

# John McCaw (1858–1924)

President of the Ulster Medical Society

1907–08

## Presidential Opening Address

Ulster Medical Society

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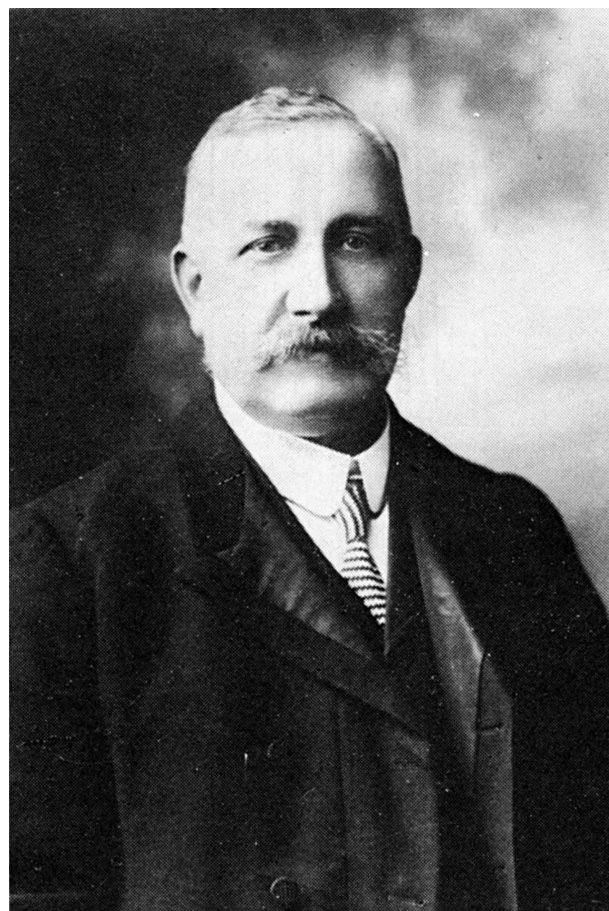
### TUBERCULOSIS IN CHILDHOOD AND ITS RELATION TO MILK

MR. EX-PRESIDENT, FELLOWS AND MEMBERS OF THE ULSTER MEDICAL SOCIETY, My first duty on taking the chair as President for the Session 1907-08 is to offer you my sincere thanks for the high honour you have conferred upon me – an honour I cannot but look upon as due more to your kindness than to any merits of my own.

It is true I have held many positions of trust in the Society. I have acted as Secretary for a term of six years, and Chancellor of your Exchequer for a similar period, while in other ways you have shown your confidence by electing me a member of various committees and deputations. Lastly, when Sir William Whitla, with rare public spirit and lavish generosity, presented this magnificent Institute to the Medical Profession, he nominated me one of the Trustees – an honour I shall never cease to appreciate as a mark of confidence and good-will. In these various positions I have always enjoyed your cordial assistance and support, and now that you have conferred upon me the highest honour in your keeping, I ask you for a helping hand to enable me to discharge the duties of President in a manner consistent with the great traditions of the Society, and in accord with the high standard set and attained by the long line of eminent men who have occupied the chair before me. It will be my duty to do my utmost to promote the best interests of the Society during my year of office, and with the able assistance of our esteemed and excellent Secretary, Dr. Stevenson, I trust the session upon which we are now entering will be a successful and useful one to us all.

Following precedent, I find it has been the custom, in the first instance, for the President to refer in his address to incidents of importance to our profession during the past year. These have not been wanting, nor few in number, to some of which I have pleasure in now referring.

The Fellows and Members of the Ulster Medical Society heard with the liveliest satisfaction



that his Gracious Majesty King Edward the Seventh had conferred upon Professor John W. Byers the honour of Knighthood. Sir John Byers has already filled the highest position in the Society, having been President during the Session 1893-4, and on many occasions he has enriched its meetings with thoughtful papers, and contributed to our discussions on various subjects. Further, he has taken his share in the battle of the profession against the abnormal prevalence of tuberculosis in our city, and I feel sure I am only voicing the feelings of the Ulster Medical Society, as I am those of my own, when I say we wish Sir John and Lady Byers length of years and every happiness.

During the year the distinguished office of High Sheriff of the City of Belfast is occupied by a Fellow of this Society in the person of Dr. P. O'Connell, J. P. Many of us have enjoyed the lavish hospitality of the High Sheriff; and, as was to be expected, Dr.

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O'Connell is discharging his important duties with signal ability. He is to be congratulated on maintaining the dignity of the profession and its reputation for hospitality—a tradition which but a few years ago was so generously preserved by another Medical High Sheriff, Dr. Henry O'Neill.

In the next place I should like to refer to the advent of another author into our midst – I mean our esteemed and popular friend, Dr. Henry Lawrence M'Kisack. The work for which Dr. M'Kisack is responsible bears the title, "A Dictionary of Medical Diagnosis," and that it will prove most helpful to students and practitioners, and especially to those engaged in teaching, there can be no doubt. It bears on every page abundant evidence of the author's industry, and those who have themselves ventured upon the thorny field of authorship will best be able to appreciate the amount of patient labour indicated by its 583 pages. Dr. M'Kisack is to be heartily congratulated upon the completion of his work – a work that is a credit not only to himself, but to the Belfast Medical School.

The next point worthy of mention is the outbreak in our midst of Epidemic Cerebro-Spinal Meningitis. Not within the memory of the oldest amongst us – not indeed since the outbreak of Asiatic cholera in Belfast, in the year 1847, has such a visitation been experienced, and it is not too much to say that the uncertainty surrounding its main features held the city in awe and trembling for a period of nine months. It would be an unpardonable waste of your time and a work of supererogation on my part were I to enter upon any mention of its characteristics, for these have been ably dealt with already by our friend, Dr. Gardner Robb, and others; but I may be permitted – nay, I think it is my duty – to refer to important and original work accomplished recently by some of the younger members of the Belfast Medical School.

