, during his time as a house surgeon at University College Hospital, Lister undertook cytological examinations. He looked at touch preparations and he then looked at tissue preparations and this is a section of scalp which was wrapped up in a piece of paper and then wet and he cuts very thin sections and out of that came a cross- section of the scalp and you can see here the surface, you can see the hair follicles and then you can see the sebaceous glands and he did studies on the iris and various other smooth muscles did Lister and these were published in the journal of the microscopical society so he was already establishing himself as not only a morbid anatomist but a cytologist.
Now let us look at the materials on which this lecture is based. All this material which I'm going to illustrate is in this college, because Lister left all his memorabilia to the college with the exception of the three caskets that he got as a freeman of Glasgow Edinburgh and London and these are lodged in the Royal College of Surgeons in Edinburgh but all the material in this lecture is in the archives of this college and I was given permission to work my way through them and display these which Lister prepared. If you were all medicals I would be asking you for a spot diagnosis, but I will not do that. This is psoriasis. This is Lister's signature on it down here. Here we are. And here we see a beautiful drawing of very bad psoriasis, in which you can see the hyperkeratotic

areas and in between them you can see these haemorrhagic congested areas which are inflamed and this is a magnificent watercolour of a very common skin condition.
This is ichthyosis, which refers to a fish- like condition of the skin, in which you can see these hyperkeratotic areas interspersed with the non - involved areas and this again was a dermatological diagnosis, the dermatologists didn't know what caused it and they had very complicated names for this which need not concern you.
Scurvy, this is from the forearm of a man of 28 and you can see the scurvitic lesion here with areas of haemorrhage. Then in addition a very characteristic feature, that there is hyperkeratosis, or the keratin layer around the hair follicles are thickened and hyperkeratosis around the skin and scurvy at that time was not uncommon.
Here is a melanoma which was restricted from the upper arm of a man of 45. Here is the lesion, here, you can see the black pigmented area above the skin and then the bulk of the lesion is subcutaneous. Here is a cross section of it and this is exactly what we do nowadays if we have a specimen like that come into the laboratory. You can see the lesion is lobulated and he comments on that, and he also notices that there is variation in the pigmentation of his skin. Some of the lobules are very darkly stained, others are a lot paler and here is an example of a cell from the darkest area in which you see the melanin pigment dispersed throughout the cell and in addition in most of these there are illustrations of the cells within the lesion and here they are here, multi-nucleate and with prominent nucleoli and he comments in particular, and I think this is interesting, on the depth of this lesion and we now know that the depth of melanomas is very important in determining the ultimate prognosis and I don't know whether he was aware of that but he certainly observed the depth of this lesion below the skin.
Breasts. Mastectomy was a routine procedure because the surgeon could do that without anaesthetic and this is a section of a mastectomy here in a woman of 45, the lesion had been present for some time and you can see here the tumour. And there are comments on there being two patterns to it, there is the pattern here where it is pale and white and is very firm and that must have been due to it being a lot of fibrous tissue in it and being what we refer to as a scirrhous carcinoma of the breast. In contrast there is another area below it here which was quite haemorrhagic and soft and he comments on this as being encephaloid. Here is another picture of the specimen here and you can see the detailed clinical and histological history which accompanies these and this is written, as you can see here, not easy to read, but possible. And again there are examples of cells from various parts of the tumour and

