THE WHITE PLAGUE IN ULSTER

A short history of tuberculosis in Northern Ireland

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This is a story about the White Plague, as tuberculosis was called by Oliver Wendell Holmes, which, in the nineteenth century and before, and in the early years of the twentieth century, ravaged both town and country all over Ireland. It is a story about how, by the devoted efforts of many of our citizens, the lives today of many hundreds of our young people are preserved. Tuberculosis is still with us and constant vigilance is still necessary, but it is no longer the White Plague.

FOREWORD

We have to thank many people who gave us most valuable help and information. Among them are Dr William Harvey, at one time Secretary to the Northern Ireland Tuberculosis Authority, Mr Roger Dixon of the Belfast Education and Library Board, Mrs Patricia Kernohan of the Public Records Office of Northern Ireland, Dr David Lyttle, Dr Wilson Wallace, Dr G T Lawson and Dr S N Donaldson of the Department of Health and Social Services, Northern Ireland.

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Mrs Eilish Doran of the Queen's University Medical Library went to a great deal of trouble to find references for us, as did Dr Keith Lewis of the Biomedical Library.

We have to thank Mr Cecil Ward, the Town Clerk of Belfast, for permission to reproduce photographs in the care of the Belfast City Council, and the Photographic Department of the Royal Victoria Hospital for reprinting many of the photographs.

We also have to thank Mrs Russell, the secretary in the Office of Archives in the Royal Victoria Hospital, who sought out many of the photographs; Miss Coleman, the Assistant Administrator of Whiteabbey Hospital for much valuable information; Mr George Woodman, Librarian of the Assembly Library at Stormont, and my own secretary, Mrs Wasson, who typed and re-typed our many drafts.

Hugh Calwell, whose original project this book was, had been ill for many months, though he took an active part in its preparation. He died before the final draft was completed. He was a man of integrity and ability and will be greatly missed by us all.

D H CRAIG

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Chapter I

THE CAPTAIN OF THE MEN OF DEATH

The tubercle bacillus has afflicted mankind for thousands of years. Evidence of tuberculous infection has been found in bones dating back to the palaeolithic and to the neolithic periods. Guthrie in his *History of medicine* quotes G Elliott Smith and D E Derry, who found a mummy of a high dignitary of the 21st Dynasty — about 100 B.C. — which had 'kyphosis in the thoracic region resulting from collapse of the thoracic vertebrae and a large psoas abscess'. This deformity, commonly known as a hump back, used to be frequently seen. The psoas abscess is so called because the pus from the affected vertebrae tracks down the sheath of the adjacent psoas muscle and appears in the region of the groin.

Tuberculosis was common in the ancient world. The early Indian physicians, the Arabs, and certainly the Greeks knew about it, and wrote about it. Hippocrates is said to have coined the word 'phthisis' meaning a wasting disease. Galen believed it was an infection. No one knows when tuberculosis came to Ireland. Archbishop Alexander, who was Primate of Armagh, records in his biography that in his boyhood, in the early years of the last century, the people of Donegal called tuberculosis the 'English cold'. Some might speculate that Donegal men, who went to work in England at harvest time, brought the tubercle bacillus home with them; just as Donegal men, who were believed to have served in Egypt with Napoleon's army, had brought back trachoma — a disease of the eyes common in Egypt and which often results in blindness.

In the nineteenth century and in the early years of the twentieth, tuberculosis was a scourge not only in Ulster but all over Ireland. The death rate was very high. Sir Robert Matheson, the Registrar General for Ireland, recorded in 1907: 'According to the *Report of the Census Commissioners* from June 1831 to January 1841 the number of deaths in Ireland due to tuberculosis was 135,000. Between June 1841 and March 1851 there were 153,098 deaths. Between March 1851 and April 1861 the number was 130,759. The Commissioners remarked that this malady is "By far the most fatal affliction to which the citizens of this country are subject". Having regard to the manner in which this information was obtained even this appalling total may be considerably under the truth'.

In Belfast between 1882 and 1908, 25% of those who died, did so as a result of tuberculosis. Each year there were over 1,000 deaths from the disease. As Sir William Osler pointed out, 1,200 deaths from tuberculosis in a year indicated that there were at least 120,000 cases of the disease — this in a city with a population in 1900 of 348,180. The death rate remained at this level until 1918.

There was a variety of possible explanations. One was the poor housing. A G Malcolm, in a paper read in 1862 to the Statistical Section of the British Association, described the workers' homes in Belfast: 'The great majority of the poorer classes of houses consist of four rooms in two storeys. These are usually occupied by two families. Each room varies from seven to 10 feet square. Each has usually, but not always, a window. The upper sash is invariably immovable. Not infrequently as many as 18 or 20 people sleep in this limited accommodation. There is a great want of systematic drainage. What there is, is of a most primitive

character signifying that the rain from the clouds and the sewage from the dwellings are at liberty to make their own intersections and channels without any interference on the part of man'.

Another explanation was the working conditions. Dr C D Purdon in 1872, in an address to the annual meeting of Certifying Medical Officers of Great Britain and Ireland, gave a graphic account of the ill-health produced by workers in the linen mills. In one process, moisture was essential and the clothes of the workers soon became saturated with spray from the looms. When work was over for the day, they made their way to their homes, which were sometimes a considerable distance away, in their wet clothes, to a meal of bread and tea. This was the staple diet. If one member of a household of such debilitated individuals contracted tuberculosis in their overcrowded and ill-ventilated rooms, the disease readily spread to others in the family.

The Victorians took a very pessimistic view of tuberculosis, with good reason. Too often they had had the melancholy experience of losing several or all the members of their family to what was then a quite mysterious affliction. It was regarded as the 'will of God', 'a decline', or a 'weakness that ran in families'. The Victorian novelists had a lot to say about tuberculosis; it was a very genteel way of disposing of characters in their books. Keats, who himself died of tuberculosis, wrote that 'youth grows pale and spectre thin and dies'. Charlotte Brontë, whose sister Emily died of tuberculosis, wrote in *Shirley* a description of Caroline Helston's illness, clearly with the experience of Emily's illness in her mind, 'with all this care it seemed strange that the sick girl did not get well; yet such was the case; she wasted away like a snow wraith in thaw; she faded like any flower in drought'.

Tuberculosis was a difficult disease to diagnose. The early symptoms were minor and easily overlooked. Where the disease had advanced to cavity formation in the lungs with a large amount of tubercle bacilli in the sputum, the patient might only complain of being easily tired, with a disinclination to make any effort, a general feeling of debility, a slight cough, a slightly raised pulse rate; and a spitting of blood was often the first evidence that the patient had tuberculosis. Sir William Gull, the eminent Victorian physician, used to tell his students: 'However clever you are you will overlook phthisis, syphilis and itch'.

One who laid the foundations which later helped doctors to make the most difficult diagnosis of tuberculosis was René Théophile Laennec. He was born in Quimper in Brittany in 1787. Though he contracted tuberculosis in early adult life and died of the disease in 1826 at the early age of 45, he had a very productive professional life. He became a physician on the staff of the Necker hospital in Paris; it was there he conceived the idea of his 'stethescope' as he called it. This was simply a wooden tube, one end of which was applied to the patient's chest and the other to the doctor's ear, thus enabling him to hear the breath sounds and the beating of the heart more readily than by putting his ear to the patient's chest. Auscultation, as this procedure was called, was no new thing. Hippocrates had described hearing the sound of 'creaking leather' in a patient who had pleurisy. But as Guthrie recounts in his *History of medicine,* Laennec thought that this procedure was 'inconvenient, indelicate and in hospital even disgusting'. He wrote two books about his findings and coined words such as

'pectoriloquy', 'crepitation' and 'rhonchus' to describe the various noises he had heard — words which doctors still use today. Not only did he describe the various sounds to be heard through his 'stethescope', he also described the naked eye appearances of the changes produced in the lung by tuberculosis, how the lesions could occur as isolated 'follicles' or as infiltration through the lung tissue. He recognised the essential unity of the early semi-transparent tubercle and of the established caseous lesion. No wonder Sir William Osler said of him 'that he had laid the foundations not only of our modern knowledge of tuberculosis but also of modern clinical medicine'.

Chapter II

CAUSE AND TREATMENT OF TUBERCULOSIS

The first doctor in Ireland to appreciate the importance of good ventilation in the nursing care of tuberculosis was Henry MacCormac. Dr George Boddington in 1840 had advocated and practised open air treatment, but his English contemporaries paid no heed to him. There is no evidence that Dr MacCormac had ever heard of him, but Boddington's teachings had been accepted abroad and a sanatorium was opened in Germany in 1855, quickly followed by others on the Continent.

Henry MacCormac was born in 1800 in Carnan in County Armagh, and, after studies in Dublin, Paris and Edinburgh, qualified in Edinburgh in 1824. He came back to Belfast and remained there in consulting practice until he died in 1886. He put forward his views on the importance of fresh air in such an obstinate and stubborn way that many who might have been persuaded to accept his opinions were antagonised. He once appeared in Court for breaking the window in a patient's home with his walking stick to let in fresh air. But his views on the value of good ventilation and fresh air were eventually widely adopted, even though his beliefs as to the cause of consumption were quite erroneous. He had no doubt at all as to the value of his opinion and he wrote many books on various subjects, among them several expounding his views on consumption:

> 'It is no more infectious than a broken leg'.
>
> 'Tuberculosis in all its protean guises is but the result of a deterioration in the blood as a result of retention of excrement, carboniferous and other impurities which have no right to be there'.
>
> 'These pages', he wrote in the preface of one of his books, 'shed a light on the phenomenon of tuberculous consumption which the last two thousand years have failed to do'.
>
> 'Hitherto and until declaimed by me the exclusive character of the cause of tuberculosis has been totally unrecognised and undetected'.

Villemin, by a series of classic experiments, demonstrated in 1865 that tuberculosis was transmissible. He found that material from the human tuberculous lung produces tuberculosis in the rabbit and later he transmitted tuberculosis from cattle to rabbits. But the great advance in the conquest of tuberculosis came on 24 March 1882 when Dr Robert Koch announced to the Berlin Physiological Society that he had identified the tubercle bacillus. He followed this up with what became a most famous paper on the aetiology of tuberculosis.

Koch was the son of a mining engineer, born on 11 December 1843 in Clausthal, a small town in central Germany, and he astonished his parents when they discovered he had taught himself to read at the age of five. He was described as a thin, pale, near-sighted young man, with a beard, who looked older than his years. He graduated with honours in 1866 at the University of Göttingen. He developed what became a consuming interest in bacteriology. In 1880, already distinguished for his work on anthrax, he was appointed to the Imperial Health Bureau in Berlin. After two years of work he discovered the tubercle bacillus and a method of growing it in a pure culture.

He published his results in 1882. This discovery caused a sensation. As David C Knight recounts in the book *Robert Koch, father of bacteriology,* 'he became a household word in Germany. 100,000 red handkerchiefs with his name on them were sold; verses about him were printed in the daily papers. The Atlantic Cable, laid then only 30 years, carried the news of his discovery to America'. It was a considerable time before the importance of his discovery was generally realised, and tuberculosis recognised as an infection. Dr MacCormac, who died in 1886, thought nothing of it at all.

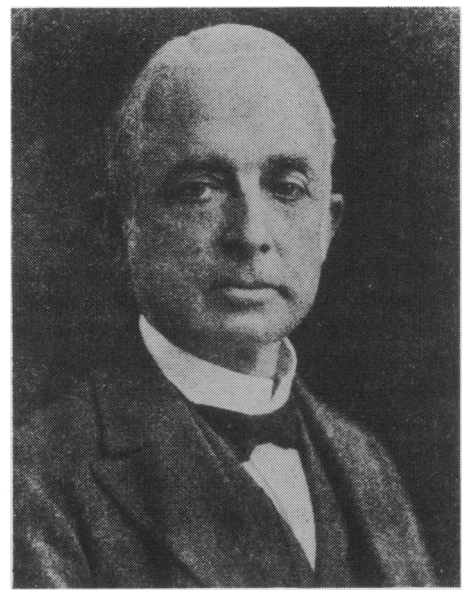


Fig 1. Professor James A Lindsay, MD, FRCP

Many of the medical profession did not accept that Koch's bacillus was the cause of the infection. A noted Belfast anticontagionist was Dr J A Lindsay (Fig 1), who later in his life became Professor of Medicine at Queen's College, Belfast. He wrote a book on *The climatic treatment of consumption,* published in 1887. In it he wrote 'The question of contagiousness of consumption remains sub-judice. Although Koch's demonstration of the invariable presence of the bacillus in tuberculosis had led to the subject being thoroughly reconsidered, little light has been cast upon it. A few cases have been brought forward in which it is difficult to gainsay the operation of contagion, but the numbers of such cases are infinitesimally small compared with the overwhelming number in which every opportunity for contagion is present without result'. It was not realised in Dr Lindsay's day that susceptibility to tuberculosis, and indeed all diseases, is very variable. Some people are virtually immune to tuberculosis just as many seem resistant to cancer. Dr Lindsay began to look after the tuberculous patients in the Throne Hospital in 1886 and resigned about two years later, so his personal experience of tuberculosis at that time could not have been very extensive. Though his views may be surprising to us today, they were those of a substantial body of medical opinion at that time,

Koch continued his work on tuberculosis and in 1890 at the 10th International Medical Conference announced that he had developed a vaccine from human tubercle bacilli which would protect guinea pigs against the disease. He stressed at the time that he had not used the vaccine on human beings, and that he was still searching for a cure for tuberculosis, and warned against drawing too many conclusions from his incomplete experiments. Unfortunately his warning words were soon forgotten, and there was a tremendous wave of excitement all over the world. As Knight records: 'Crowds paraded through the streets of Berlin shouting his name; his picture was glazed on plates and on beer mugs; hymns were sung in his honour'. When it was realised that Koch's tuberculin was not an instant cure for tuberculosis 'Great resentment arose against Koch and abuse was heaped on

him from all parts of the world'. He produced a second variety of tuberculin in 1896 which he called 'new tuberculin', but hopes that this time there was a cure for tuberculosis were not realised, though tuberculin was found to be of diagnostic value.