During the past year work in the Pathological Laboratory has been chiefly directed to the elucidation of certain facts in the etiology of typhoid and cerebro-spinal fever. Dr. W. James Wilson has devised a new method for isolating the typhoid bacillus from infected drinking water. This method, in dealing with experimentally contaminated water has given better results in isolating the typhoid bacillus from such waters than any method hitherto introduced. By means of this method Professor Symmers and Dr. Wilson have isolated from Belfast drinking water a group of organisms which from their similarity to the typhoid bacillus are of great scientific interest. The outbreak of cerebro-spinal fever furnished valuable material for investigation at the

laboratory. Early in the year Professor Symmers called attention to certain pathological conditions frequently overlooked in *post-mortem* examination of cases of cerebro-spinal fever. Briefly, these are a psorenteritis, enlargement of the mesenteric glands, pericarditis and pyelitis.

The inflamed condition of the intestine and the enlargement of the mesenteric glands suggest that possibly the meningococcus may enter the system *via* the intestine.

Professor Symmers and Dr. Wilson, in a paper in the *British Medical Journal*, dealt with the cultural characters of the meningococcus present in the Belfast epidemic. They also were able to cultivate the organism during life from the blood of three out of fifteen cases examined. The finding of the meningococcus in the blood supports the view that cerebro-spinal fever is a general infection of the body, not an infection confined to the meninges.

Dr. Wilson, from a case of cerebro-spinal meningitis under the care of Dr. Darling, Lurgan, cultivated a streptococcus which showed a tendency to assume a bacillary form, and in this and every other respect resembled the "rheumo-coccus" which Poynton and Paine have thought to be the cause of acute rheumatic fever and chorea. It is noteworthy that Dr. Darling's case presented signs and symptoms of meningitis and no symptoms whatever of chorea.

Drs. Houston and Rankin, in a valuable paper read at the Exeter meeting of the British Medical Association in July last, recorded the results obtained by them in the determination of the opsonic power of the serum of cerebro-spinal fever cases on the meningococcus. They found—

(1) That after the fifth day the opsonic power of the serum is enormously increased.

(2) That the opsonic index of such a serum with regard to a gram-negative diplococcus isolated from three cases of posterior basic meningitis was normal, although with regard to the meningococcus it was very high. Their results tend to show that probably the organisms causing cerebro-spinal fever and posterior basic meningitis are different varieties of the same species. As evidence of the importance of these findings, they have already appeared in the last edition of Muir and Ritchie's well-known *Manual of Bacteriology*. A great amount of time and work was expended on this research, but it is work of the highest merit, and reflects much credit upon Dr. Houston and Dr. Rankin. It is a very real pleasure to me to be the medium of extending to them the hearty congratulations of the Ulster Medical Society.

Dr. Kirkhope, in a paper on Placental Infarcts,

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has advanced some original views on their causation. The paper will appear shortly in the *Journal of Pathology and Bacteriology*.

Professor Symmers and Dr. Wilson have in hand two papers which will shortly appear.

(1) Cerebro-spinal meningitis due to infection with the anthrax, typhoid, and paratyphoid bacillus.

(2) Agglutinative effect of the blood serum of cases of cerebro-spinal fever on organisms of the colon, typhoid, and alkaligenes groups

No presidential address this year could be considered complete or satisfactory without some reference to the Local Government Board Commission which was appointed by that body to enquire into and report upon the health of our city. The various events which led up to the appointment of this commission are common property and well known to the man in the street, so that it is unnecessary and, indeed, undesirable that I should refer to them; but this much I may say, that a vast amount of evidence was submitted by many witnesses, amongst whom several past Presidents and Fellows of this Society were conspicuous. The report of the Commission will be published shortly, and until it is issued no estimate can be formed of the nature of its findings. This much I may, however, say, that the Commissioners were a body of most capable men, and it is conceded on all hands that they conducted the enquiry with impartiality, thoroughness, patience, and ability. The Chairman, Colonel Harding, in closing the commission on July 24th, said "he earnestly hoped that the enquiry would prove to have been sufficiently useful to warrant the labour and the time which had been devoted to it. The enquiry, which had taken up thirty-three days, had already effected an immense amount of good, the Public Health Committee having displayed an abnormal activity since its sittings began."

An event of the highest importance to the Belfast Medical School was the opening, by Sir Otto Jaffé, in the unavoidable absence of Lord Kelvin, of seven new laboratories at the Queen's College. This important function took place in the large hall of the College, on Friday, the 20th of September, in the presence of a distinguished gathering, after which the laboratories were opened for inspection. It is scarcely possible to exaggerate the importance of these laboratories in the work of our school. The building and equipment of them were made possible by the lavish generosity of Sir Donald Currie, Sir Otto Jaffé, and the subscribers to the Better Equipment Fund. The respected President of Queen's College, Rev. Dr. Hamilton, has been untiring in his energies to further

this fund, and he is entitled to the thanks of the whole profession for the deep interest he has shown in their welfare, not only now but at all times.

Another event of more than ordinary interest is the visit to Belfast, in 1909, of the British Medical Association. It will be recalled by many amongst you that the last visit of the Association in 1884 was presided over by our late beloved teacher and leader, Professor James Cuming, whose presidential address on that occasion was listened to with delight, and whose inspiring personality was a great stimulus to everyone to make that meeting the success it was. It augurs well for the coming visit of the Association to our city that Sir William Whitla has been nominated for the Presidentship. Under his capable leadership one feels that success is already assured; but he will need the earnest, hearty, and united co-operation of the members of our profession in Ulster, and this I feel quite sure will be willingly given.

The great meeting held in the City Hall so recently as the 29th October last, for the purpose of establishing in Belfast a branch of "the Women's National Health Association," will be fresh in the memory of many amongst you. That meeting was presided over by the Lord Mayor, the Earl of Shaftesbury. Her Excellency the Countess of Aberdeen addressed the meeting at some length, and explained that their work was to be directed mainly against the abnormally large amount of tuberculosis existing in Ireland. Seldom, if ever, has there been held in Belfast a public meeting at which the gathering has been more fully representative of the various interests – professional, commercial, ecclesiastical, and political – of which our civic life is made up. The meeting was an unqualified success; enthusiasm was generated; and it is earnestly to be hoped that the work, which was begun under such auspicious circumstances, will be vigorously carried on, and result in a substantial reduction of the amount of tuberculosis in Ireland.