these are shown here. And again he comments on the varying pleomorphism or the variation in size and then the variation in appearance of these individual cells. So he was being very observant in looking at the cytological details and which we would still do.
Then this lesion from a 23- year old girl, a Scot who had come down -- who Syme operated on, and this is the clinical picture. And this is beautiful. Here we see this lesion here at the lateral end of the scapula -- no, not the scapula the --
NEW SPEAKER: Clavicle.
SIR RODDY MACSWEEN: Yes, the clavicle. Here is the lesion here and he describes in detail the appearances of the skin and in addition he was quite happy that this lesion did not extend into the joint and that was important. It did not go into the shoulder joint and Syme was able to reset this quite easily with clearance on the medial side and in addition clearance on the shoulder joint.
Here is the tumour in cross- section and this, I think, is an aneurysmal bone cyst, you need not concern yourselves with the details of this, but here is the medial end of the clavicle and here is this well circumscribed tumour, which is cystic in appearance, which has haemorrhagic areas in it and in addition Lister observes that the periosteum is preserved around this tumour, although there were speckles of bone present in this surface area.
Here is another view of it. Again, we see this clinical pathological correlation between the tumour and what he has noted about it. Here is the tumour which you have already seen. And then there are various cell types which he comments on from within the cysts. Cells which were multi- nucleate and cells which were rather fibrous. Here are some of the elongated connective tissue cells and again there is beautiful detail in terms of the cytology. And here is a multi- nucleate cell, and he comments on it and he also observes that there are nucleoli in many of these cells and you can see this quite readily.
The tumour was removed and there is no follow- up. She went home well about five or six weeks -- or maybe five or six days later, but there's no comment as to what subsequently happened.
A tumour of the tongue. Here we see the tip of the tongue here and this multi- lobulated tumour is present on the lateral aspect of the tongue and here we see it in high power and he describes in detail the multi- lobulated areas of this tumour, the fact that there are some areas of breakdown and again he looks at some of the cells which are present here and these are shown from camera lucida preparations accompanying the microscopic specimen.

Soft tissue tumours of course would also be resected and here we see a tumour from the thigh of a 40- year old man and this tumour had been going for approximately three to four years and it was easily removed. Here is the skin of it here, and here we see a tumour which is showing a variated appearance, some areas are haemorrhagic, other areas are fatty, and then there are intervening areas which are quite haemorrhagic. Again he describes this in great detail. Here is a high powered view of it. Not a nice specimen. But on the other hand, a beautiful picture.
And here is another tumour. Connective tissue tumours at that stage were really not very well- defined and they were categorised on the basis of their appearance. This one was categorised because of a distinctly colloid appearance and again there is the clinical history and again examples of the cells which are present within this tumour.
Now, some of the descriptions were very lengthy, pages of text which he wrote or may in part have been written by Agnes, she acted as a kind of stenographer for him. And these are detailed descriptions, both of the tumour and of the cytology. You can read them but it's hard work.
A tumour of the femur in a young person, and this is an osteosarcoma of the femur in the young person. Here is the head of the femur here and then there is this tumour, which is showing a distinctive variegated appearance. He doesn't tell us what the lesion was but I think any pathologist worth his salt would immediately say this is an osteosarcoma from a young person.
Then this is a hydrocele which had been removed by Syme and he describes, Lister describes, this bit of it which was intra- abdominal, this bit which was coming through the inguinal canal and here is the site at which the testes would lie. Beautifully illustrated.
And then he marks out certain areas in this hydrocele and details what they are.
A lesion of the distal end of a spinal cord. There is no history with this one but you can see here the vertebral column with the vertebrae, the spinal cord, and then there is a destructive lesion affecting two vertebrae here and the tissue has been destroyed and one presumes that this is probably tuberculosis.
Then there are some black and white illustrations. Here we see a gun- shot wound with the point of entry here, and the point of exit here.
Then there is a cystic lesion of the hand, almost certainly some kind of hygroma and again see the beautiful drawing.
Then I think this is the most beautiful of all. A woman who has a lump in her neck. It is not central, therefore it is unlikely to be thyroid, and this is probably again some kind of hygroma but notice the detail, not