Honours were now heaped on him and in 1905 he was awarded the Nobel Prize for Physiology or Medicine. The representative of the Royal Caroline Institute in Stockholm said, 'Seldom has an investigator been able to comprehend in advance, with such clear-sightedness, the new unbroken field of investigation, and seldom has someone succeeded in working on it with the brilliance and success which Robert Koch has done. Seldom have so many discoveries of such decisive significance stemmed from the activities of a single man'. In his lecture entitled *The current state of the struggle against tuberculosis,* delivered on receiving the prize, Koch reviewed the position of tuberculosis in the world in 1905, and the efforts which were being made to cure the disease. He said, 'Decline in tuberculosis in England has been under way for 40 years. Significantly it is less in Scotland and completely lacking in Ireland', and made a surprising statement: 'Bovine tuberculosis cannot be transmitted to humans'.

The decline in tuberculosis which Koch referred to may well have been due to the infection killing off so many young people before they could have children that the proportion of non-susceptible individuals in the population rose. It was eventually realised that fresh air, good food, rest, and isolation of the sufferers from the rest of the community, provided the best means of controlling the disease, as Dr MacCormac had been preaching. In early cases, at least under the sanatorium régime, the rapid pulse slowed, there were no more night sweats, the cough lessened, the lassitude and disinclination for effort, both mental and physical, cleared up.

For the patients in a sanatorium in the early days life could not have been easy. A lady recorded her personal experience of tuberculosis: 'The widespread belief that tuberculosis was incurable had hitherto discouraged any attempt to employ systematic measures in a serious attempt to fight the disease. But Dr Otto Walthus of Frankfurt disagreed with this pessimistic view and in his clinic at Nordrach, near Baden, laid down three main principles for successs: feeding, rest and graduated exercise. The patient's environment, he insisted, must be altered so that there should be freedom from the debilitating influences of civilisation. So when in the beginning of 1895 I myself was stricken, I determined to visit his clinic'.

She described her symptoms with almost gruesome detachment. 'At first it seemed to be acute miliary tuberculosis, the pneumonic signs were limited to the right upper and middle lobes. The attack developed the usual signs of acute tuberculosis, high continuous fever, night sweats, great emaciation, scanty sputum at first but becoming nummular, with rapid softening and considerable excavation of the right upper lobe. The reaction after the journey appeared in a few days and a sudden and rapid spread of disease occurred with fever ranging from 100°F. to 102°F. Complete prostration and delirium at night. My friends were sent away. I was not allowed out of bed; I saw only my doctor and nurse who spoke to me as little as possible. My condition seemed hopeless. After seven weeks in bed I was carried outside and allowed to lie on a long chair'.

'My diet was solid food in three meals a day. I had to eat plentifully of fatty and farinaceous food — fat bacon, wheat meal, maize porridge made with Devonshire cream. A dinner for example consisted of a plate of fat pork and potatoes, a large portion of chicken and salad and more potatoes. Then came pastry or pudding. The effect of this diet, which I took in spite of indigestion, was noteworthy. In the first three weeks it seemed to be expended in combating the high fever. No weight was gained but strange to say none was lost. In the next five weeks I gained 22 lbs. The temperature came down gradually; it came below normal in the mornings in four and a half months. The further course of the illness was uneventful, with final arrest after a year's treatment at Nordrach and a total gain of 45 pounds'. All this was found in a journal kept by Miss McCallum of Lindesfarne, Holywood, who had contracted tuberculosis in 1901 as a result of nursing her brother. She was later treated in a sanatorium at Rostrevor, but died of the disease in 1906.

In its early stages tuberculosis usually could be 'cured', but even when apparently cured the disease had an inveterate tendency to recur. Modern methods were still a long way in the future.

Chapter III

FORSTER GREEN HOSPITAL

The first attempt to deal with the problem in Belfast had been the establishment of the Hospital for Consumption and Diseases of the Chest. The Hospital first opened in Donegall Pass in 1880, moved to College Square North in 1889 and then to Fisherwick Place. In 1889 two houses were rented near the Academical Institution. It was realised that the middle of the city was not a good site for a tuberculosis hospital. Not much could be done about it until Forster Green came to the rescue (Fig 2). He purchased Fortbreda House and its grounds, which were then out in the country, for £20,000, and presented it to the management of the Hospital for Consumption as a solution to their problems.

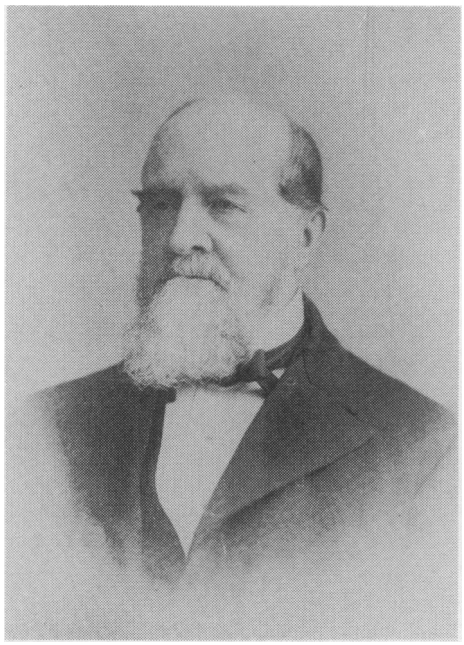


Fig 2. Forster Green (1815 – 1903)

Forster Green was born in 1815, on a farm in County Down, the son of a prosperous linen weaver. After some early setbacks he became a most successful grocer in Belfast with a special interest in tea and coffee. Being a Quaker, he did not approve of titles and referred to himself always by his Christian name. It was said that he loved nothing better than a good cigar and a high-stepping horse, and was a good judge of both. Later in life he decided that it was wrong to smoke, and gave up cigars, and also their sale. He apparently found giving up smoking a great hardship and is reputed to have said that he 'would rather have lost his little finger'.

Six of his children died in infancy; at least one, his only daughter, of tuberculosis. This may have stimulated his interest in the health of the citizens of Belfast. It was estimated that during his life he gave away at least £200,000. He died at his home in Derryvolgie Avenue in 1903.

The new combined hospital was to be known as the Forster Green Hospital for Consumption and Diseases of the Chest, incorporating the Belfast Hospital for Consumption and Diseases of the Chest. The first annual report of this combined hospital, dated 1 January 1897, notes that the Master of the Rolls in Dublin had given his permission for this amalgamation in November 1896.

There was some urgency to move into the new premises because one of the Fisherwick Place houses had to be vacated on 1 May 1897; but the alterations in Fortbreda House took longer than expected. A great deal of work had to be done.

Fig 3. The Forster Green Hospital for Consumption and Diseases of the Chest, shortly after it opened in 1897.

A new wing was built facing south, new windows were opened in walls so that five new wards all facing south were established in the original home. In all, room for 25 beds was obtained. Then the well was found to be inadequate and a connection with the town's water supply had to be made.

The Management Committee of the Hospital for Consumption continued virtually unchanged though Forster Green was now President. He found this task a labour, because as he explained in the first annual report he was losing both his sight and his hearing.

FORSTER GREEN HOSPITAL

Board of Governors 1897

President:	Forster Green
Vice Presidents:	G Herbert Ewart
	Joseph Reid
Hon Treasurer:	T Foulkes Shillington
Hon Secretary:	Mrs Purdon

Mrs Green	John Kinahan
Robert W Corry	William R Patterson
James T Reade	D G Barkley, LLD

Committee of Management

The President

Mrs Robert Anderson, The Park, Dunmurry.	Alfred Malone, Cliftonville.
D G Barkley, LLD, Annadale Avenue.	R T Martin, Wellington Place.
Miss Eliza Bruce, The Farm.	Frank Megarry, Adelaide Park.
R W Corry, Benvue, Malone Road.	Mrs H Montgomery, Upper Crescent.
Forster Green, Derryvolgie House.	Mrs Moss Montrose, Fortwilliam Park.
Mrs F Green, Derryvolgie House.	Mrs Purdon, Wellington Place.
J F Harris, Creswick.	Joseph Reid, Adelaide Park.
Mrs Hind, Sunnymede, Rosetta.	John Simpson, MD, Shaftesbury Square.
Mrs Jas McCalmont, Holywood.	Mrs Sinclair, Pakenham Place.

T Foulkes Shillington — Hon Treasurer.
Alex A Shaw — Assistant Secretary, 9 May Street.

Medical Staff 1897

Honorary Consulting Physicians:
Dr Henry S Purdon, Pakenham Place.
Dr Dickey, Clifton Street.
Honorary Consulting Surgeons:
Mr John Fagan, FRCSI, Great Victoria Street.
Professor Thomas Sinclair, 1 Howard Street.
Honorary Attending Physicians:
Dr Richard J Purdon, Murray Terrace.
Dr John Simpson, Shaftesbury Square.
Dr F Howard Sinclair, Pakenham Place.
Honorary Attending Surgeon:
Mr E C Stark, FRCS.
Honorary Laryngeal Surgeon:
Dr Cecil Shaw, College Square.
Matron:
Miss M E Wright.

The report of the medical staff dated 15 January 1897 refers to the work done in the Belfast Hospital for Consumption and Diseases of the Chest in its various sites since it first opened in 1882. It is the only record available. Clearly a substantial amount of work had been done.

Out-patients:	
New cases	544
Attendance of old patients	2353
	2897
Total since opening of original institution in 1882	55102
In-patients:	
Patients under treatment on 1 January 1897	21
Admitted during year	36
Total for 1897	57
Died	5
Admitted since opening wards in October 1890 until 31 December 1897	418

The second annual report, dated 20 January 1899, recounted that the new hospital was opened for inspection on 30 September 1897 and that the patients were moved in from Fisherwick Place a few days later. Even then the alterations were not completed. A mortuary and a laundry were still required and arrangements for disposal of sewage still had to be made. This latter was accomplished in 1899 'by connecting the drainage system with city sewers at the boundary of Annadale'. In the same year Forster Green announced his intention to clear the building debt which was £5,238 — in those days a very substantial sum.

One of the advances in Belfast, organised by the Forster Green Hospital Committee, was the opening in 1909 of a tuberculosis dispensary with medical staff and trained nurses in attendance. The dispensary, at first sited in rather inadequate premises in Queen Street, was open for four days a week — Monday, Wednesday, Friday and Saturday. Nurses visited patients in their own homes to investigate living conditions and to encourage other members of the family

to attend the dispensary for examination, particularly of their sputum. It was resolved that 'as soon as a new site for the dispensary could be obtained an electrical department should be set up equipped with the new Röntgen rays to facilitate diagnosis in early cases'.

The dispensary was a new departure in dealing with tuberculosis — at that time it was the only one of its kind. Though the Belfast Corporation funded 25 beds in the Forster Green Hospital, where advanced cases were now taken in — they had been empowered to do this by the 1908 Act — it was not until 1914 that they took over the running of the dispensary and opened another on the County Down side of the Lagan, under the care of Dr Andrew Trimble.

For a number of years there was no great change in the tuberculosis scene. The waiting lists continued to be a problem: patients continued to come in at a late stage of the disease. One sensed a slight depression, almost of discouragement, in the medical reports:

> 'The ravages of tuberculosis continued to be a blot on our civilisation'.
>
> 'Tuberculosis infection is almost universal in certain communities'.
>
> 'We have got no specific remedy for tuberculosis. A long and protracted course of treatment is necesssary, as the disease may be only quiescent and will flare up again'.

However, in 1933 came a more hopeful note:

> 'There has been a gratifying decline in mortality. At the present rate of decline tuberculosis will be a rare disease in 100 years'.

And a year later:

> 'Tuberculosis is on the decline in Ireland'.

During 1933 tuberculosis deaths in Northern Ireland numbered 1461, one half of these between the ages of 15 and 35. But this substantial death rate was less than half that in 1913.

In the annual report of the Forster Green Hospital for 1933 is recorded: 'Of the 336 patients treated during the year, 106 came from the Belfast area, 18 from Londonderry, 10 from Crosscannon. The remainder were equally scattered all over the Province. The occupations of the patients varied. Almost all in Northern Ireland were represented: clergymen 4, civil servants 3, police constables 6, shop assistants 15, farmers 10, housewives 41 and 1 golf caddy'. The remainder had quite miscellaneous occupations or were listed as having no occupations. There was no preponderance of factory workers, only four being so listed. There were only six linen mill workers.

The financial position which the sufferer from tuberculosis found himself in began to attract attention. The Employment Committee of the Joint Tuberculosis Council reported on the rehabilitation and care of the tuberculous. 'There is little inducement in the scale of allowances to persuade early cases with few or no symptoms and earning good wages to give up their work when the disease remains early. For many patients all the anxieties of today are more potent, than the fears of tomorrow which they hope may never materialise'. They urged that the treatment allowances paid through the local tuberculosis committee should be increased, and the scope of such allowances enlarged to include all tuberculosis

cases irrespective of prognosis and site of the disease, and that the present scale of allowances be materially increased: 'The change from good wages to treatment allowance will result in a considerable lowering in the standard of living, just when such a standard should be maintained if not raised'.

The Committee on Tuberculosis in Wartime produced a similar report: 'There has been a real increase of death from tuberculosis since the beginning of the war. Poverty is a predisposing cause of tuberculosis, and tuberculosis is a cause of poverty. Fear of poverty impels patients to continue work for as long as possible until the disease reaches quite an advanced stage. In view of the special character of the disease and the prolonged treatment usually required, special financial provisions greater than that obtainable under the National Health Insurance Scheme should be made for patients with tuberculosis. The effects of treatment may be jeopardised by insufficient after-care and rehabilitation'.