During the year that has passed away our ranks have been visited by the hand of death, and it is my painful duty to refer to the loss the Society has sustained by the removal of three Fellows and one Member.

Henry Murney, M.D., J.P.—Many of the more senior members of the Society will remember Dr. Henry Murney, a former President of the old Clinical and Pathological Societies, and the Medical Society, which were subsequently merged in the Ulster Medical Society. He was for many years Senior Surgeon to the Belfast Royal Hospital – a position from which he retired in May, 1882, becoming

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thereon Consulting Surgeon, which he remained till the day of his death. Dr. Murney was a true gentleman in every sense of the term, most tender hearted and kindly of disposition, a skilled surgeon, and an excellent clinical teacher. For many years he was demonstrator of Anatomy in the old Medical School in College Square North, close to where this Medical Institute now stands, and afterwards, when the school was transferred to the Queen's College, he was assistant to the late Dr. Hugh Carlile, who was Professor of Anatomy and Physiology. Upon the death of Dr. Carlile in the year 1859 it was generally thought that his assistant, Dr. Murney, would be appointed to succeed him in the Chair of Anatomy and Physiology in the Queen's College, but it was not to be, for reasons well known at the time – a disappointment keenly felt by him.

Dr. Murney was the first surgeon to successfully excise the ankle-joint in the year 1847 – sixty years ago – and the records of our Society show that this also was the year he joined the older societies, so that he was our oldest member at the time of his death. A keen yachtsman, he was the founder of the Royal Ulster Yacht Club and its first Rear-Commodore. For some years Dr. Murney had retired from public life, and owing to increasing infirmity was seldom seen of late in Belfast. He resided at Holywood with his sister, to whom he was devotedly attached. Both were in feeble health for the past eighteen months, and by a pathetic coincidence they died on the same day, Miss Murney passing away in the morning and Dr. Murney in the afternoon of August 25th, 1907, so that of this devoted sister and brother it may be truly said *in death they were not separated*. His remains were interred in the family vault, which is romantically situated within the walls of the old Parish Church of Holywood, in presence of a representative gathering of relatives and friends, including two of his former colleagues, Dr. Nelson and Dr. J. Walton Browne, and Dr. H. L. M'Kisack as secretary and representative of the staff of the Royal Victoria Hospital. Dr. Murney, who was a Justice of the Peace for the City of Belfast and the County of Down, had reached the advanced age of eighty-one years, and by his death the last of a band of surgeons, eminent in their day and generation, disappears from our midst – men who upheld the very best traditions of our profession, and whose memory will long remain a cherished legacy.

Surgeon M'Cleery, joined this Society in the year 1874. He was the son of Dr. James Browne M'Cleery, who practised in Belfast in the early part of the last century. The subject of this notice was born

on the first of July, 1823, and died on the 19th January, 1907, at the ripe old age of nearly eighty-four years. Dr. M'Cleery studied in Belfast and Dublin, and obtained the licentiate of the Royal College of Surgeons of Ireland in May, 1847. Soon after this he was appointed Resident Surgeon in the old Royal Hospital in Frederick Street, and continued to fill this post till the following August, when he resigned owing to the death of his father, whose practice he took up and carried on with much success; he retired in the year 1890.

Dr. M'Cleery was the intimate friend of the late Dr. T. K. Wheeler and Dr. James W. T. Smith, and was deeply beloved by them as he was by every one who came into close touch with him. His chief distinguishing feature was a child-like simplicity of character and a purity of motive seldom met with. He retained to the last hour of his long life all the freshness of his boyish spirits, keeping as young in heart as when he was a schoolboy. He continued to take the deepest interest in everything going on in the domain of medicine and surgery, and looked upon every member of the profession as a brother. He was a generous and constant friend and supporter of the Medical Benevolent Fund, and for many years took a practical interest in its affairs. Dr. M'Cleery was regarded by his co-temporaries as a very able surgeon, and Drs. Smith and Wheeler constantly availed themselves of his services; the chief characteristic of his work as a surgeon was seen in his extreme neatness.

Though the last fifteen years had reserved for him a world of suffering and often of agony, owing to his being completely crippled by rheumatoid-arthritis, a murmur never escaped his lips. He continued to exhibit the same remarkable amiability and sweetness of disposition as had characterized his long life of singular beauty, loveableness, and purity.

Dr. J. H. Lowry, a Fellow of our Society, was cut off early in life by an obscure disease of the liver, probably of a malignant nature. He died in Pakhoi, South China, a few months ago. Dr. Lowry studied at London, Edinburgh, and Belfast, and was beloved by his teachers and fellow-students for his goodness of heart and honourable conduct. After qualifying he obtained an appointment in the Chinese Customs, having been nominated by Sir Robert Hart. In September, 1906, upon his return to China from Ireland, he was appointed Acting-Commissioner at Pakhoi, an appointment of which he was justly proud. He was specially mentioned in the report of the Royal Commission upon Bubonic Plague for his work in that



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disease, and was publicly thanked by the Chinese Government for his services, and who conferred upon him an honorary title. Dr. J. Walton Browne, to whom I am indebted for this appreciation, concludes his letter to me in the following terms : – “He was one of the best Fellows that ever stepped, and as one of my earliest resident pupils I shall never forget J. H. Lowry.”

Dr. Robert A. L. Graham became a member in the year 1902. After a college career of unusual merit, he early devoted his talents to the subject of Mental Science, and became attached to the staff of the District Lunatic Asylum on the Grosvenor Road. Here he applied himself to the elucidation of those abstruse problems connected with cerebral degeneration, and many of us will still have a vivid recollection of the very able and original paper which he read at the meeting of the Society held in the Pathological Laboratory, Queen's College, on March 2nd, 1905 – a paper which is fortunately preserved in our Transactions for 1906. Dr. Graham's work was of the quiet and unobtrusive kind, and already, in a career all too short, it had become recognised by the Government in his appointment to be one of those in Ireland to inquire into the amount of insanity existing, with special reference to its family history and causes. Only a short time before his death he called upon me, as he did upon others amongst you, in connection with this investigation, and the announcement of his demise from typhoid fever, complicated with perforation, came as a sad blow, and one very difficult to realise, for he appeared to be in the best of health and spirits, and was looking forward with high anticipations to the work he had in hand.