only as far as the tumour is concerned but as far as the clinical picture is concerned. This quiet woman looking to the distance and then a beautiful drawing of her hair and a beautiful drawing of this crenelated cap which is on her head. These are better than any clinical descriptions one could give with a case like this.
Then finally cytological aspects. He examined, as I told you, various tissue preparations and produced pictures of them. This is in 1874, and you can see here prickle cell layer from the prickle cell layer of the skin, you can see the prickles here, and then in addition this cell has three nuclei.
Another preparation of a hair follicle. Here again is the malpighian layer around the side and here is the hair shaft. Again, marvellous detail.
And again, the same as he did with the macroscopic, or large, specimens, he did the same with these materials and here he illustrates pleomorphic appearance of different cells and he describes the bi-nucleate cell here and another one here and here, multi- nucleate cells here with prominent nuclei and this is all described in detail her.
A marvellously observant cytopathologist. Here are other ones again from the prickle cell layer because these were easy to obtain from the mouth or scrapings from the skin and he examines these and shows the details of them.
Then this I think is the prize. A marvellous illustration of a mitotic figure, and you see the cell here undergoing mitosis, here is the spindle, here is the fragmentation of the nuclei prior to the cell dividing and in another hour, if you left it, you would have two cells from this one and again he details the appearance of the cytoplasm and comments on the appearances of the nuclei.
Now, I hope I've convinced you that Lister was a competent pathologist and he probably had a good conceit of himself as well and justifies himself being a pathologist. This is a student comment from some of the students in Glasgow that he taught more pathology than surgery. His lectures ran for about two hours with half an hour or three quarters of an hour for discussion and in this he clearly taught him a lot of pathology. Then this is an introductory lecture to new students in Edinburgh:
"You will find the pathology of surgery of peculiar attraction from the circumstances that the accessible position of the parts affected enable you to watch, during life, the progress of disease in a manner denied to the physician ... as a general rule surgical pathology has more practical character than medical pathology."
How right he was. Then in an address to the Royal Society in 1857 this was reporting some of the experimental work which he was undertaking

at University College Hospital and in fact which was to earn him the FRS in 1860 and here he makes a plea:
"We stand in need of the beacon light of correct pathology to enable us to steer a safe course amid various conflicting opinions which assail us."
Then in the interval between these observations about pathology and his own observations in the 1850s and the 1860s there was a huge change, as I've indicated to you, in the development of staining techniques and other means of examining histological material. By this time, this was in 1897 in an address to Queen's College in Belfast, by this time we had the micro- tome, we were able to harden tissues with formalin, we were able to paraffin embed tissue and we were able to stain tissues. He had kept up with this and in his address to the colleges he speaks that he was:
" ... aware of the increasing complexity in examining pathological specimens - - section cutting, staining and microscopic examination."
Which he did not have any great experience of.
In preparing this material I have been grateful to the Hunterian museum at Glasgow University, to members of staff of the college here, the library of the Royal College of Physicians and Surgeons of Glasgow, Dr Robin Reed is a junior pathologist in my department and kept the old professor right in terms of the diagnoses and then Alison Gardiner of the Lothian Health Board who allowed me access to some of the clinical material which Lister had produced during his time in Edinburgh.
I hope I have convinced you that Lister, in addition to being a surgeon who made an enormous contribution to the development of surgery, he was also an observant pathologist and he valued pathology as an adjunct to the work which he was doing and he himself was clearly enthusiastic about it and sang the praises of pathology. I would venture to suggest that his contributions to pathology while not perhaps in the same class as his surgical work still represented important contributions.
There was a time at King's College hospital where the professor of pathology had access to beds. When Lister was appointed to the chair of surgery at King's College, he decided that the pathologist would no longer have access to beds. Two explanations: one, he was just new to London and he had to set up a limited private practice and he didn't want these bright pathologists competing with him. On the other hand, he might just have realised that these pathologists should be kept in their own place and they had no business to come and see patients, which was his firm remit. Take a choice. I suspect he thought so much of pathologists that he was jealous that they might keep him out of some aspects of private practice. Thank you very much.
[applause]

DR SAM ALBERTI: Well we have good time for questions, ladies and gentlemen, from that extremely thought- provoking and beautifully illustrated talk. Please?