The Employment Committee of the Joint Tuberculosis Council reported: 'What happens to a patient when he is in a sanatorium is often of less importance than what happens to him when he leaves'. The report suggested the establishment of a National Rehabilitation Board with regional areas throughout the country to enable full-time and part-time employment to be given to tuberculous patients under suitable conditions and according to their physical capacity.

The Forster Green Hospital continued over the years as one of the active centres for treating tuberculosis. But its original purpose for treating tuberculosis has become much modified. In 1986 the tuberculosis beds were reduced to 10. There are now rarely more than two tuberculosis patients under treatment at a time. At the moment, the beds reserved for tuberculous patients are occupied by patients suffering from cancer of the lung, who are receiving radiotherapy treatment at the Belvoir Park Hospital. It is planned that the Forster Green Hospital will ultimately become a geriatric unit.

Chapter IV

THE THRONE HOSPITAL

Private philanthropy, so vigorous in mid-Victorian times, was anxious and disturbed at the prevalence of tuberculosis in the community. Another substantial benefactor appeared — Samuel Martin of Shrigley, Killyleagh. He came of a family of prosperous merchants well-known for their public and private charitable donations. He was in the traditions of the family when he purchased a property in the north of Belfast known as 'The Throne'; according to local tradition so-called because it was believed to have been a stronghold of the O'Neills.

On 5 April 1872 he wrote to the Treasurer of the General Hospital — James Girdwood — to tell him: 'I hold 27 acres, 2 roods and 16 perches statute measure of land at a place called The Throne. I have decided to establish a home for children there, and I have to request, through you, the proper authorities of the General Hospital in Belfast to accept from me the remainder of the land, on which to erect a convalescent hospital, or for whatever other purpose they wish'.

By 1874 he had erected and formally opened a children's hospital with accommodation for 32 beds. He appointed a matron, Miss Markham, and a physician and surgeon, Dr Marley of Whitehouse. In making the transfer to the Belfast General Hospital he stipulated that at least 10 beds should be set aside for the 'reception of children afflicted with spinal disease and deformity arising therefrom, which may admit of relief and improvement by surgical treatment and care, and who may therefore be inmates for a length of time'. He also stipulated that the General Hospital should build a convalescent hospital on the site within three years.

The Committee of the General Hospital were delighted to receive this generous gift. The opportunity of acquiring a children's hospital of their own, with a convalescent unit and a tuberculosis unit as well, was most welcome. They then decided that the time was ripe to apply for a Royal Charter for the Belfast General Hospital, which was granted in 1874.

Samuel Martin died suddenly of fever in 1882. Replying to condolences from the General Hospital Committee, his father John Martin undertook 'that it shall be a prominent object in the life of his mother and myself to fulfil his intentions to the full extent'. So the work went on. A convalescent block housing 21 patients was erected. John Martin died in 1886.

The General Hospital Committee found that they were unable to get enough money to build a block for adult consumptive patients. So, after having secured permission from the Master of the Rolls, 20 beds in the convalescent unit were set aside for consumptive patients, 10 beds for male, 10 for female, quite shut off from the rest of the hospital. Forster Green had earlier offered to give £5,000 for the building of a tuberculosis unit if a like sum could be raised by public subscription. When this proved impossible he withdrew his offer, but in 1889 he donated a sum of £5,000 plus £500 for the consumptive unit.

In all, in the Throne children's hospital, there were 16 beds for boys, and 15 for girls; and in the convalescent unit 21 beds. The children's department 'had a

large well-lighted theatre'. Mr T S Kirk was appointed surgeon in charge, Dr W Calwell was in charge of the convalescent unit and Dr Marley of the children's unit and the consumptive unit.

All went smoothly for a considerable time. In 1900 permission was given for tuberculous patients at all stages to be admitted. Under the terms of the Martin bequest, only advanced cases were to be taken in — cases in which there was very little chance of either improvement or cure. But the demand for admission of patients to the tuberculosis hospital became less urgent as the years went by. On 18 October 1919 the Royal Victoria Hospital Management Committee resolved that 'no more cases of tuberculosis should be admitted to the Throne Hospital because of the danger of fire in the consumptive and convalescent units . . . The terms of the Deed of Endowment would be fulfilled if the Forster Green funds were used for the treatment of patients suffering from consumption and diseases of the chest in the wards of the Royal Victoria Hospital'.

There is no longer any commemorative token in the Throne Hospital of Samuel Martin, its founder and benefactor; moreover his name has long since disappeared from its original title which was 'The Samuel Martin Children's Hospital'. When he presented the hospital to the General Hospital the Board erected two stained glass windows with the commemorative inscription 'In memory of Samuel Martin of Shrigley, Killyleagh, Founder and Endower of the Sick Children's Hospital'. (The Belfast Hospital for Sick Children at that time was in premises in Queen Street, Belfast). In 1960 a decision was taken to install clear glass windows and the Martin windows were removed and presented to Whitehouse Presbyterian Church where they were re-erected. There is a memorial tablet in the First Presbyterian Church, Rosemary Street, Belfast, of which Samuel Martin was a member. The Hospital is now a geriatric unit.

Chapter V

TUBERCULOSIS IN THE BELFAST INFIRMARY AND AT THE WHITEABBEY SANATORIUM

Patients in the Belfast Infirmary in the Nineteenth Century were nursed under very primitive conditions, in enormous wards, all together. It was not realised that tuberculous patients — and there were many of them — were a source of danger to others. Dr Robert Hall changed all this. He was appointed as a visiting Medical Officer in 1892, at the age of 31. In the Belfast Infirmary at that time there was a total number of 1681 patients. He shared their care with one other colleague. Though he was clearly a young man of enormous energy and enthusiasm he must have found his task a daunting one (Fig 4).

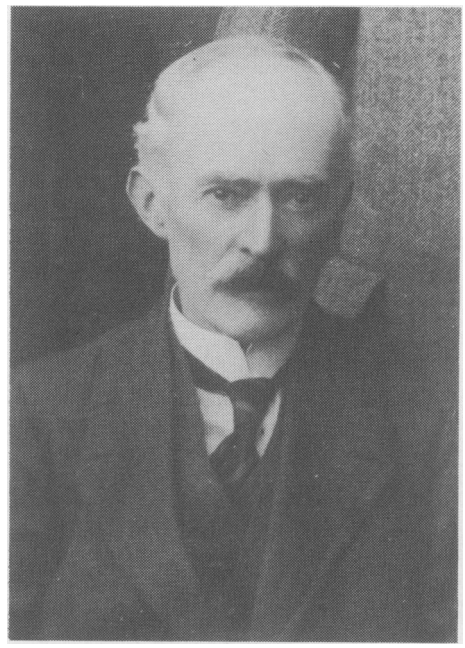


Fig 4. Dr Robert Hall
(from a photograph taken about 1920).

He developed a great interest in tuberculosis. With what must have been great difficulty he persuaded the Guardians — who were a body most reluctant to make any changes — to provide separate wards in which patients suffering from tuberculosis could be nursed. He managed to accomplish this by 1899. He also persuaded the Guardians to provide sputum mugs and had arrangements made to clean and sterilise them. He seems to have been pleased with his new wards. He told the Guardians in his monthly report 'that the new wards were well ventilated and provided every comfort for the patients. In the six months ending 31 December 1900, 314 consumptive patients were treated, as compared with 293 in the past half year'. He also told the Guardians that 'this class of patient would be better treated in a separate establishment in the country'.

In the meantime his colleague, apparently less enlightened, went on treating the consumptive patients under his care mixed up with others in the open wards. Dr Hall continued to agitate that the Guardians should provide a hospital in the country in which to nurse tuberculous patients. In 1904, a site at Whiteabbey — the mansion house which had been the residence of Sir Charles Lanyon, and its grounds — were obtained as an auxiliary workhouse for the treatment of tuberculosis. Sir Charles Lanyon was the eminent architect and engineer who designed so many of our Belfast buildings, among them the Queen's College, the Crumlin Road Courthouse and Prison, the Presbyterian Assembly's College and the Customs House. He also planned the Antrim coast road, the Ormeau and Queen's Bridges, and the Belfast Infirmary. He had died on 31 May 1899.

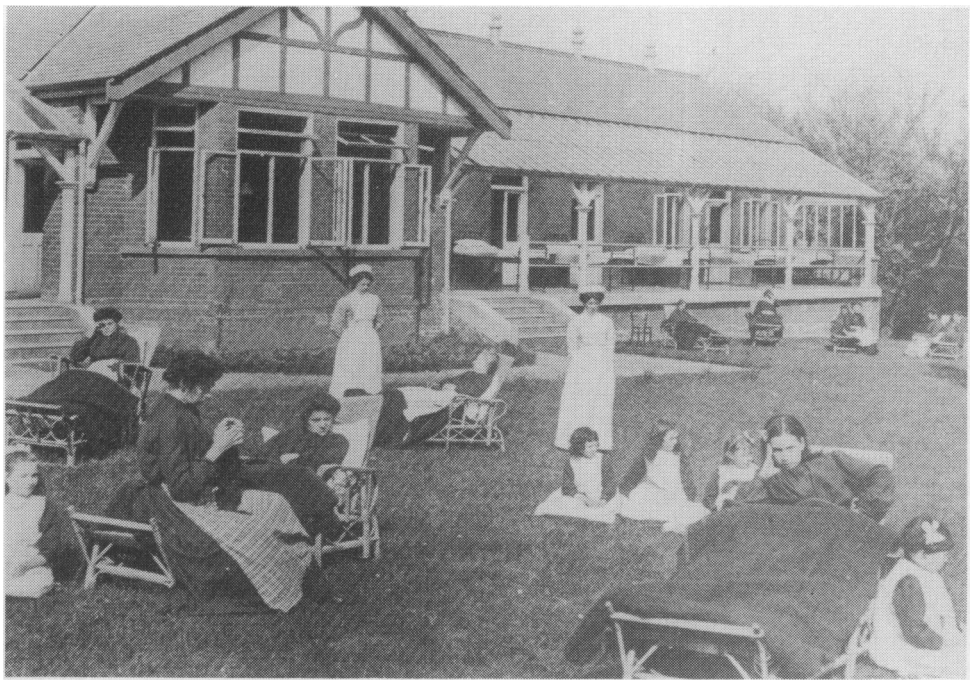


Fig 5. The Abbey Sanatorium, Belfast, shortly after it opened.

Rebuilding began in 1906; eventually, apart from the two-storeyed building, there were four pavilions, so that 210 patients could be accommodated (Fig 5). This new unit continued under the care of Dr Hall and the Guardians until 1 October 1913, when it was handed over to the Belfast Corporation. Some years after the Corporation took over Whiteabbey it fell on evil days, and well-founded criticisms of its administration and its standard of patient care were made. The Tuberculosis Committee of the Corporation was replaced by Commissioners. The then Medical Superintendent retired, and Dr Brice Clarke was transferred from the Forster Green Hospital to replace him. Before long, Whiteabbey became a most efficient Unit.

Even after the Whiteabbey Sanatorium opened its doors, tuberculous patients were still being treated in the wards of the Belfast Infirmary — unfortunately with not much success. There were two wards on the upper storey, one for male and one for female patients. They were poorly ventilated, having low ceilings and small windows. The patients who were admitted came in very reluctantly, realising they were coming in to await their deaths. The Unit was full of unhappy and hopeless people. The air was heavy with the smell of tuberculosis. There was, however, one dramatic occasion when a young woman was admitted, six months pregnant, whose larnyx was affected by her advanced tuberculosis, so that the airway became obstructed, and it was obvious that she was in extremis. A very able young resident doctor, not normally in charge of the ward, carried out a tracheostomy — the first he had ever done. The patient survived long enough to give birth to a healthy baby.

However, things improved in 1948, when Dr Wilson Wallace, then a junior tuberculosis physician in the Northern Ireland Tuberculosis Authority, was asked to take over the care of the wards. This he did on an entirely voluntary basis and continued to do so until he became a full consultant and had other commitments. During his period in charge of the two tuberculosis wards, he quite transformed the situation. Patients now found that they were receiving efficient modern treatment and tuberculosis sufferers were no longer reluctant to go into the Infirmary. By the time Dr Wallace had to leave, beds were available in the Whiteabbey Sanatorium, the tuberculosis unit in the Infirmary could be closed and no more tuberculosis patients were admitted to the Infirmary.

Dr Hall's work was over; he died in 1941. In 1958, since tuberculosis was no longer a problem, it was decided to create a general hospital on the Whiteabbey site to serve Newtownabbey and the surrounding district. A new laboratory was also built, and a geriatric unit of 36 beds. The remaining few tuberculous patients were transferred in August 1968 to the Forster Green Hospital.

Chapter VI

THE WOMEN'S NATIONAL HEALTH ASSOCIATION

The public as a whole were very reluctant to accept that phthisis was an infection. They viewed it as a 'decline' and their living conditions continued to encourage the spread of the disease. It was in order to educate them that the Women's National Health Association was formed in 1907, having 'as their first and foremost duty to take part in the fight against the appalling ravages of tuberculosis in Ireland'.

Fig 6. Lady Aberdeen, President of the Women's National Health Association.

They determined to hold a tuberculosis exhibition. They first formed a special committee of doctors, and of ladies and gentlemen who had experience of the 'subject'. They enlisted the enthusiastic support of Lady Aberdeen, wife of the then Lord Lieutenant (Fig 6). The exhibition took place in Dublin from 12 October 1907 until the end of November. It caused a great deal of interest and crowded audiences came to listen to the lectures and to see the exhibits. Encouraged by this success, they decided to duplicate their exhibition so as to be able to have a northern and southern circuit, which visited towns in both the north and south of Ireland.