Dr. Graham was a man of somewhat retiring disposition, and to those who did not know him intimately he may have appeared distant and reserved; but he was the most loyal of colleagues, true and staunch to a fault, kindly and ever ready to give a helping hand in time of need – qualities best appreciated by those who were his co-workers in the Asylum. The loss of Dr. Graham is a severe one to the Belfast Medical School, for he was a man of great ability and untiring zeal in his special field of work, and that he would have early made his mark there can be little doubt. As a well-remembered and assiduous student of my own in the Children's Hospital, and as one with whom I kept in touch with since those days, it is a very sorrowful duty that has devolved upon me to write this short and inadequate notice of his death, and I could have wished the duty had fallen into hands more able than mine to do it justice; but what I have said is the barest truth of a man who in every

respect was an ornament to our profession, and one whose example of fidelity to duty was worthy of our highest esteem.

Before passing from this list I should like, with your permission, to refer very briefly to the death of two eminent leaders of our profession. I do so because the great tuberculosis question is uppermost in our minds at the present time, and both these men were pioneers – the one in this country, the other in France.

Anti-tuberculosis workers throughout the world have to deplore the loss of two indefatigable and highly-honoured leaders. Sir William Broadbent was an able student of the tuberculosis problem, a valuable contributor to its literature, and a prominent advocate for, and supporter of, all measures seeking to prevent the disease and alleviate its sufferers.

Professor J. J. Grancher has won world-wide distinction for his work in the preservation of childhood from the ravages of tuberculosis; he has established principles and demonstrated methods which promise to be of inestimable value, not only to the children of France, but to the little people of all nationalities. *Requiescant in pace.*

And now, ladies and gentlemen, I come to what may be called the presidential address proper. Many of your ex-Presidents have experienced no difficulty in overcoming this part of their duty, inasmuch as a congenial subject was easily found and ready to hand. Some have had considerable misgivings as to the theme to which they should venture to address themselves. I confess I must be included in the latter category, for I have wavered between three texts for my sermon, a position which I understand is looked upon by the brethren of the cloth as one fraught with considerable peril. I have decided, however, to speak to you to-night upon a disease that is unfortunately ever present with us, and one the importance of which is paramount – I refer to Tuberculosis.

During the past few years, and especially at the present time, the tuberculosis question has engaged and is engaging the attention of the medical profession in all countries. A campaign is being carried on against tuberculosis which has already resulted in much benefit, and bids fair to eventually stamp out the disease completely. Whether or not this highly desirable result will be attained in our time is very doubtful, but it is satisfactory to know that the means by which the disease is generated and spread are well known, and that prevention is not impossible.

The medical profession in Ireland have not been behind hand in this campaign. The large amount of tuberculosis existing in Belfast has been very

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forcibly brought out by means of letters in the local Press, and especially by statistics submitted by the various witnesses who appeared before the Commission already referred to. Further, the Registrar-General of Ireland, in his annual report for the year 1906, points out that out of a total of 74,417 deaths registered no fewer than 11,756, or 15.8 per cent., were due to tuberculous disease. Of the total number of 11,756 deaths, the number dying from phthisis (pulmonary tuberculosis) was 8,933. Of this total, 1,072 died between the age of 15 to 20 years; the deaths from 20 to 25 years numbered 1,444, and from 35 to 45 years they numbered 1,557. The report of the Superintendent Medical Officer of Health of Belfast shows that during the year 1906 1,015 deaths were registered in Belfast as caused by phthisis, and 395 from other forms of tuberculous disease.

Finally, the Registrar-General for Ireland points out that, while in England the death-rate for all forms of tuberculous disease has declined from 3.3 per 1,000 in 1864 to 1.6 per 1,000 in 1905, and in Scotland from 3.6 per 1,000 in 1864 to 2.1 per 1,000 in 1905, it has in Ireland risen from 2.4 per 1,000 in 1864 to 2.9 in 1904 and to 2.7 per 1,000 in 1905 and 1906. With these figures before me I think I am justified in saying that in no country is it more desirable to pursue a vigorous campaign against tuberculosis than in Ireland, and in no city in the United Kingdom is a better opportunity afforded for studying and fighting the disease than in Belfast. Our position, therefore, with regard to the large amount of adult tuberculosis existing in Belfast, is well known and assured, and to it I need not further refer; but what about tuberculosis in childhood? As a separate enquiry this aspect of the question has been but lightly touched upon, and I shall endeavour, as far as possible in the time at my disposal, to supply the omission in what follows.

My connection with the Belfast Hospital for Sick Children for the past twenty years has given me exceptional opportunities for studying the disease, and I shall now place before you, as shortly as possible, the main points with regard to tuberculosis in childhood, and lay special emphasis upon the connection which exists between tuberculosis and cows' milk. In order that my remarks may be quite clear and readily followed, I shall discuss the subject under the following heads:—

- (1.) What amount of tuberculosis in children exists in Belfast?
- (2.) What types of the disease are met with?
- (3.) What connection exists between tuberculosis and cows' milk?

(4.) What can be done to prevent or cure the disease?

## **1. What amount of tuberculosis in children exists in Belfast?**

In conversation with the physicians and surgeons attached to Children's Hospitals I find a general consensus of opinion that tuberculous disease of one kind or another forms a very considerable part of their work in these institutions, and Professor Holt states that autopsies on children dying from all causes under 15 years of age, show the presence of tuberculosis estimated by various observers at from 14 to 40 per cent. I think the statement may safely be made that a large amount of tuberculosis exists amongst children. That this opinion is well founded, I shall now endeavour to support by a few statistics. At the Children's Hospital, in Queen Street, during the quinquennial period 1902-06, 26,193 cases were treated, and tuberculous disease in some form was met with in almost 20.0 per cent. — to be accurate, in 19.99 per cent. of them. Of this total, 4,049 were treated as in-patients in the wards, and 28.52 per cent. of them were tuberculous, while 22,144 new cases were treated in the out-patient department, and 18.26 per cent. suffered from tuberculosis in some form. If these figures be examined in detail some interesting points are brought out.