QUESTION: Very interesting. Has anyone - - have you or with using Lister's original microscope which you say you have seen or anybody else tried to look at specimens using the techniques that they had? That is without stains and paraffin, et cetera?

SIR RODDY MACSWEEN: It is quite readily possible. You can spin urine specimens and look at the cells that are there.

QUESTION: But how easy is it to tell what's going on.

SIR RODDY MACSWEEN: Well I don't think you would be able to get much more out of it than he did, in other words a description of what the cells look like and if there was a pleomorphism of the cells, you would suspect maybe this comes from a malignant lesion and now we are able to take cells from any organ of the body and take needle samples and look at what the diagnosis is. He was not at that level of expertise but I'm sure he could have become an expert in that area.

QUESTION: Nowadays, do they operate on the hygromas that we saw in that picture of the woman?

SIR RODDY MACSWEEN: No, I don't think they would. I think now they would try and get a tissue diagnosis. But they might take a needle and see what the cellular content was.

QUESTION: But they don't seem to operate because I have noticed where I live in Essex a woman standing there with just one, she didn't have a sort of double hygroma, so they don't seem to operate.

SIR RODDY MACSWEEN: Well, one would have to be sure of what the diagnosis was, that it wasn't some other kind of tumour rather than a cystic one.

DR SAM ALBERTI: Was there a question at the back?

QUESTION: Do you think he was a self- taught pathologist just with Virchow's textbook in his hand.

SIR RODDY MACSWEEN: Yes, I think the surgeons then were self-taught particularly Lister who was interested in the tissue he was examining. The examination of these organs was done in the afternoon. He had a very busy working day, got up at 5.30 in the morning, had a cup of tea and toast and worked for three to four hours in his rooms and then went to the hospital and delivered the lectures at 10 o'clock. The surgery was carried out in the early afternoon and Syme brought the specimens to him and he worked on these specimens, dissected them, made these preparations and did the material which we undertook - - the reproductions which we see here. I've always thought that the good surgeon is as good as his pathologist and it

depends very much on the pathologist and admires what the pathologist does and I was always more impressed with the surgeon who came over to the pathology department and wanted to see an example of the tissues which he had removed and they were amenable to advice from the pathologist as to what the lesion was.

QUESTION: Wonderful as the work is that he did, what actually motivated him to be one pioneer of the work, why did he look at these specimens in such detail and so wonderfully. Did he have an inkling of what it might lead to?

SIR RODDY MACSWEEN: Well I can't answer the second question but I think he was just an interested surgeon and there are such people. He was interested in the specimens he had removed, he had time on his hands and he examined them and he was aware of what was happening in the laboratories, hence his comments to Virchow, he appreciated that tissues were made of cells and he wanted to see more of them and that is what he did in the late afternoons when he was looking at these specimens. Lister, I think, was curious about everything which he did and of course he was not allowed to undertake the major surgery, he just got the specimens which Syme brought to him and, being an interested person with time on his hands and highly motivated, he examined them in detail and clearly his powers of observation were considerable and that's why these are so fascinating.

QUESTION: Thank you.

QUESTION: As a distinguished liver pathologist where most of the work is quintessentially medical pathology, do you believe in the proposal that surgical pathology is more important than medical pathology.

SIR RODDY MACSWEEN: At that time it was.

QUESTION: Now?

SIR RODDY MACSWEEN: No longer, I think now we work hand in hand and we are able to get tissue diagnoses from needles and various aspirations and that's where the challenge lies. So it's very easy when you have a breast specimen with a great big tumour in it, but when you are taking a needle sample from that lesion in the breast or whatever other lesion it is, that's very challenging indeed.

DR SAM ALBERTI: May I ask, I'm fascinated in the relationship between Lister and his father, Joseph Jackson Lister, and you touched on this. Could you expand on how important Joseph Jackson Lister's skills with a microscope were in passing them on to his son?