The committee recruited the most distinguished medical men of the day to come and give lectures. At their first exhibition in Dublin they had Sir William Osler, then Regius Professor of Medicine in the University of Oxford (Fig 7); Sir Robert Matheson, Registrar General for Ireland; R F Tobin, Surgeon to St Vincent's Hospital, Dublin; Dr Lawson, Medical Superintendent, Nordrach on Dee Sanatorium, Banchory, North Britain; Professor Lindsay, Professor of Medicine, Queen's College, Belfast, and Sir John Byers, Professor of Midwifery, Queen's College, Belfast (Fig 8).

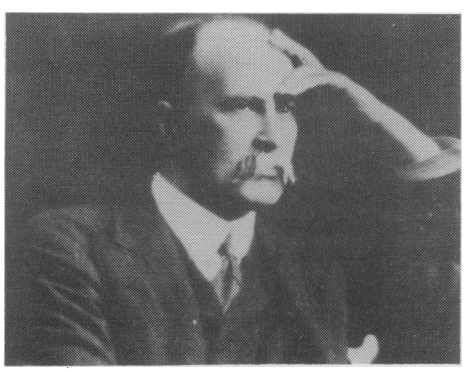


Fig 7. Sir William Osler, 1848–1919, a speaker at the first Tuberculosis Exhibition in Dublin (from a photograph in 1908).

Fig 8. Sir John Byers, Professor of Midwifery, Queen's College, Belfast.

The exhibition brought home to the Irish people the knowledge that tuberculosis was not a mysterious affliction running in families, a manifestation of God's will to be accepted with Christian resignation, but an easily preventable and avoidable infection. The audience must have been astonished to hear how a favourite cow could have destroyed their children or grandchildren. To hear that the tubercle bacillus could continue to lurk in the bedrooms in which sufferers from phthisis had died, waiting for another victim, was almost beyond belief.

They heard about these infected rooms and infected houses from Professor E P Culverwell, of Trinity College Dublin: 'In 1874 a family entered a house; the mother died of consumption. They left the house and were followed by another family, who were previously healthy. The father, mother and one son died of consumption. The next family arrived; father and two sons died of consumption, the mother became consumptive, a child developed hip disease, and another became extremely scrofulous. A fourth family arrived, all healthy. The mother became consumptive and two children died from "tubercular inflammation of the brain". During all this period the dwelling was never vacant. A new family entered when the previous one left. The building was never painted or cleaned out.

'A village carpenter lived in a detached healthy cottage with a family of three sons and two daughters "all most well conducted and sober". The two eldest sons shared an attic room. The eldest died of consumption when aged about twenty-three. The second died of it a year or two later. The room was then unoccupied until the third son grew up, when he moved up into it. After a short time he also fell into consumption and died of it in a year or two. The attic was then unused for a considerable time. Finally the son of one of the daughters — a boy of about ten — came to live with his grandparents. When he was about fifteen he was given the attic room to sleep in. When he was about seventeen he fell into consumption and died. None of those who lived downstairs took the disease. The old father and mother were strong healthy people and lived to old age. Neither of the daughters was consumptive'.

From the President of the Royal College of Surgeons of Ireland, Mr J Lentaigne, they heard about infected cows: 'Seventeen years ago when our knowledge of tuberculosis was very vague I rented a cottage and farm seven miles from Dublin. I was anxious to get a pure milk supply for my children and the landlord gave me the option of taking over a very fine cow which had been on the farm and which was supplying milk for his herd and the herd's family. I noticed that the first thing the herd did was to milk one of the cow's spins so that the first tablespoonful of milk fell on the floor of the byre. The herd explained that "this is a bad spin — there is a little corruption in it". When I examined the spilled milk I found it largely composed of pus evidently coming from an abscess of the udder. I told the herd that this milk was unfit for human consumption but he disregarded my warning and continued to give it to his children. The herd had four healthy children. The first child, a daughter aged ten, developed consumption of the lungs and died. The second boy developed tuberculosis of one knee which I operated on and he recovered, with a stiff knee. A second sister required an operation for a tuberculous hip. The parents refused operation and removed the child from hospital. She became a helpless invalid having to be wheeled about in a perambulator. A fourth child developed tuberculosis but recovered'.

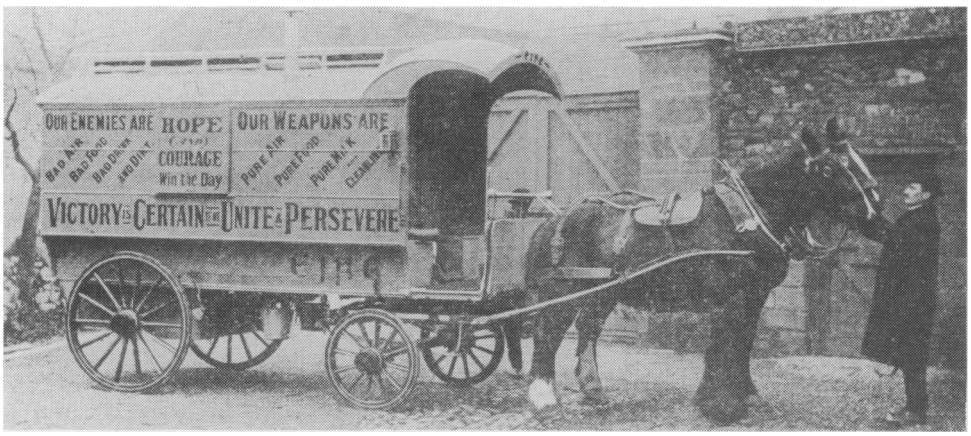


Fig 9. The caravan named Eire which travelled throughout the south and west of Ireland in 1907.

Fig 10. The second caravan, named the Phoenix, successor to the Eire which was destroyed by fire.

When the exhibition closed, the Committee purchased a horse-drawn caravan which they named Eire (Fig 9). This carried diagrams, charts, pictures, literature for distribution, pathological exhibits, a limelight lantern with slides for illustrating lectures — even a gramophone to enliven proceedings. The crew of this peripatetic exhibition consisted of a young medical lecturer, Mr J O'Connor, who spoke both Irish and English, Miss Manderson, a cooking teacher and demonstrator, Mr Fitzpatrick the custodian, who slept in the van, and Cunningham the driver. In addition Mrs Margaret Molloy acted as advance agent. The van travelled all over the south and west of Ireland; its journeys were chronicled by Mr O'Connor. It was burned down at one stage, and its successor was aptly named the Phoenix, which continued travelling (Fig 10). Mr O'Connor recorded that 'Miss Manderson delivered one hundred and twenty-five lectures and I two hundred and eleven'. They visited on the tour one hundred and thirty-five places and there was a total attendance of one hundred and five thousand, five hundred. Mr O'Connor also recored that his throat was sore. It was a disability received in a very good cause.

When the Exhibition closed in Dublin it came up to the north, at first to Belfast, then to Lisburn and finally to Lurgan. In Belfast it was sited in the Old Town Hall in Victoria Street. It began on 7 December 1907, and a great deal of interest was aroused, reported at length in the local papers, especially the *Northern Whig.* Lectures were given each night in the old Council Chamber. There were models of various sanatoria with panoramic views of the work done. Chalets and shelters available for home nursing were demonstrated. There were large diagrams on the walls showing the Registrar General's returns of the death rate from tuberculosis. In the smaller rooms other exhibits were shown. There were tuberculous lungs, kidneys, udders, and a roast of tuberculous meat, all this reinforced by a photographic display. There were X-rays of tuberculous lungs, the attention of the visitors being directed by a large arrow to 'a cavity in a diseased lung, the lung tissue having been eaten away'. The citizens must have found it all most horrifying.

There was even a tuberculous cow on display. This resulted in a letter to the editor of the *Northern Whig,* which complained that after the exhibition closed the cow was sold and 'sent to Scotland — presumably to supply milk for human consumption'. The editor replied that 'the cow had been borrowed by the Veterinary Section for the purposes of the exhibition, and at the close of the exhibition was sent back to the owner. With this the responsibilities of the promoters of the exhibition in connection with the animal ceased'.

The evening lectures were given by various eminent men. They were:

Sir Douglas Powell (Bart), MD, KCVO, President of the Royal College of Surgeons in England
Dr John McCaw, President of the Ulster Medical Society
Sir Robert Matheson, LLD, Registrar General of Ireland
Professor Sinclair, FRCS, Professor of Surgery, Queen's University, Belfast
Dr Lawson, Medical Superintendent, Banchory Sanatorium
Dr William Davison, Technical Institute, Belfast
Professor Mottram, FRCVS, Principal, Royal Veterinary College, Dublin
Professor Lindsay, MD, FRCP, Professor of Medicine, Queen's University, Belfast
Mr A Sayers, Technical Institute, Belfast
Dr William Calwell
Professor Symmers, Professor of Pathology, Queen's University, Belfast
Dr Howard Sinclair.

The Honorary Secretaries were Dr Thomas Houston and Dr John MacIlwaine. The lectures were very thoroughly reported and must have reached a wide audience.

The Lord Lieutenant and the Countess of Aberdeen attended all the meetings in the North of Ireland. The Countess of Aberdeen, who was interested in forming more branches of the Women's National Health Association, as well as promoting a knowledge of tuberculosis, was no figurehead. Her speech in Belfast was reported in the *Northern Whig.* In it she repeated the message for the control of tuberculosis in the community:

i. The disease must be notifiable.
ii. There must be stringent regulations concerning the sale of food and milk.
iii. Children must be medically examined.
iv. County and Borough Councils must be empowered to run clinics in hospitals and dispensaries.

All of these measures are commonplace today. When the exhibition closed on 7 December, 43,000 people had visited it.

The exhibition moved to Lisburn. It opened at 3 pm on Monday 18 December 1907, and at first it was held in the dining hall of Messrs W Barbour & Sons. Arrangements were made for all the work force to attend. The following day it was transferred to the dining hall of the Island Spinning Company, the next day to the Lisburn Assembly Rooms. The proceedings were reported at length in the *Lisburn Mail*: 'The day is breaking on the long night of ignorance, disease, and death which has brooded over the land since somewhere back in the far past consumption established itself as an indigenous disease in Ireland. But, yesterday, everyone regarded this dire malady as an unavoidable and non-infectious disease, which, when once declared, must inevitably slay its victim; and, today, it not only stands revealed as an infectious disease, which, like all others, may be prevented from communicating itself from individual to individual, but as an absolutely curable one up to a certain stage; while it is being clearly demonstrated that by the adoption of certain measures the disease is really radicable from the nation. What a revelation is here, and what can effectually retard the indicated public reforms which alone are essential for the security of the public health! The importance of the exhibition now in Lisburn it is impossible to over-estimate, for, although the exhibits might conveniently be shown in a hall of not great dimensions, they embody the most vivid, interesting, and valuable object-lesson that has ever been presented to the public. By the holding of the exhibition here an admirably effective education on a most vital subject is offered free to every member of the community, and it is hoped that the public will be thoroughly awakened to the adequate sense of their responsibilities in relation to it'.

On 11 January 1908 the exhibition was opened in the Lurgan Town Hall, where the same riveting specimens were displayed, and lectures were given each evening. The proceedings, reported in the *Portadown Weekly News,* were clearly a source of great interest. There are no records of the numbers of people who attended the exhibition in Lisburn and Lurgan, but there must have been many hundreds, and no doubt the Countess of Aberdeen must have persuaded many local ladies to join the Women's National Health Association. The exhibition lasted for a week.

It is difficult to realise from reading statistics the human misery and devastation which this, then mysterious, affliction caused, so many years ago. The *Lisburn Mail* reported from a speech by Sir Robert Matheson: 'Some time ago my eldest daughter, then staying in Belfast, received a letter from a soldier in the Inniskilling Fusiliers, on foreign service, asking her to go and see his sweetheart, as he feared something was wrong, having written three times to her and received no reply. She went. It was in a poor neighbourhood inhabited by factory workers. The door was opened by a haggard looking girl, evidently far gone in phthisis. On enquiring for the young woman, the girl replied sadly, "You mean my sister, she died a month ago from consumption". She then asked her visitor to enter. The house was poor, but very clean. She seemed pleased to have an opportunity for a little talk, as far as her racking cough permitted. She spoke of her sister, and then said, "My brother is ill too, but he still tries to keep at his work as he is our only support". My daughter was deeply moved by this touching story, and suggested to the poor girl that change of air might do her good. She looked up wistfully and said "I couldn't leave my brother alone, and besides, where could I go to". Her visitor said she would call again, to which she gave the sad reply, "I shall be glad to see you if I am still here".

'A few years ago I made the acquaintance of a young girl to whom I was able to

render a service. Shortly afterwards she married, and I lost sight of her. About two years passed by when I received a letter from her sister, begging me to go and see her at once in the country where she was dying. When I arrived at the station her heart-broken husband met me sobbing and crying. The White Plague had entered their pretty little cottage and laid hands on his dear one. In the emaciated form lying there, I hardly recognised the young woman whom I had seen so shortly before in the bloom of health and strength. Two brief months had done the terrible work, and in a few days after my visit she passed away'. Such experiences as this must have been familiar enough to his audience, but less so to us.

This crusade, as it was called, and crusade it was, brought home to the people of Ireland, north and south, the true nature of tuberculosis, that it was an infection which could be avoided, and, at least in its early stages, cured. It was the first attempt which had been made to inform and educate the public, and it was most successful.

Chapter VII

FORMATION OF THE NORTHERN IRELAND TUBERCULOSIS AUTHORITY

Before partition, the Local Government Board for Ireland received reports from their Inspectors on the health of the community, and each year produced a very large report of their own. The Inspectors were well aware of the ravages of tuberculosis. They told the Board about it. They quoted the Registrar General's Annual Report: 'In 1905 there were close on 12,000 deaths in Ireland due to the disease . . . . Tuberculosis in all forms was responsible for a death rate of 2·7 per thousand . . . . A further unsatisfactory feature is the fact that the death rate from tuberculosis in Ireland stands at a far higher figure than either England or Scotland'. Though the Board were probably impressed they took no action until 1907.