*In the year 1902*, 13.96 per cent. of the cases treated in the medical ward were tuberculous, while in the surgical ward 49.24 per cent. of the cases treated suffered from the disease in some form. During the same year, in the outpatient department, 6.65 per cent. of new medical cases were tuberculous, while on the surgical side 40.78 per cent. of the new cases suffered from the disease.

*In the year 1903*, 18.60 per cent. of the cases treated in the medical ward were tuberculous, while 40.76 per cent. of the cases treated in the surgical ward suffered from the disease in some form. During the same year, in the outpatient department, 5.67 per cent. of new medical cases, and 48.50 per cent. of new surgical cases, were tuberculous.

*In the year 1904*, 15.27 per cent. of the cases treated in the medical ward, and 39.81 per cent. of those treated in the surgical ward, were tuberculous, while in the out-patient department 6.31 per cent. of the new cases treated on the medical side, and 47.74 per cent. of the new cases treated on the surgical side suffered from tuberculosis in some form.

*In the year 1905*, 17.56 per cent. of the cases treated in the medical ward, and 40.64 per cent. of those treated in the surgical ward were tuberculous,

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while in the outpatient department 6.95 per cent. of the new cases treated on the medical side, and 38.86 per cent. of the new cases treated on the surgical side, were tuberculous.

*In the year 1906*, 14.04 per cent. of the cases treated in the medical ward, and 37.85 per cent. of those treated in the surgical ward were tuberculous, while in the out-patient department 5.16 per cent. of the new cases treated on the medical side, and 31.71 per cent. of the new cases treated on the surgical side, were tuberculous.

Through the kindness of Dr. Stevenson I have been enabled to examine the returns of the Ulster Hospital for Children for the years 1903, 1904, and 1906, and here again I find a similar, if more striking, record. During the year 1903 of all children treated in the wards 35.74 per cent. suffered from tuberculosis in some form; in 1904 the percentage is still higher, being 38.31 of all children treated; while in 1906, of all in-patients, 30.36 were tuberculous. The figures I have given carry one message of encouragement, and it is this, that the amount of tuberculosis met with at our local children's hospitals has been diminishing during recent years. With these statistics before me, I have no hesitation in answering the question set by saying that the amount of tuberculosis existing amongst children in Belfast is large; and in this I feel sure my hearers will agree. The interesting question now arises: How do we in Belfast compare with other cities in regard to the amount of tuberculosis met with in children? To arrive at an answer to this question I have examined, on exactly the same basis, the returns of the cases treated at Great Ormond Street, London; the Royal Edinburgh Hospital for Sick Children; the Manchester Hospital for Sick Children, at Pendlebury; the East London Hospital for Sick Children, at Shadwell; and the Glasgow Hospital for Sick Children. Using the same methods of deduction, I find from the report of Great Ormond Street for the year 1905, that the number of cases treated in the wards was 2,876, of which 778, or 27.0 per cent., were tuberculous. In the Royal Edinburgh Hospital for Sick Children during the year 1906 1,968 cases were treated in the wards, of which 407, or 20 per cent., suffered from some form of tuberculosis. In the Manchester Children's Hospital at Pendlebury during the year 1905 the number of cases treated in the wards was 1,999, of which 436, or 21.3 per cent., were tuberculous. In the East London Hospital for Children at Shadwell during the year 1905 2,054 cases were treated as in-patients, and of these 501, or 24.3 per cent., suffered from tuberculosis in some form. Lastly, in the Glasgow Children's Hospital during the

year 1906 the number of intern patients was 1,177, and of these 27.95 per cent. were tuberculous. That these figures may be more readily compared, I will tabulate them in one column as follows:—

Hospital	Intern	TB %
1906—Belfast Hospit'l for Sick Childr'm	827	26.10
1906—Ulster do. do. do.	247	30.36
1905—Great Ormond Street, London.,	2,876	27.0
1906—Royal Edinburgh Hospital	1,968	20.0
1905—Manchester Children's Hospital	1,999	21.3
1905—East London do. do.	2,054	24.3
1906—Glasgow do. do.	1,177	27.95

This table shows a wonderful agreement amongst the returns of these hospitals as to the amount of tuberculosis met with. I should here like to say that had the reports all tabulated the cases in a similar way, it would have enabled me to be more accurate, and, I believe, would have shown a percentage return closer even than is here indicated. My firm conviction is that all children's hospitals meet with much the same amount of tuberculosis, and that that amount is very large.

The next point to be examined is:—

## 2. What types of the disease are met with?

A glance at the statistics which I have given will be sufficient to demonstrate the fact that a certain number of the cases of tuberculosis met with at the children's hospitals are deemed suitable for treatment in the medical wards, while others are more properly sent to the surgical side. From this, then, one might say that there is a medical as distinguished from a surgical form of tuberculosis; and while this is true enough, still it is not sufficient, nor does it satisfy the question.

One of the most noteworthy deductions from the statistics is the preponderating amount of surgical tuberculosis met with when compared with that seen by the physician, and this point I wish very specially to emphasise, as having a most important bearing on causation and treatment. If the returns of the hospitals mentioned be examined, it will be found that the cases treated on the medical side consist of phthisis and meningitis, spinal caries and general tuberculosis; while on the surgical side the surgeon is deluged with chronic abscesses, tuberculous joints, lymphadenitis, and chronic ulcers. But it should be noted that many of the cases treated in the medical wards would be more properly classified as surgical — such, for instance, as lupus, spinal caries, &c. — which, if added to the surgical figures, would still more emphasise the preponderance of surgical over

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medical tuberculosis. These facts suggest the question, Is the disease as seen by the physician only another form of that met with by the surgeon, or are they different types of the same disease, and caused by a bacillus of a different species?