SIR RODDY MACSWEEN: Oh considerably. I'm sure Joseph Lister was brought up in an environment in which the microscope was regularly spoken of and in which his father taught him the principles of the

achromatic lenses and they had a huge amount of correspondence. They were Quakers of course and they used the terms "thee, thine and thou" and the letters showed a clear respect between the son and the father and I'm sure in response to the earlier question, I'm sure his father did a lot to stimulate him into examining the tissues and did in fact facilitate and promote his interest in tissues. That's what microscopists did at the time, they were examining the cells and I'm sure the father was telling the son "look at this, come and see the specimen under the microscope".

QUESTION: Talking of families, you didn't mention him having children, you spoke about his wife helping him but did he have children?

SIR RODDY MACSWEEN: No, he had no family, and his wife worked with him and she died in 1893 of pneumonia and when she died he was dependent on Syme's sister to look after him because I'm sure he wasn't very well domesticated. [laughter].

DR SAM ALBERTI: His nephew, was Rickman John Godlee was then president of this college. His portrait is just around the corner as you come up the stairs and it is a small portrait and Godlee's humility is such that when all the other great and the good on that staircase with their grand portraits are put back in store, Godlee will still be there because it's the only one that fits in that space. It was also through Godlee's auspices as one of Lister's trustees that the material came here so we are very fond of Godlee for that reason. Please?

QUESTION: Which school did he go to when he was a child? When he was growing up? Which school did he go to?

SIR RODDY MACSWEEN: Oh, he went to a Quaker school in Kent. The name of it is in one of the biographies, but he was brought up as a Quaker. When he married Agnes Syme in Edinburgh, she of course was church of Scotland and he changed then from being a Quaker to become an Episcopalian, which he and Agnes were both professing Episcopalians.

QUESTION: Were there siblings? What of the eldest son?

SIR RODDY MACSWEEN: There were siblings, you've caught me I can't remember exactly, but I think there were two siblings.

DR SAM ALBERTI: Well, ladies and gentlemen, the fun doesn't stop here, we have for your perusal and delectation but not for touching as you will see behind you one of the recently preserved Lister rolls which were the lecture diagrams that he and his students and Agnes prepared to illustrate his lectures. The Victorian version of the Powerpoint we have seen today. So please do go and my colleague Louise will be able to talk about them at the back there.

SIR RODDY MACSWEEN: One more comment about Agnes. She

clearly did a lot of the writing and he clearly must have dictated it to her, because she would not be familiar with the clinical material. But there is a suggestion that perhaps she also became an interested pathologist and examined some of these tissues and actually described them herself, rather than Lister doing it. It was a very close relationship between the two of them, she was clearly more than just a simple lab assistant. [laughter]

DR SAM ALBERTI: And there are accounts of when the - - there are accounts of them drawing with a student the rolls that we have there and the student recalls Agnes coming in at midnight with sherry on a tray and clearly being very involved and if she wasn't drawing them she was certainly very helpful with that.

So if I may say a couple of things, I would like to thank m*y archival colleagues for bringing out the Lister rolls again. I would like to thank our long-suffering speech-to-text colleagues who have wrestled with some particular terminology today bravely, I think. I would like to thank Hayley and Jane our learning and access team who worked so hard to put this whole series together. I would like to thank* Johnson&Johnson *who provided the support for the lecture series, I should add that very importantly and our next series, our next brochure, will be launched very soon and we will be running a whole series of events around sport and museums at night. On the 18th May my colleague is telling me.*

NEW SPEAKER: That is our next event. The museums at night event special on a surgeon named Thomas Wakley, who was a crusader and hated our guts, actually - - so interesting to come and find out who doesn't like the Royal College of Surgeons!

DR SAM ALBERTI: You will also have feedback forms which were handed out and there's more information about the speech-to-text but finally I would like to thank very heartily and warmly Sir Roddy for coming to give us what turned out to be, as I knew it would, a splendid lecture. Thank you very much. [applause]

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