They then submitted their Thirty-fifth Annual Report to His Excellency John Campbell, Earl of Aberdeen. In it they proposed a systematic plan for dealing with tuberculosis. There were four elements:

(i) Advanced cases should be admitted to hospital, segregation of highly infectious patients from healthy persons being in itself a great safeguard against infection.

(ii) Where the disease is in its early stages and capable of being arrested, sanatoria should be provided where persons affected could be sent for proper treatment.

(iii) In large centres of population, dispensaries should be provided where advice could be obtained and the latest method of treatment tried.

(iv) Local committees appointed by the Sanitary Authorities to deal with the question of tuberculosis would be very beneficial.

In spite of this good advice nothing was done. It must have been a most frustrating experience to have been a medical inspector. Also in 1907, Surgeon Colonel D Edgar Flint reported visiting a tenement house 'where I found the mother of a family suffering from phthisis. She had been in hospital for six weeks and had recently been discharged. The woman had a family of six; four others had died in the last few years, the mother said "of delicacy". The return of this poor woman to her tenement home is regrettable in view of her condition and the history of her family. She did not appear to have been instructed in taking ordinary precautions in her own, and her family's and her neighbours' interests'.

The Local Government Board reported to His Excellency that though they had been requested by their Inspectors to have consumption listed as a notifiable disease: 'We feel unable to accede to this request. We consider pulmonary tuberculosis to be quite different in development and method of infection to such diseases as small-pox, diphtheria, enteric fever, typhus, etc. No unnecessary restriction should be placed on the liberty of the consumptive patient'.

Dr Brendan MacCarthy, though he was clearly preoccupied with an outbreak of enteric fever in Ballyconnell and Swanlinbar Dispensary Districts, and another in Drumahair Dispensary District, found time to comment on pulmonary

tuberculosis in his area. He reported that small committees had been formed to consider the steps to be taken against the spread of tuberculosis. Committees were formed in Coleraine Urban District, Limavady Rural District, Londonderry No 1 and No 2 Rural Districts, Londonderry County Borough, Strabane No 1 and No 2 Rural Districts, among other places. 'With the exception of the committees formed by the Rural District Council of Londonderry and that formed by the Corporation of Londonderry I do not think any of the committees have ever met to discuss or study the question or taken any steps to deal with it. Some Sanitary Authorities had caused posters to be displayed and distributed leaflets giving information as to consumption and its prevention. A few Sanitary Authorities had agreed to pay for the examination of the sputum of infected cases. But no action at all had been taken by Clones Urban District Council, Dromore Urban District Council, Enniskillen Urban District Council and No 1 and 2 Rural District Council, or Omagh Urban District Council. Advice given to the Local Government Board was never acted upon . . . . It was a difficult and tedious task to seek co-operation among the Sanitary Authorities for the establishment of sanatoria'.

After the partition of Ireland and the formation of the Northern Ireland Government things began to improve. Members of the new Parliament were continually expressing their anxiety about the very high death rate and urged the Government to do something about it. In 1942 a Select Committee was formed to consider the Health Scheme in Northern Ireland. They reported in 1944:

'Tuberculosis

61. Your Committee have heard witnesses from many of the tuberculosis administrative authorities and the tuberculosis officers in Northern Ireland. There are eight schemes in operation, one for each of the six counties and one for the County Borough of Belfast and one for Londonderry. Nineteen medical officers and one part-time orthopaedic surgeon are employed outside the City of Belfast. There are 105 beds provided by local authorities for tuberculosis patients. Sixty additional beds are available in a private Sanatorium at Rostrevor and ten in Ballymena. There are also certain facilities in some of the voluntary hospitals throughout the area.

62. In County Antrim there are twelve tuberculosis dispensaries under a tuberculosis officer and one assistant. There is no sanatorium although there are facilities for early pulmonary cases in the District Hospitals of Ballycastle and Larne, but advanced cases are also admitted to these hospitals and this is considered most undesirable. Cases are also sent to the Forster Green Hospital, Belfast, and non-pulmonary cases are admitted to cottage and district hospitals.

63. In County Armagh there are four dispensaries and a sanatorium at Drumarg under one tuberculosis officer. This Sanatorium has no X-ray apparatus and no facilities for surgical treatment, in fact the TB Services in this county are totally inadequate. There are 33 beds here for all types of pulmonary cases. Non-pulmonary cases are admitted to the Armagh County Infirmary and the Lurgan District Hospital where X-ray examinations can be carried out.

64. County Down has 13 dispensaries under one tuberculosis officer and two assistants. There is no county sanatorium but patients are sent to the Forster Green Hospital, Belfast, to the Royal National Hospital for Consumptives at

Newcastle, Co Wicklow, and to Rostrevor Sanatorium. Non-pulmonary cases are sent to the various general hospitals in the county.

65. In County Fermanagh there are 8 dispensaries under one tuberculosis officer. There is no sanatorium and no X-ray facilities other than those at the County Hospital, Enniskillen. Patients with pulmonary disease are sent to the Forster Green Hospital, Belfast, or to the Royal National Hospital, Newcastle, Co Wicklow. Advanced cases are sent to the Union Hospital and certain cases to one or other of the Belfast hospitals. Non-pulmonary cases are admitted to the county infirmary where X-ray examinations can be carried out.

66. County Londonderry has four dispensaries in charge of a tuberculosis officer. There is no sanatorium, pulmonary cases being sent to Rostrevor or the Forster Green Hospital. Non-pulmonary cases are admitted to the Cottage Hospital, Coleraine or Portrush, or to the City and County Hospital, Londonderry, or Dalriada Hospital, Ballycastle. Advanced cases are treated in the Union Infirmary.

67. In County Tyrone there are 6 dispensaries and a sanatorium containing 32 beds at Dungannon where patients can have X-ray examinations under one tuberculosis officer. X-ray facilities are also available at the Tyrone County Hospital, Omagh. Advanced cases are admitted to the Union Hospitals and non-pulmonary cases to the county hospital.

68. Londonderry County Borough — The county borough has a scheme under the charge of the medical officer of health for the city. There is no sanatorium but X-ray facilities are available in the City and County Hospital. Patients are sent to the Forster Green Hospital, and Rostrevor Sanatorium. Some are sent to England and to the Londonderry City and County Hospital. There are no open air schools but arrangements exist for the admission of suitable cases to the Papworth Village Settlement, Cambridge. Advanced cases are admitted to the Union Hospital, Londonderry.

69. Belfast County Borough has a municipal sanatorium at Whiteabbey where there are 265 beds. There are three resident medical officers, one of whom is the medical superintendent. Cases are not admitted from outside the borough except for certain small areas which are within the Belfast rural dispensary areas. Seventy beds are available at the Belfast Union Infirmary, bringing the total of beds up to 335. Six doctors are in daily attendance at the two city dispensaries, at one of which X-ray examinations can be made.

70. There are two Open Air Schools, one at Whiteabbey and the other at Ventnor. At Ventnor Hospital they have 44 beds for the treatment of bone and joint tuberculosis in children under the charge of a part-time visiting surgeon. This is the only hospital in Northern Ireland dealing exclusively with non-pulmonary cases and this is quite inadequate.

71. Forster Green Hospital is a voluntary hospital administered by a board of management. There is a medical superintendent and three resident doctors for 200 beds. The surgical treatment of pulmonary tuberculosis is a feature of the institution and operations are performed gratuitously by an honorary visiting surgeon. By arrangement with the county councils cases are admitted from Antrim, Down, Fermanagh and Londonderry. The Murray Trust defray the cost

of a certain number of wholly necessitous persons who appear to have a reasonable chance of recovery. The fund at present is sufficient for about 22 patients.

72. It will therefore be seen that there is a considerable divergence of facilities in the various county areas and it would be much more satisfactory from every point of view if all the schemes were co-ordinated by some central authority, such as a Ministry of Health; this would ensure that there would be uniformity of facilities and administration throughout Northern Ireland. Your Committee are satisfied that there is a serious lack of bed accommodation for tuberculosis patients — in fact about 500 additional beds are required and the problem as to how this is to be overcome raises the question of the extension of the existing sanatoria, or the building of new sanatoria, or a combination of both.

73. Your Committee are convinced that two additional sanatoria are required. One might be situated in the north part of the Province and the other somewhere in the neighbourhood of Belfast. These two sanatoria, together with Whiteabbey and Forster Green, would enable the treatment of the disease to be more or less centralised in these four sanatoria where there would be a competent staff of surgeons and doctors who would be available at any time. Your Committee are of opinion that it is much better to have these large sanatoria adequately staffed with all the necessary equipment than to have various isolated sanatoria under-staffed and under-equipped, and that even while the initial expense might be heavy it would be cheaper in the end to run four large sanatoria than it it at the moment to keep various smaller ones in operation. This is all the more necessary because within recent years remarkable advances in treatment have taken place and surgical operations designed to ensure rest to the diseased lung are undertaken daily at every modern sanatorium.

74. The modern treatment of tuberculosis demands not only the provision of fresh air and suitable buildings but the services of an experienced and adequate staff of medical and surgical specialists. Radiology plays a very important part in the diagnosis of tuberculosis and the services of an expert radiologist are essential, together with ample facilities for a bacteriological laboratory.

75. The sites for these new sanatoria should be carefully selected and there should be ample provision for outdoor exercise and suitable work. In the interests of the patients and their relatives there should be adequate transport facilities.

76. One essential requirement is the open air school. It may be necessary for children to spend several years at such a school and during this time their education should not be neglected. Some of the existing sanatoria might be utilised for certain convalescent patients who would benefit by a change of air and scene after a prolonged stay in the main sanatoria and before discharge to their own homes.

77. Facilities should be provided for dealing with advanced cases within the grounds of the sanatoria. There should also be provision for private patients who would be able to pay for treatment.

78. Another problem, which though difficult in many respects is not impossible of solution, is the care of dependents of tuberculous patients who are in hospital. At present there is little or no provision for the care of children whose parents may require hospital treatment. Relatives and friends sometimes take the children into their homes but in many cases this is not possible and the parent cannot go to

hospital and leave the children uncared for at home. This is a tragedy and is a very serious menace to the public health. The tuberculous father is often discouraged from having early treatment on account of financial considerations and the only solution that we can see to this problem at the moment is by a system of family allowances in such cases.

79. After-care should include medical treatment and nursing where necessary, and training for suitable re-employment. After-care committees are an important part of any tuberculosis scheme.

80. Two further questions have been considered by your Committee — (i) the question of notifiability and (ii) the question of compulsory removal. As a result of the evidence submitted we are of the opinion that all cases of clinical tuberculosis should be made compulsorily notifiable. With regard to the compulsory removal of the patient from the home it is agreed that it is highly desirable to isolate these infectious cases.

81. Your Committee are deeply concerned with the tuberculosis situation in Northern Ireland, especially with the lack of progress made in many areas in the treatment of the disease from the standpoint of individual and communal welfare, and they recommend that the Government should take immediate steps to ensure a speedy improvement in the measures which can be taken to deal with this most urgent problem. It is a fact that there has been a decrease in the death rate from the disease, but this reduction has been very slow. Your Committee are satisfied that much more could be done by energetic measures to assist local authorities in the carrying out of their various schemes'.

Following consideration of this Report the Northern Ireland Government set up a Health Advisory Council under the chairmanship of Mr Howard Stevenson, a well-known Belfast surgeon — 'to advise the Minister of Health and Local Government upon matters he might refer to them from time to time, to draw his attention to matters which seemed fit for him to consider, and to advise him of the general administration of the Health and Medical Services'.

The better to do this the Council set up a Tuberculosis Committee; they reported in 1946: 'This committee set itself the immediate task of considering the whole question of the attack on tuberculosis as a medical and social problem and of advising the Council on the measures which the Minister ought to be urged to adopt'.

Anxious that there should be no delay in pressing forward with this important work the committee completed its inquiries within three months, with the result that the Council within four months of its establishment was able to present the Minister with a comprehensive recommendation:

> 'One concentrated attack on tuberculosis is needed and to achieve this a single authority for Northern Ireland is advisable;
>
> Only a unified scheme gives promise of real success;
>
> There should be ample local authority representation on the new body;
>
> 500 additional beds for pulmonary tuberculosis should be regarded as the absolute minimum;
>
> While the authority's main duty should be to deal with tuberculosis, it should have power also to treat non-tuberculous chest diseases and non-tuberculous orthopaedic defects;

Prevention and education must have a prominent place in any tuberculosis scheme;

The general care of patients, including their dental treatment, must be thought of in planning their long stay in hospital;

Special provision is urgently needed for cases in which tuberculosis occurs during pregnancy;

The Treatment Allowances Scheme should be extended to include all cases of pulmonary tuberculosis instead of being limited to those in which there is good prospect of early return to fitness'.

On the specific question of prevention the Council was in favour of the following four steps:

'It should be made possible for a doctor coming across a suspected case of tuberculosis to make a "provisional intimation" before notifying the case finally on diagnosis;

All forms of tuberculosis should be compulsorily notifiable;

There should be power to require contacts of tuberculous patients to submit to medical examination;

There should be power for the Courts to order the removal to hospital of an infectious person'.

The Committee then went on to examine the question of a safe milk supply in the light of modern medical opinion and of the realities of the present position in Northern Ireland. As a result the Council had no difficulty in agreeing on a recommendation in favour of widespread pasteurisation. The Council thought it right to advise the Minister that 'bovine infection through milk plays a much smaller part in the causation of tuberculosis than is often assumed; the most liberal estimate is ten per cent. Still, that is a serious problem in terms of death, crippling and human suffering'.

As a result of this report the Northern Ireland Tuberculosis Authority was set up. There were to be 17 members on the Authority, four nominated by the Minister of Health, the remaining 13 from the various county and borough councils. There was power to co-opt a further two members. The Authority was similar to schemes in use in Lancashire and Wales, and the Welsh pattern was used for Northern Ireland.