Recently the theory has been put forward that tuberculous affections of the human body are divisible into two types: – (a) a type caused by tubercle bacilli from the human, and called the “*typus humanus*”; and (b) a type caused by tubercle bacilli from the cow, and called the “*typus bovinus*.” These bacilli are varieties of the same species, but they give rise to quite distinct and different lesions, according to the method of infection. In the first (or human) type, the bacilli are inhaled in dust, and find a lodgment in the apex of the lung. From this site of infection the disease may spread and cause secondary infection of the intestines, or set up a tuberculous laryngitis. In the second (or bovine) type, the disease is conveyed indirectly by means of tubercle bacilli taken into the body in raw milk, meat, &c. Here the infection is carried to the intestines and mesenteric glands, and gives rise to *tabes mesenterica*, tuberculous peritonitis, tubercle of the pelvic organs, tuberculous lymphatic glands, tuberculous bones and joints, lupus, tuberculous meningitis, or acute miliary tuberculosis. Much may be said in support of this theory; and I will content myself at present by pointing to the enormous amount of surgical tuberculosis met with at an age when cow’s milk is largely availed of – indeed, is the chief article of diet – as a circumstance of the highest moment, and also to the following extracts from the Report of the Royal Commission on Human and Bovine Tuberculosis. In that report (page 10) the effects of feeding calves with the bacillus of bovine tuberculosis are set forth as follows: – In each of six cows, whose udders had been made tuberculous by intra-mammary injection, the calves were allowed to suck for varying periods. In one case only was general tuberculosis produced. In all the other five calves killed, after being kept alive from 74 to 363 days, the tuberculosis was for the most part limited to the intestines and mesenteric glands. Fourteen calves were fed with tuberculous milk, the number of bacilli ingested varying from one to ten millions. None of these calves showed when killed anything more than tuberculosis limited to the intestine and to the mesenteric or ileo-colic glands: in one case tuberculous lesions were found in the pharyngeal glands. In other animals the results are no less striking. Thus a quantity of milk from a tuberculous udder produced in each of two pigs tuberculous disease of the mesenteric and ileo-colic

glands. In goats, feeding sometimes produced a generalised progressive tuberculosis; at other times the disease was limited for the most part to the mesenteric and adjoining glands. In anthropoid apes, a chimpanzee was fed for a week with tuberculous milk, the number of bacilli given being estimated roughly to be 100 millions. It was killed when very ill, 100 days later, and showed generalised progressive tuberculosis; the intestines and associated glands were tuberculous, and there were also tubercles in the lungs, thoracic glands, spleen and kidneys. Another chimpanzee received 10 million bacilli, tuberculous milk being the medium. It died 144 days afterwards, with tuberculous ulceration of the intestines, and caseous or caseo-calcareous lesions in the mesenteric and meso-colic glands. The tuberculosis was, therefore, limited. These experiments, then, in the anthropoid ape, an animal so nearly related to man, are of the highest importance, and point clearly to the fact that when the dose of bovine tubercle bacilli taken into the system is large, a generalised tuberculosis, starting from the intestines and mesenteric glands, is set up; whereas when the dose is moderate, the affection may remain confined to the intestines and mesenteric glands, which in time may extend to other glands and bones and joints. Here, then, I submit is evidence sufficient to support the contention that the large percentage of tuberculosis met with in children is bovine, and caused by the ingestion of bovine tubercle bacilli in milk, meat, &c., and that this form of tuberculosis is chiefly surgical. But this theory goes a step further. It is affirmed by some that these two types of the disease are more or less antagonistic, so that a child when it becomes affected with bovine tuberculosis absorbs an antitoxin, which protects it against the human type of the disease, and similarly the human type renders it either less liable to be attacked by, or immune against, the bovine bacillus. In support of this contention the rarity of pulmonary tuberculosis in association with tuberculous glands, or joints, or bone disease is pointed to; and the further fact is relied upon, namely, that the vast amount of tuberculosis met with in the child is surgical, the result of infection with bovine bacilli, and also that the adult or human type of the disease is quite rarely met with at an early age.

My experience at Queen Street Hospital for a period of over twenty years undoubtedly confirms both these contentions. I have been greatly impressed with the fact that only very rarely indeed do I meet with a case of pulmonary tuberculosis in which the disease follows the adult type and attacks the apex of



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the lung. On thinking this point over, another series of events not uncommon have impressed me.

I can easily recall numbers of children who have been under my care for extensive disease of the glands of the neck, in whom suppuration went on until it seemed that the glands must have become completely eliminated, and yet in not one of them did any secondary infection of the lungs take place, and they are to-day apparently as strong, vigorous, and healthy as the best of us. How comes it, if these children were flooded with virulent human tubercle bacilli, that their lungs escaped? It seems to me that the theory I have put forward affords a reasonable answer, namely, that they were suffering from bovine tuberculosis, and that this protected them from the human type of the disease.

To carry this argument to a logical conclusion: if this theory be correct, then human serum, or tuberculin R., should be beneficial when used for surgical or bovine tuberculosis; and, *vice-versa*, bovine serum should be beneficial in tuberculosis of human type. Much evidence could be adduced in support of this contention, and my experience, but more especially the experience of surgeons, is, that in limited tuberculous lesions of a surgical nature the injection of tuberculin R. is followed by favourable results. Dr. Nathan Raw, of Liverpool, whose work in this connection has been very extensive, writes me to say that he has obtained the most gratifying results from the use of these serums, and, after long observation of clinical cases, and extensive laboratory work, he is convinced the theory is sound. I cannot, however, now wait to discuss this point further, but I should like to make the suggestion that during the session an evening might be very profitably devoted to a discussion of this subject. The third question to be answered is:-

### **3. What connection exists between tuberculosis in children and cows' milk?**

As I consider this to be a very important part of my subject, I should like to emphasise its importance as much as possible, for two reasons – *firstly*, because the connection is a very close and vital one, as I shall endeavour to prove; and, *secondly*, because no serious attempt has yet been made by the authorities to determine the amount of tuberculosis existing among dairy cattle, much less to adopt such measures as are necessary to stamp out bovine tuberculosis. In what has gone before, I have shown that a large amount of tuberculous disease exists amongst children. Let me now draw your attention to the fact that the disease appears at a time of life when cows' milk is the main, or almost the main, article of diet. These two