It is only right that those of our Ulster citizens who carried out what was a most formidable task so successfully should not be forgotten (Fig 11). They were (in the first instance):

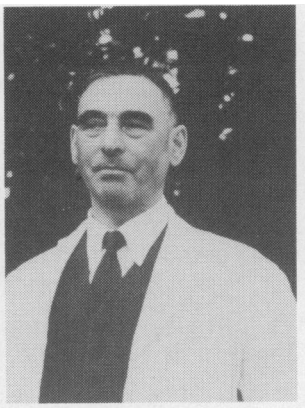
Alderman Percival Brown, CBE (Chairman)
Alderman D Hall Christie (Vice-Chairman)

Mrs M J Beattie, MBE, JP	Mr F S McKinley
Mr W J Black, JP	Mr Andrew Millar
Councillor T W Harpur	Councillor Samuel Orr, JP
Councillor J Hopkins	Mr Alfred Russell, JP
Councilor W Johnston	Alderman A Scott, JP
Dr D G Kennedy, JP	Professor W J Wilson, MD, DSc
Mr James N Lamont	

Fig 11.

SOME EARLY MEMBERS OF THE NORTHERN IRELAND TUBERCULOSIS AUTHORITY

WILLIAM HARVEY
(Secretary)



DR BRICE CLARKE
(Director of Tuberculosis Services)

SIR PERCIVAL BROWN
(Chairman)

ALFRED RUSSELL, JP

ANDREW SCOTT, JP

T W HARPUR

W E G JOHNSTON

PROFESSOR W J WILSON

The Act defined the duties of the newly created Authority:

(a) the accommodation and treatment of patients suffering from tuberculosis, including their general care, their care and maintenance during treatment, their after-care and their industrial rehabilitation.

(b) the discovery of cases of tuberculosis.

(c) the prevention of tuberculosis.

(d) the giving of advice to, and the education of, the public and tuberculosis sufferers, with respect to the best means of preventing and treating the disease.

(e) the initiation of courses of instruction to medical students, doctors and nurses.

(f) the performance of any function transferred to it or vested in it by virtue of the Act.

Their task was indeed a formidable one. Among Northern Ireland's population of some 1,300,000 there were known to be 14,235 sufferers from tuberculosis. It was certain that the number would increase as improved methods of diagnosis were introduced. The death rate was 85 per 100,000.

The newly formed Authority took stock of their assets. The very comprehensive report of the Select Committee had made the position clear. The standard of patient care available differed widely over the province; in some cases it was adequate, in others there was no more than a county workhouse with a small hospital attached, understaffed and lacking in facilities. On 31 December 1947 they had access to about 1,200 beds. There was a waiting list of some 750. This was a most unsatisfactory state of affairs.

In addition, in Belfast there was a central clinic equipped with both a static X-ray and with a mobile miniature radiography unit. Both the Dungannon and Armagh hospitals had clinics where X-ray facilities were available. There was a particularly well-equipped and active diagnosis unit at the County Hospital Omagh.

The Authority made two appointments which were to prove very valuable to the future well-being of the service. They were Dr R Brice Clarke, Director of Tuberculous Services, and Mr William Harvey, Secretary of the Northern Ireland Tuberculosis Authority.

The Authority looked for more beds. There was an unoccupied hospital in Londonderry, which had been an American naval hospital during the war. This they acquired on loan from the War Department, and re-named it St Columb's Hospital. It was to provide 156 more beds. They planned to extend Dungannon Hospital to provide 100 beds. The Manor House at Crawfordsburn was purchased with the idea of turning it into a hospital of 80 beds primarily for children. They planned to turn the Orthopaedic Hospital at Greenisland into a modern hospital with 120 beds. They made overtures to secure beds in various other hospitals for the use of tuberculous patients, with such success that by the end of 1948 the number of available beds had gone up to 1,302. They decided to re-name the hospitals which had come into their care to avoid using the terms consumption or tuberculosis in the titles.

To improve efficiency the province was divided into five regions, each with an

experienced doctor to be in administrative charge, to co-ordinate the clinical and hospital services in the area. They then set to work to create more out-patient clinics. These were recognised as being particularly important in the control of tuberculosis, not only as diagnostic centres for new patients, but also to supervise the well-being of those patients who had been discharged from hospital. This was essential since tuberculosis was very liable to recur. In the apparently cured patient the disease might only be quiescent.

It was not enough to diagnose and treat patients with tuberculosis: effective welfare arrangements were essential so that those diagnosed as suffering from tuberculosis could be helped and advised in their own homes, and contacts could be detected and advised to attend the clinic. This was often a very difficult task: the attitude of 'what I don't know won't hurt me' was difficult to overcome. The Authority set up a system of trained health visitors attached to each clinic. Dr Clarke recorded in his Annual Report or 1948: 'The reception which a patient receives when first visiting a tuberculosis clinic may make all the difference to that patient's future co-operation and peace of mind. It is no light thing to attend a clinic for the first time and await a verdict that may jeopardise one's whole future, not only as regards employment but as regards normal home life as well. One learns from the lips of many patients how much a reception by a kind and tactful health visitor may help in the struggle ahead'.

The attendance of the health visitor at the clinic not only served to stimulate their interest and keep them acquainted with methods of diagnosis but the patient was given added confidence to know that the health visitor was familiar with his clinical condition. The health visitor was able to advise on the general hygiene of the home conditions; beds and bedding were supplied on loan; milk and extra nourishment were provided. Many tuberculous patients were found to be sharing beds or bedrooms with other members of the family — in one case a tuberculous mother had four children in bed with her. Chalets were provided so that patients could sleep outside. On occasion it was possible to re-house a family to secure isolation of the sufferer. Home nursing services could be provided and home helps, and when the tuberculous mother had to be admitted to hospital there were resident nurseries available where the children could be looked after.

Apart from the four clinics just mentioned — Belfast, Coleraine, Dungannon and Omagh — 44 other clinics were taken over. Most were quite lacking in any facilities and were often little more than a room rented for the purpose in a private house. New clinics were planned, as often as possible to be in association with a general hospital, which had many advantages. Patients preferred to attend a hospital they were already familiar with, and there was the benefit for the physician in charge of the clinic to have access to all the facilities of a general hospital.

In the report of 1949 there is a record of the work done in the various clinics during the year: Total attendance 54,870; radiological examinations 40,604; surgical procedures 15,900; cases examined for the first time at the clinic, including contacts, 18,000. Dr Clarke reported that 'more than half of the adults in Northern Ireland had been infected with the Tubercle Bacillus. The aim of the physician is to diagnose tubercle at the earliest stage . . . . it is frequently necessary to observe the patient for a period before a definite diagnosis can be

made . . . . it is important that no person is labelled tuberculous without the exercise of the greatest care . . . . this procedure saves many hospital beds and also minimises the social and economic consequences of being labeled tuberculous'.

A central laboratory was established in 1947 at Whiteabbey, under the care of Dr L Violet Reilly. An immense amount of work was required. Not only were all the bacteriological investigations, and all the routine work required of a hospital laboratory, carried out, but the sanatorium laboratory was involved in much more special typing and culture work, and the Whiteabbey laboratory served as a centre for typing and for all the other specialised work required. Investigations necessary on the then new drugs, streptomycin and para-amino-salicyclic acid, increased the work load. Laboratories were also established at St Columb's Hospital in Londonderry, and at the Dungannon Chest Hospital under the care of Dr J H C Johnston.

Dr Reilly wrote in her report on the work carried out in 1958: 'With the continuing fall in the death rate from tuberculosis it might have been expected that examinations for the detection of the tubercle bacillus would be less numerous, but this has not been the case. In fact the number of examinations of sputum has increased during the past year. Since control of the disease depends to a large extent on the early detection of the infectious case it seems highly desirable that these laboratory examinations should continue to be done if control is to be maintained or improved. The number of patients suffering meningeal and miliary tuberculosis has shown a further decrease'. This volume of work and high standard of care continued over the years.

The Authority had to ensure a proper standard of treatment for tuberculous sufferers all over the province, and they had to provide an adequate number of beds. Dr Clarke pointed out that 'Canadian experience had shown that there was a definite relationship between the death rate from tuberculosis in a community and the sanatorium accommodation: at least two beds per annual tuberculous death is required. When one takes into account the isolation of the infectious patient, the educational value of sanatorium treatment, the curative resources at present available, and the excellent prospects of better means of therapeusis in the near future, one cannot doubt that additional beds will pay a big dividend to the community'.

In the early stages of tuberculosis patients do not feel ill; perhaps they notice that they are easily tired, but to begin with that is about all the disturbance that the disease produces. By the time that the patient is coughing and producing sputum containing the bacillus the disease is well advanced.

When the Tuberculosis Authority took on their responsibility, Dr Brice Clarke estimated that at least half the adult population in the Province had been infected by tuberculosis, and that there were at least 3,000 undiagnosed active cases. The most important single investigation for detecting an early case was a good quality X-ray of the chest, which could demonstrate an otherwise undetectable lesion.

The Authority found that only four of the hospitals and clinics they had taken over had X-ray equipment, and some of this was obsolete. Their first task was to install new X-ray equipment of the latest type. This they did in the Dungannon Chest Hospital, the Dungannon Clinic, the Armagh Chest Hospital, St Columb's Hospital

Londonderry, in Coleraine and in Enniskillen. There was a mobile mass radiography unit in Durham Street; they ordered another for Londonderry, and realising how essential such units were they continued to buy more so that by the time the Authority was disbanded in 1959 they had five.

In the first year of operation, 30,000 persons were X-rayed, 164 of whom, hitherto unsuspected, were found to be in the early stages of tuberculosis, and 87 of whom had tubercle bacilli in their sputum. The mobile mass radiography units made it possible for workers in factories, children at school, and their teachers, to be X-rayed with very little disturbance of their activities. It is almost certain that the decline of tuberculosis in Ulster, when it came after the war, was in some part due to the operation of the mobile radiological units.

By 1958 it was clear that the Tuberculosis Authority had accomplished its task. There was now no waiting list and there was a substantial number of empty beds. The final report came in March 1959 when the Tuberculosis Authority's functions were transferred partly to the Hospitals Authority and partly to the local health and welfare committees.

In 1946 20 people were dying each week from tuberculosis and three times as many new cases were occurring. When the Tuberculosis Authority finished its task, only two deaths each week were occurring as a result of tuberculosis.

The report of the Tuberculosis Survey Northern Ireland, 1982 commented on the Tuberculosis Authority: 'The legacy of this remarkable tuberculosis organisation, the creation of which pre-dated the Northern Ireland Health Service, can be seen in the fact that the incidence of tuberculosis in the Province is substantially lower today than in the other areas of the British Isles'.

By 1981 the Eastern Health Board had doubts about the cost-effectiveness of the Mass Radiography Service and on 5 January 1981 decided to seek the opinion of their Chief Administrative Medical Officer, who consulted his colleagues in the other Health and Social Services Boards. They in turn consulted the chest physicians and radiologists. Following this review they decided to terminate the service with effect from 1 December 1983, and to 'mothball' the equipment so that it could be resurrected if it was required.

ADDENDUM TO CHAPTER VII

B R Clarke

Brice Clarke joined the Army in the First World War when he was still a medical student. He came back to Queen's University with a Military Cross, and having had the experience of being a Tank Commander on the Western Front. He qualified with Honours in 1921. After a series of appointments in chest hospitals he became Medical Superintendent in the Forster Green Hospital.

In 1943 he transferred to become Medical Superintendent of the Whiteabbey Chest Hospital and the Greenisland Hospital for Children, shortly afterwards becoming Chief Tuberculosis Officer for Belfast.

With the coming of the Northern Ireland Tuberculosis Authority he became Director of Tuberculosis Services in the province; later consulting physician for

chest diseases and lecturer in tuberculosis at Queen's University. He received the honour of CBE.

He wrote articles on tuberculosis in various journals, and the section on tuberculosis in the 9th edition of Whitla's *Dictionary of Treatment.* In 1952 he published a major work, *Causes and prevention of tuberculosis.* On his retirement he devoted his interests to his garden at Hillsborough where he died in June 1975.

William Harvey

William Harvey was appointed as a very young man a clerk in the Borough offices of Newtownards. He rose to become Town Clerk, and was later honoured by being appointed Mayor. While he was Town Clerk the Northern Ireland Tuberculosis Authority appointed him as Secretary, and he retained this office until the Authority gave up its responsibilities in 1959.

He then became Secretary of the Northern Ireland Hospitals Authority, and, when this was reorganised, Chief Executive Officer to the Eastern Health and Social Services Board.

He was also invited to serve on the Senate of Queen's University and in 1959 was awarded the OBE. On his retirement from the Eastern Board he was appointed Honorary Treasurer of the University. On his final retirement from the University he was awarded the degree of Doctor of Literature (*Hon Caus*). He is now living in the south of England.

Chapter VIII

LEGISLATION TO ENSURE A PURE MILK SUPPLY

The eradication of bovine tuberculosis

Though well aware that milk from infected cows and from dirty dairies was a health hazard, at first the authorities did not do much about it. The original acts were drafted with the object of protecting animals rather than human beings. There were various acts which gave sanitary authorities the power to prevent the sale of milk which might be infected, but these applied to epidemic diseases such as scarlet fever and enteric fever rather than to tuberculosis. The object of the Food and Drugs Act was to prevent adulteration and watering of milk.

It was possible for local authorities to obtain special powers to deal with tuberculosis in cows, especially tuberculosis of the udder. In Ireland, 80% of the local authorities did nothing about this. In February 1908 a new Dairies, Cowsheds and Milk Shed Order was issued by the Local Government Board for Ireland for the control of cowsheds and the methods used to store milk.

Progress was very slow and the regulations were often not observed. However a further Act — The Tuberculosis Prevention (1908) Act — made notification of cases of tuberculosis by the family doctor mandatory. The sanitary inspectors now had a statutory duty to supervise cases of tuberculosis in the home and advise about methods of sterilisation of sputum.

The strain of tubercle which infects cows is of great importance to us; children are especially vulnerable if this organism is present in the milk they drink. Meningitis can occur, as well as infection of bones, joints and lymph glands. Apart from human beings, the bovine type of tubercle bacillus can affect almost all animals — dogs, cats, horses and goats can be infected. Recently, to their misfortune, badgers and deer have been suspected of being a source of infection to cows.

In the north of Ireland the measures to obtain a pure milk supply were pursued energetically. Veterinary surgeons and bacteriologists were appointed to each county. The bacteriologists tested suspected milk samples; the veterinary surgeon's task was to inspect herds of cattle and have those suffering from tuberculosis slaughtered, with appropriate compensation. The farmers welcomed these measures and were very pleased to have milking herds certified as being free from tuberculosis.

In Belfast the reports of the Medical Officers of Health over the years make interesting reading. All shops and other premises where food was stored or sold were inspected. These included dairies, confectioners' shops, butchers' shops, fish and chip shops, ice cream shops, markets, railway station restaurants and hawkers' carts. When milk samples infected with tubercle bacilli were found, the infected cows which had produced the sample were tracked down and slaughtered.

Another most important measure to ensure a clean milk supply was sterilisation by 'pasteurisation'. This had been introduced by Louis Pasteur in 1860 in his efforts to deal with a problem which the wine growers of France had encountered. His method was found to have a wider application. When milk was heated to

62°C for 30 minutes, or 72°C for 15 minutes, any tubercle bacilli it contained were destroyed, as indeed was any other organism which had contaminated the milk by dirty handling. In Belfast, pasteurisation on a commercial scale was first introduced by the Belfast Co-operative Society in 1913, when they began their business in Federation Street. For the first time, milk was delivered to the customers in sealed bottles. This innovation was subsequently adopted by other milk wholesalers.

When the Milk Marketing Board began its operations in 1955, the method of collecting milk from the farms was improved. The custom had been for the farmers to put their milk into large churns and leave them at the bottom of the farm lane, to be collected by the wholesalers when it was convenient for them. The milk was exposed to the heat of the sun, so any organisms in it were encouraged to grow. The Milk Marketing Board provided the farmers with insulated containers in which the milk could be refrigerated. The milk was collected from the farms in large insulated tankers, and taken to one of a number of depots from which the wholesalers drew their supplies. Samples of milk produced by the individual farmers were taken from time to time and examined by a bacteriologist. All the milk was pasteurised before being issued to the wholesalers.

These efforts to free milk from contamination with the bovine strain of the tubercle bacillus have been most successful. Though infection of humans from bovine tuberculosis still occurs, the number of cases is very small, never more than two in a year. The curious finding is that the infection is in the lungs, not in the bones and joints, as was the case in what might be termed classical bovine tuberculosis. It has rarely been found possible to find the source of infection, but milk and milk products are scarcely ever implicated.

Chapter IX

BCG VACCINATION

Perhaps one of the greatest benefits in the conquest of tuberculosis was the introduction of BCG vaccine. Dr Honor Purser, in a paper published in the *Ulster Medical Journal* and reprinted in the Fourth Annual Report of the Northern Ireland Tuberculosis Authority recounted: 'In 1908 Calmette and Guérin began to grow a particular strain of bovine tubercle bacillus on special culture media. Koch had used the human strain of tubercle bacillus. The research continued over many years, using different experimental animals, first to determine the harmlessness of the vaccine and secondly to test its immunising powers. Finally in 1923 it was given to newborn infants in Paris with no ill effects and with some success. These years of experiment were necessary in order to produce a vaccine that was stable in virulence and potency, one that was incapable of producing a progressive tuberculous disease and at the same time had the power of conjuring up the protective mechanisms of the body so that a possible virulent infection would be successfully resisted'.

It was called BCG vaccine, meaning the Bacillus of Calmette and Guérin. The vaccine produced today is still grown from the original strain of organism. In the early years the vaccine was imported from Denmark. It was a fresh liquid preparation which arrived weekly packed in ice, and had to be collected and put into a refrigerator for distribution. This was later replaced by a freeze-dried vaccine made in England which was more easily distributed.

BCG vaccination had two benefits — the preliminary tuberculin tests could detect those hitherto uninfected and at risk of developing tuberculosis, and it could protect them from their first infection. This was done by injecting a small amount of tuberculin into the skin or applying a jelly containing it to a scarified area. From the local reaction which followed, it was possible to identify those who were already infected and those who were hitherto uninfected and required vaccination. It was thought that the protection provided by vaccination would last at least for five years, though, if need be, the vaccination could be repeated. In the case of children, they had to be separated from a probable source of their infection for six weeks before and after vaccination.

BCG vaccination was begun in July 1949, at first by Dr Purser working alone. Since in the first instance supplies of the vaccine were limited, it had to be restricted to those most at risk, such as doctors, medical students, nurses, ward maids, contacts not already infected, and newborn babies — particularly those whose mothers had tubercle bacillus in their sputum. In April 1952 Dr H G Calwell was appointed Medical Director of BCG Services. He was to take charge of the special department and to co-ordinate BCG vaccination in Northern Ireland.

Dr Calwell realised that it was essential to obtain support for the project from the Northern Ireland Hospitals Authority and from the county and county borough health committees in order that the scheme might be adopted in the children's hospitals, the maternity hospitals, the schools and the welfare services. In this he was conspicuously successful. He also attempted to introduce the scheme into factories so that the 18 to 23 age group could be protected. The BCG clinics were

accompanied by the presence of the mobile mass radiography unit. The response here was a little disappointing, though some firms welcomed the scheme. Routine vaccination of school leavers was begun in 1953.

During this year there were 15,094 tuberculin tests carried out, 9,948 of those tested were found to be hitherto uninfected and therefore susceptible to infection and required vaccination. The main task of the BCG clinics during this period was the vaccination of family and other contacts referred by chest physicians, and the following up of those vaccinated since 1949. This entailed clinical examination, annual post-vaccination tuberculin tests, and, where necessary, radiography.

New clinics were opened up in the Enniskillen and Derry areas. Dr Leitch was appointed full time to organise and conduct clinics in various areas in the region and to vaccinate nurses and infants in the maternity hospitals. The Queen's University Students' Medical Service began a BCG clinic.

A ward with five cots was opened in the Crawfordsburn Hospital. This was to remove infants from an infected family environment, where either father or mother was suffering from active sputum-positive tuberculosis, and contact with the infection could not otherwise be broken; such contact was especially dangerous to infants. During 1957 it is recorded that 17 newborn babies were admitted to the isolation nursery.

In 1954 the volume of work continued to increase: 24,250 vaccinations were done. Vaccination of newborn infants was begun in the Mater Hospital, and domiciliary vaccinations in Belfast, especially of newborn infants, began. This was a great convenience for the parents, and enabled infants to be more effectively dealt with. In 1955 there were 41,237 vaccinations, a substantial increase on the previous year. The number of home vaccinations had increased greatly and a BCG clinic was opened in the Ulster Hospital. In the 10 years before the Authority gave up its responsibilities 170,000 vaccinations were carried out, mainly on newborn babies, contacts and children about to leave school.

In 1956 however there began a significant change in the BCG vaccination pattern — there was an obvious fall in the natural reactor rate. A falling reactor rate indicates increasingly successful tuberculosis control. The fall in the natural reactor rate continued in the remaining few years of the Northern Ireland Tuberculosis Authority's existence. In 1959 — the last year — it was 21% compared with 25% in 1957 and 46·3% in 1954. This was a clear indication that tuberculosis in Northern Ireland had begun to decline. One authority stated that tuberculosis would cease to be a public health risk when the reactor rate in adolescents was 1%.

BCG vaccination is still offered as a routine to all adolescent schoolchildren in Northern Ireland. This position will have been reviewed in the light of the results of a survey to be completed in 1987. In England serious consideration is being given to abandoning BCG completely.

Chapter X

STREPTOMYCIN

Streptomycin was one of the major medical discoveries of this century. Tuberculosis could now be cured. No longer had the patient to stay for months in a sanatorium, where cure was by no means certain, even in early cases. Many drugs were tried: creosote was a favourite in early days, apparently because it was excreted by the lungs and had an antiseptic sort of smell. Gold salts were used for quite a long time with no good results. Certain chemical substances allied to sulphanilamides seemed hopeful. Perhaps the most bizarre was insufflation of the bowel with a mixture of carbon dioxide and sulphurated hydrogen. Penicillin proved to be useless. The tubercle bacillus enclosed in a kind of waxy envelope was immune to all these. It could affect not only the lungs but almost any organ in the human body, the brain, the kidneys, the lymph glands, the bones, the joints, even the skin. No wonder Sir William Gull commented on the difficulty in diagnosis.

The discovery of streptomycin in no way resembled that of penicillin, where a spore of a particular variety of penicillium was blown in through an open window in Fleming's laboratory and landed on a culture plate, to be noticed almost by accident some time later. Streptomycin was discovered after the most intense labour of a number of scientists, especially Selman A Waksman. It had been known for a long time that there were certain organisms in the soil, called either fungi or bacteria — depending on whether they were being described by a mycologist or a bacteriologist — which had the property of inhibiting the growth of, or killing, other bacteria.

One particular group of these organisms called actinomyces, which seemed to be most efficient at surviving under adverse conditions, and in killing off its neighbours, was first described in 1890 by Gasparini. He named the sample he was studying streptothrix. Over the years other investigators wrote about the properties of this fungus, but the foundation of our modern knowledge was laid by Waksman. He was interested in the antibiotic properties which some of these fungi possessed. There were some organisms that penicillin did not affect at all, notably the tubercle bacillus, and there was a hope that this new antibiotic might deal with it.

The first experiments began in the microbiology laboratory of the New Jersey Agricultural Experimental Station in 1939. A strain of actinomyces was isolated, the product of which they called actinomycin. This was a potent antibiotic but very toxic to experimental animals. In all, Waksman isolated 244 cultures of actinomyces. Finally two cultures were found, one from soil and the other from the throat of a chicken; both belonged to a strain of actinomyces called *A griseus,* which seemed to be what they were looking for. Waksman christened the new antibiotic streptomycin when he announced his results in 1944.

After a great deal of work the molecular structure of streptomycin was elucidated and the preparation of a chemical derivative began. By the end of 1947 sufficient streptomycin had been manufactured to begin exporting it. There was an explosion of interest when streptomycin became generally available and in the

five years following its isolation in 1943, 1,800 papers were published about the results obtained with it. In Northern Ireland clinical trials were carried out by Dr J N White in the Whiteabbey Sanatorium, and he reported on the best ways of using this potent remedy.

Rest and adequate nutrition were all a sanatorium could offer, and certain surgical techniques were evolved with the aim of putting the affected lung at rest. The nerves supplying the diaphragm were readily accessible in the neck, and one nerve was divided so that the diaphragm on the side it served would be paralysed, and the lung would not fill with air during breathing. Another method called pneumothorax was to inject air into the chest cavity so that the lung on that side collapsed. This procedure had to be repeated at intervals as the air absorbed. A more drastic operation entailed removing a portion of several ribs so that the lung would be premanently collapsed. These operations were carried out in Belfast by that quite remarkable surgeon, Mr G B Purce, who pioneered not only chest surgery in the Province, but brain surgery also, this on top of his general surgical activities. He must have had an enormous work load.

The introduction of streptomycin had a dramatic effect on the treatment of all types of tuberculosis. Tuberculous meningitis, previously invariably fatal, could now be cured, though the first attempts to do so were very disappointing. Patients with pulmonary tuberculosis, too gravely ill for any surgical procedures to be contemplated, could now be so improved that surgery could be carried out with success. Patients who would have required surgery could now be cured without operation. But many difficulties were discovered when it was first introduced. Various disagreeable side effects began to occur, notably deafness and dizziness. The greatest problem in the early days, however, was the toleration which the tubercle bacillus developed, to the extent that streptomycin-resistant organisms began to appear. However, new chemical compounds were introduced and by their use this problem was largely overcome.

The first of these, para-amino-salicyclic acid in 1946 had pre-dated streptomycin. It was a relatively feeble remedy, difficult to take and with disagreeable side effects. Better remedies were discovered: in 1953 isoniazid, in 1968 ethambutol, in 1969 rifampicin. Though the necessity for sanatorium treatment no longer exists, these most potent remedies must still be administered under the care of experienced physicians. In the first instance the patient is admitted to a side ward in a chest unit; when the bacilli disappear from the sputum — which may occur in a few days — he is no longer infectious and can be treated at home.

One of the most distressing manifestations of tuberculosis was lupus vulgaris, as tuberculous infection of the skin was called. This usually began between the ages of 12 and 15. Women were affected more often than men. It most often started in the mucous membrane inside the nose, and spread. The disease progressed until the nose was quite eaten away, and the skin of the whole face could become affected. It was common about 60 years ago, when there were upwards of 100 such cases attending the Dermatological Department of the Royal Victoria Hospital. At that time treatment was quite ineffective. The disfigurement was so great that the unfortunate sufferers were often too ashamed of their revolting appearance to venture out of their homes.

Applications of powerful ultra-violet light (called the Finsen light) sometimes

helped a little, but the treatment was very tedious and could only be carried out in a few centres which had the special apparatus required. Then in the early part of 1940 it was found, independently, by Charoy in Paris, and by Geoffrey Dowling in London, that calciferol (Vitamin D_2) in large doses caused remarkable improvement; though the high doses sometimes caused kidney trouble, especially in children. The use of calciferol was discontinued after the introduction of streptomycin and the other modern drugs. This treatment has been so successful that the condition has practically disappeared in this country, though it is still seen in the immigrant population.