statements taken together are sufficient to establish a *prima-facie* case against cows' milk. Further, I have shown that tuberculosis in children is very largely of the surgical type – that is, it is chiefly glandular, and almost certainly due to the bacillus of bovine tuberculosis which has been taken into the system in food. In support of this the following definite pronouncement of the Royal Commission is of the highest moment. On page 36, paragraph 66, of their report is the following: – “There can be no doubt but that in a certain number of cases the tuberculosis occurring in the human subject, *especially in children*, is the direct result of the introduction into the human body of the bacillus of bovine tuberculosis; and there can also be no doubt that in the majority at least of these cases the bacillus is introduced through cows' milk. Cows' milk containing bovine tubercle bacilli is clearly a cause of tuberculosis, and of fatal tuberculosis, in man. Of the 60 cases of human tuberculosis investigated by us, 14 of the viruses contained the bovine bacillus. If, instead of taking all these 60 cases, we confine ourselves to cases of tuberculosis in which the bacilli were apparently introduced into the body by way of the alimentary canal, the proportion of cases of bovine infection becomes very much larger. Of the 60 cases investigated by us, 28 possessed clinical histories indicating that in them the bacillus was introduced through the alimentary canal. Of these, 13 contained the bovine bacillus. Of 9 cases in which the cervical glands were studied by us, 3, and of the 19 cases in which the lesions of abdominal tuberculosis were studied by us, 10, contained the bovine bacillus. These facts indicate that *a very large proportion of tuberculosis contracted by ingestion is due to tubercle bacilli of bovine source. A very considerable amount of disease and loss of life, especially among the young, must be attributed to the consumption of cows' milk containing tubercle bacilli, for the bacillus of bovine tuberculosis can readily, by feeding as well as by sub-cutaneous injection, give rise to generalised tuberculosis in the anthropoid ape, so nearly related to man, and, indeed, seems to produce this result more readily than in the bovine body itself.*” After these weighty words it is quite unnecessary for me to labour the point further, and, indeed, it would be a waste of your time were I to do so. This pronouncement of the Royal Commission establishes a close and clear connection between cows' milk and tuberculosis in children, and must be considered final.

4. Finally, **What can be done to prevent or cure the disease?**

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With regard to the first part of the question – how can we prevent tuberculosis in childhood? I think I may safely say a general opinion exists that our best hopes for eradicating the disease lie in the direction of preventing it, and accordingly measures adopted for prevention must be energetically pursued. Two eminent opinions have been expressed on this point from which we may obtain guidance, namely, that of Professor Koch, who lays stress upon the transmission of the disease by contagion, especially by means of the respiratory organs; and that of Professor Von Behring, who is of opinion that tuberculosis in children is principally disseminated through the alimentary canal, and he sees a fruitful source of danger to children in the tuberculous nature of much of our milk supply. I think both these pronouncements are true, but I hold strongly that the latter theory is the more important one as regards children. Acting upon Koch's opinion it is necessary that children be kept apart from those suffering from pulmonary tuberculosis, whose breath and sputa are loaded with infectious germs. This has been recognised in Germany, where visits are made to the houses of consumptives, children are removed, when this is possible, from such surroundings, directions are given and patients are taught the most efficient means of disinfecting and disposing of their sputa, and the necessity for keeping their clothes, beds, furniture, and floors clean. Such means as these constitute a powerful factor in limiting the area of the disease and diminishing its virulence. Then much good has resulted from convalescent homes in the country, holiday camps, and forest schools. The country homes are simple but suitable buildings put up somewhere in the woods to which children may be taken and kept for the entire day. At these homes everything is conducted upon strictly hygienic lines, from the proper cleansing of the children to the furnishing of a suitable dietary, and the enforcement of physical exercise.

Holiday camps provide children with a yearly or more frequent holiday, in the country; such holidays do much to strengthen their bodies, and they, at least, remove them, for a time, from undesirable surroundings. More recently still, forest schools have been tried in Germany and have proved most successful. Near Berlin, Charlottenburgh, a school has been erected in the heart of the woods to which pale, weakly children are sent and kept for months at a time. Here they are taught under the most advantageous conditions, due regard being paid to their state of health. Scattered throughout France and Germany are numerous dispensaries, or "gouttes

de lait," at which children are brought under medical inspection, parents are instructed and advised, and good sterilized milk is supplied either free or at small cost. Coming now to Von Behring's view that tuberculosis in children is principally disseminated through the alimentary canal, I believe we have here the most important factor in the tuberculosis of children. Many eminent authorities in this country adhere to this view, and have given expression to the opinion that the bacilli found in these cases are most commonly of the bovine type, and gain entrance into the system by means of the milk of infected cows. It may here be asked, What amount of bovine tuberculosis exists? The report of the Royal Commission on tuberculosis states that "of all animals slaughtered for food in Great Britain and Ireland those of the bovine race seem to be more largely affected with tuberculosis than any other." In the absence of statistical information as regards our own country, the report proceeds to show that, in Leipzig, of 9,303 cows slaughtered, 4,048, or 43.51 per cent., were tuberculous. The proportion of such diseased cattle in English cow-houses, which has been publicly and authoritatively stated to be about 30 per cent. by the late Professor MacFadyean, is, therefore, probably not excessive. In the year 1901 there were 1,887,414 milch cows in England, and 4,102,061 in the United Kingdom. Thirty per cent. of these means upwards of 560,000 tuberculous cows for England alone, and nearly 1 1/4 millions for the United Kingdom. If 5 quarts of milk be allowed as a fair average yield per day for each cow, then 6,250,000 quarts of milk, the daily yield of tuberculous cows, are consumed in the United Kingdom. Again, it has been calculated, and is admitted, that tuberculosis of the udder exists in 2 per cent. of dairy cows in the United Kingdom; this means that some 20,000 cows with active tuberculosis of the udder are to-day contributing to our milk supply, and some 100,000 quarts of milk teeming with virulent bovine tubercle bacilli are consumed each day in the United Kingdom. As a beginning, surely it is not too much to ask that these 20,000 cows with virulent disease of the udder be removed now and at once.

When it is remembered that even one diseased udder is capable of disseminating a huge number of tubercle bacilli, the bare idea of the amount of possible human tuberculosis from the milk of so immense a number of diseased cows is appalling. I regret I am unable to place before you any statistics bearing upon the prevalence of tuberculosis in cattle supplying milk to Belfast, but the following figures, taken from the report of the Medical Officer of Health

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of Manchester, Dr. Nevin, are interesting in this connection: – During the year 1904, 432 samples of milk were examined, the number of farmers represented in the total being 318. Of these 318 farmers, 188 reside in Cheshire, and 21 of them (or 11.7 per cent.) sent tuberculous milk; 83 live in Derbyshire, and 5 of them (6.02 per cent.) sent tuberculous milk; 14 reside in Lancashire, and 1 of them (7.14 per cent.) sent tuberculous milk; 8 reside in Yorkshire, and 2 of them (25.00 per cent.) sent tuberculous milk. Are we in Belfast any better off in regard to the number of diseased cows supplying milk than Manchester? My firm belief is we are not. I am confirmed in this opinion from what I have seen when visiting some of the dairies within the city, and that much tuberculous milk is purveyed in our midst I think admits of no doubt. It is clear, therefore, that a large amount of tuberculosis in cattle exists, and the connection between the disease in cattle and tuberculosis in childhood having been established, it follows, if we would prevent the disease in children the first and most important step is to stamp it out in cattle. In considering how this may be done it is necessary to remember that in tuberculosis, before the formation of tubercles in any part of the body, there is a stage of the disease of unknown duration during which the bacilli multiply and circulate throughout the body. To regard the disease as beginning with and being localised in tubercular formations is to fail to recognise the bacillary stage of the disease, and is therefore wrong. This pre-tubercular stage can only be detected by means of the tuberculin test; therefore, it becomes imperative that this test be applied to all dairy cattle, and that every cow reacting to this test be withdrawn and the carcass destroyed. To ensure success, however, compulsory and universal application of the principle is necessary. Fair compensation for the loss to the stock-owner should be granted; and, probably, the sum of money that would be required for this purpose is the main objection to the enforcement of the measure by the Government. In the year 1865-66 an outbreak of cattle-plague occurred in this country, which involved the death of 233,000 head of stock. And what took place? The first consideration was the stamping out of the disease as quickly as possible, and at any cost. But tuberculosis in animals is more widespread than cattle-plague has ever been: it is always present in our herds, whereas outbreaks of plague are few and far between; and, what is worst of all, tuberculosis causes a vast amount of sickness and suffering and death and despair, which cattle-plague does not do. Surely this most astounding condition of

things will not be permitted to continue much longer. The public – and, more especially, we members of the medical profession – should now and at once insist, both on hygienic and economic grounds, that it is urgently necessary to stamp out this awful disease of tuberculosis in cattle. It is estimated that the disease in animals may be eliminated in a single year, and, if so, what a year of triumph that would be!

To protect children from the ravages of tuberculosis, the following rules may be formulated:

**1. The notification of all births within twenty-four hours.** This would enable health visitors to examine into the state of the child's surroundings; to have the child removed, or precautions taken, should any case of tuberculosis exist in the house; and to give suitable directions for the care of the child, and especially to encourage breastfeeding.

**2. Complete control of the milk supply by the State.** This should include the application of the *tuberculin test to dairy cattle*, and the removal of all such as react to this test; cleanliness in the collection of all milk, and in the transmission of it from the dairy to the consumer; the removal of dairies from the centre of large towns and cities.

**3. Medical inspection of school children and school premises.** Firstly, to detect and remove children who are actually ill or unfit to attend school; and, secondly, to ensure proper ventilation and sanitary arrangements in the schools, and to prevent overcrowding. The elementary principles of hygiene should be taught to even young children; to older children the principles of domestic hygiene and economy should be added.

**4. Dwelling-houses in the poorer districts should be made more sanitary,** especially with regard to the free access to them of sunlight and fresh air. Ireland is behindhand in this respect – a circumstance which may, in part, account for its high death-rate from phthisis. A levelling-up of the social and domestic conditions of the poor is urgently required; for of the 1,200,000 children born each year in the United Kingdom, fully one-fourth to one-third of them are born to want and squalor.

**5. All advanced cases of phthisis should be segregated as far as practicable** and treated in special institutions set apart for that purpose. Children who are allowed to live in the house with a consumptive are exposed to serious risk.

**6. Notification of the disease should be compulsory.** By this means health officers would know where the disease existed, and it would enable them to take suitable precautions against the spread of the disease by disinfection and other means.

With the second part of the question – *What can be done to cure the disease?* – I need not detain you long. I have said that the large proportion of tuberculosis in childhood comes within the purview of the surgeons, and with them the treatment may safely be left; for Belfast is fortunate in having a band of gentlemen second to none in the kingdom for operative skill and surgical acumen.

With regard to the use of tuberculin, the scientific investigations concerning it have placed in our hands a remedy of the greatest value. Unfortunately, the profession still feel a want of confidence in it, or a dread of its reaction, but it should be remembered that the use of tuberculin at

the present time is very different from what it was when first introduced. Formerly tuberculin was administered by rule of thumb, and often with disastrous results; now, thanks to the brilliant researches of Sir A. E. Wright, and the discovery by him of the opsonic index, the dose of tuberculin, its effects, and the most suitable times for injection, can be regulated with scientific precision.

This discovery has in fact brought treatment with tuberculin within the realm of safe therapeutics, and the clinical success which has attended the employment of this treatment has firmly established its position as a remedial agent of the first importance. In addition to the use of tuberculin, our efforts to cure tuberculosis, or stay its progress, must include good and wholesome food, healthy hygienic surroundings, an abundance of pure air, and such drugs as cod-liver-oil in combination with the hypophosphites.

And now, Fellows and Members of the Ulster Medical Society, it only remains for me to thank you for the patient hearing you have given to these few thoughts of mine on tuberculosis, and if they should be the means of arousing a fresh interest in the subject I shall feel amply rewarded. In conclusion, I would like to add that in my judgment a great and beneficent work lies close to our hand – a work which calls for – nay, demands – our immediate and most earnest and united attention – I mean the stamping out of tuberculosis in childhood. And when the day comes, as I firmly believe it will come in the life-time of many of us, when tuberculosis, like cholera, plague, typhus fever, and other preventable diseases, will be

stamped out and cease to exist amongst us, we will have the satisfaction of knowing that the battle against this greatest of all scourges of the human race, though long and trying, has been won, and that the victory is ours.

The gloomy night will then be past,  
The morning will appear,  
The rays of blessed light at last  
Each eye will cheer.