Tuberculosis today, though it has not disappeared from the community, is no longer a problem. In 1984 in Northern Ireland there were 130 cases of pulmonary tuberculosis (8·2/100,000 pop.) and 43 cases of non-pulmonary tuberculosis (2·7/100,000 pop.). The corresponding figures for England and Wales were 4,871 cases of pulmonary tuberculosis (9·8/1000,000 pop.) and 1,317 cases of non-pulmonary tuberculosis (2·6/100,000 pop.). In Scotland the figures were 590 cases of pulmonary tuberculosis (11·5/100,000 pop.) and 151 cases of non-pulmonary tuberculosis (2·9/100,000 pop.) and in the Republic of Ireland the figures were 711 cases of pulmonary tuberculosis (21·1/100,000 pop.) and 126 cases of non-pulmonary tuberculosis (3·6/100,000 pop.).

The hospitals under the care of the Northern Ireland Tuberculosis Authority have been adapted for other uses. One, the Whiteabbey Sanatorium, is now a general hospital; others have become general practitioners' hospitals or geriatric units. In Armagh the Drumarg Hospital is used for handicapped children.

We have come a long way from the days when one in six of the citizens of Belfast perished from consumption, and there may well come a time when tuberculosis will vanish from the community. When that day comes, the work that the Northern Ireland Tuberculosis Authority did should not be forgotten.

It is appropriate to quote here from the Tuberculosis Survey report: 'In 1946, 20 people were dying in the Province from tuberculosis every week. In 1959 the figure had been reduced to two. The legacy of this remarkable tuberculosis organisation, the creation of which pre-dated the Northern Ireland Health Service, can be seen in the fact that the incidence of tuberculosis is now substantially lower in the Province than in other parts of the British Isles'. Similarly, the Department of Agriculture has achieved a situation where no cases of tuberculosis derived from infected milk products have been identified in the Province for at least 10 years.

Though tuberculosis in Ulster is no longer a problem, it is far from defeated in the rest of the world. Crofton in 1960 and Bulla in 1981 reviewed the world-wide prevalence of tuberculosis. They came to the conclusion that there were at least 6,000,000 cases and that there were 400,000 deaths each year. Outside Ulster, tuberculosis remains a major killer.

Appendix I

Extract from the Report of the Registrar General for Ireland 1906.

Tuberculosis

In my Annual Report for the year 1905 I had the honour of inviting Your Excellency's especial attention to the havoc which the disease known as tuberculosis is making amongst His Majesty's subjects in Ireland. I feel that it is my duty again to ask your gracious consideration of this important matter which recurs in the Report I now have the honour of submitting.

In introducing this subject, I may state that the fall of the mortality rate for tuberculous disease in England and Wales during the 42 years from 1864 to 1905, as may be seen in the diagram facing this page, is a proof that the disease is at least capable of being successfully combated, and for the purposes of the militant sanitarian may be looked upon as a preventable disease. I cannot, Your Excellency, say that it is a matter of much congratulation that the high death rate of 2·9 per 1,000 in the year 1904 for all forms of tuberculous disease has declined to 2·7 per 1,000 in the years 1905 and 1906. When I come to enumerate the figures which I have compiled, I find that there were 11,756 victims, inhabitants of Ireland; in other words, out of a total of 74,427 deaths registered in Ireland during the year 1906, no less than 11,756, or 15·8 per cent, were sacrificed to a disease which is in a great degree preventable. It is a difficult matter for me to dissociate myself from responsibility in such appalling circumstances, and I cannot feel that my duty terminates in merely collecting and classifying these most depressing statistics. Year after year these facts are published, and although the members of the medical profession are strenuous in trying to awaken the public mind to a state of affairs that can only be considered as destructive to the community, yet, comparatively speaking, our countrymen are not alive to the dangers which threaten them.

No doubt many efforts have been and are still being made with a view of combating the scourge. Amongst these agencies may be mentioned the National Society for the Prevention of Consumption and other forms of Tuberculosis, which has done good service in drawing attention to the ravages of the disease, while the Women's National Health Association of Ireland, recently inaugurated and presided over by Her Excellency the Countess of Aberdeen, will no doubt aid materially in bringing prominently forward the importance of this and other pressing questions of hygienic interest.

Our people have shown that they are not slow to appreciate the benefits of vaccination as a protection from small-pox, and when they are thoroughly awakened as to the infectious character of tuberculous disease they will be the first themselves to aid in its prevention.

The death rates for all forms of tuberculous disease in Ireland for the 43 years 1864–1906 as compared with those in England and Wales and Scotland, show that while in England the rate 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 risen in Ireland from 2·4 per 1,000 in 1864 to 2·9 in 1904 and to 2·7 per 1,000 in 1905 and 1906.

The deaths from all forms of tuberculous disease, amounting as before mentioned, to 11,756, include 8,933 deaths (of males 4,412 and of females 4,521) from tuberculous phthisis (phthisis); 797 deaths from tuberculous meningitis (of males 394 and of females 403); 299 deaths from tuberculous peritonitis (of males 135 and of females 164); 167 deaths from tabes mesenterica (of males 84 and of females 83); 12 deaths from lupus (of males 3 and of females 9); 633 deaths attributed to tuberculous diseases of other organs (of males 352 and of females 281); 858 deaths returned as from tuberculosis or general tuberculosis (of males 411 and of females 447); and 57 deaths returned as from scrofula (of males 29 and of females 28).

Tuberculous Phthisis. The deaths from tuberculous phthisis, including those returned as from Phthisis, were 8,933 in number, and represent an annual rate of 2·4 per 1,000 of the estimated population. A reference to the following tabular statement shows the respective death rates per 1,000 of the population for Ireland during the year 1906, by sexes, and age-periods. Table XIV on page xxv, gives particulars for a period of 36 years regarding deaths from all forms of tuberculous disease in Ireland; and on pages 114–115 of the abstracts the number of deaths by age-periods and sexes is given for the different forms of the disease; there it may be seen that by far the greater number of the decedents were in the effective age periods of life, the highest number for both sexes falling in the age period between 25 and 35 years.

The following tabular statement shows, by sexes and by certain age periods, the total number of deaths from phthisis registered in Ireland during the year 1906, with the respective death rates per 1,000 living at each age period.

Deaths from Phthisis in Ireland

	Total of both Sexes		*Of Males*		*Of Females*	
AGE PERIODS	*Number*	*Rate per 1,000*	*Number*	*Rate per 1,000*	*Number*	*Rate per 1,000*
0– 5 years	152	0·35	80	0·36	72	0·34
5–10 ,,	140	0·32	50	0·22	90	0·41
10–15 ,,	367	0·81	117	0·50	250	1·13
15–20 ,,	1,072	2·30	421	1·81	651	2·80
20–25 ,,	1,444	3·30	730	3·40	714	3·21
25–35 ,,	2,573	3·98	1,292	4·07	1,281	3·90
35–45 ,,	1,557	3·28	781	3·38	776	3·18
45–55 ,,	873	2·15	498	2·59	375	1·75
55–65 ,,	520	1·50	297	1·77	223	1·25
65 and upwards	235	0·84	146	1·04	89	0·64
Total all ages	8,933	2·04	4,412	2·03	4,521	2·04

Tuberculous Meningitis. The total deaths (797) correspond to an annual rate of 0·18 per 1,000 of the estimated population, the deaths of males (394) to a rate of 0·18 per 1,000 of the estimated male population; and the deaths of females (403) to a rate of 0·18 per 1,000 of the estimated female population of the country. Of the males who succumbed, 196 were under the age of 5 years, and of the females 190 were under 5 years of age.

Tuberculous Peritonitis. The deaths from tuberculous peritonitis, including those returned as from tabes mesenterica, numbered 466, and are equal to a rate of 0·11 per 1,000 of the estimated population. Of the deaths, 219 were of males and 247 were of females.

Other Tuberculous Diseases. The deaths from lupus, tuberculous disease of other organs, tuberculosis, general tuberculosis and scrofula in the aggregate numbered 1,560, and represent a rate of 0·36 per 1,000 of the estimated population. Of this total 795 were deaths of males, and 765 were deaths of females.

Appendix II

Extract from the Report of the Registrar General for Northern Ireland 1984.

Tuberculosis

Deaths from this cause numbered 13 compared with 14 in 1983. The rate of 0·01 per 1,000 population is the same as that for 1983. There were 3 deaths from the late effects of tuberculosis in 1984. Although not related to the condition taken to have initiated the sequence of events leading to death, tuberculosis was also an important contributory factor in a further 13 deaths.

The tuberculosis death rates for England and Wales, Scotland and the Irish Republic in 1984 were 0·02, 0·02 and 0·02 respectively.

Northern Ireland: Deaths and death rates from tuberculosis (all forms), 1926, 1937, 1951, 1961, 1966, 1971 and 1974–1984.

	MALES		*FEMALES*		*PERSONS*	
Year	*Number of deaths*	*Rate per 1,000 of the estimated male population*	*Number of deaths*	*Rate per 1,000 of the estimated female population*	*Number of deaths*	*Rate per 1,000 of the estimated population*
1926	849	1·40	992	1·53	1,841	1·47
1937	627	1·00	624	0·95	1,251	0·98
1951	342	0·51	275	0·39	617	0·45
1961	75	0·11	30	0·04	105	0·07
1966	39	0·05	18	0·02	57	0·04
1971	30	0·04	13	0·02	43	0·03
1976	15	0·02	19	0·02	34	0·02
1977	25	0·03	7	0·01	32	0·02
1978	21	0·03	4	0·01	25	0·02
1979	20	0·03	4	0·01	24	0·02
1980	19	0·02	8	0·01	27	0·02
1981	7	0·01	13	0·02	20	0·01
1982	6	0·01	6	0·01	12	0·01
1983	7	0·01	7	0·01	14	0·01
1984	7	0·01	6	0·01	13	0·01

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1971	30	0·04	13	0·02	43	0·03
1976	15	0·02	19	0·02	34	0·02
1977	25	0·03	7	0·01	32	0·02
1978	21	0·03	4	0·01	25	0·02
1979	20	0·03	4	0·01	24	0·02
1980	19	0·02	8	0·01	27	0·02
1981	7	0·01	13	0·02	20	0·01
1982	6	0·01	6	0·01	12	0·01
1983	7	0·01	7	0·01	14	0·01
1984	7	0·01	6	0·01	13	0·01

Appendix III

Last Dying Speech and Confession of BACILLUS TUBERCULOSIS, Esq., Late of Belfast,

With a Full History of his many Crimes and Murders, and his most Edifying End.

'Twas a weariful bacillus, old and faded, worn and gray,
Who, drying on the coverslip, spake thin and far away:
"Proud mortal, ere my form you steep in carbol fuchsin stain,
Ere I bathe in acid alcohol again and yet again,
I would fain recount my story to your sympathetic ear;
But wet my lips with saline, for the Bunsen flame's too near.
I was once a gay young microbe, and I floated round the town,
Wrapped up in well-dried mucus, light as the thistle down.
My race was old and mighty; Koch made us known to fame,
For the Tubercle Bacillus is my far-renowned name.
In the heyday of my vigour, when the world and I were young,
My aims were high — I sought and found the apex of the lung.
With a chemotactic longing leucocytes came flocking round,
We dallied fondly till we changed th' expiratory sound,
So Professor Lindsay spotted me, and ordered me to quit —
I find fresh air unhealthy, I thought it best to flit.
More cautious now, I sought to rest embraced by giant cells,
Within a deep cervical gland that near the phrenic dwells.
Unhappy choice! for Surgeon Kirk removed me all complete,
With half a foot of jugular and half a pound of meat.
My bonds with man, so rudely torn, gave all my faiths a shock,
I doubted — 'Am I human? p'raps I ought to try the flock;
I may be bovine after all; since man evicts me still
I'll look for compensation under Mr. Birrell's Bill'.
So I found a country dairy, just back of Grosvenor Street;
A friendly stripper took me in and lodged me in her teat.
Here, amid rustic sights and smells, I ruralised a space,
Then borne upon a stream of milk rejoined the human race.
Snug in a mesenteric nook I soon addressed my mind,
By fission's simple easy arts, to propagate my kind.
Over the serous surfaces quick spread my hardy brood;
Ascitic fluid came in floods — we found it very good.
But Thomas, prince of opsonists, by fell mischance came nigh:
He took the index of our host, and found it very high.
Treatment on scientific lines we heard him then discuss —
Tuberculin, one miligramme, soon decimated us!
Fleeing the slaughter of my tribe, my powers now rather weak,
With hearty zest I made a nest upon a damask cheek.
There, in an apple-jelly speck, I'd hoped to end my life,
But X-Rays pierced me to the quick — I left th' unequal strife.

Since then I've wandered round Belfast, but find the world grown hard,
Man's bowels yearn no more for me, and bovine breasts are barred.
A band, with demonstrating ways and eloquence profound,
'Gainst me the people's passions raise, and loud the tocsin sound.
Chief instigator of the fray, Sir John — 'No quarter' — cries,
When knights were bold they fought with things — well, nearer their own size!
A surgeon, too, a vet. as well, physicians add their breath,
And gents from sanatoria, where we are fed to death,
And several more who show my crimes, while all the people stare;
Though many a fee they've got for me — they'll get no more, I swear!
For now those oft-respired airs, in which a microbe blooms,
Are blown to Hades by the breeze denouncing 'Stuffy Rooms'.
They've cleared away the dust, in which I used to lurk and hope;
They hear 'What other nations do' — the Dutch are fond of soap.
I lived with darling children once, in tissues soft as silk;
I simply can't get near them now — they sterilise the milk!
Aye, worse than that — excuse the tear of pity in my eye —
The poor milch cows that harbour us, for that offence must die.
The very things I most detest I strive in vain to flee,
All round it's sunlight, food, fresh air, to kill 'the Scourge' — that's me.
Why, many good, hard-drinking souls are sorely put about —
They're going to dock the beer, because I like men fond of stout.
At peril oft before I scoffed, I've managed to outpace
The dreaded phagocyte's pursuit, his fatal slow embrace;
I've laughed to scorn iodoform, and once — 'twas rather warm —
Passed through a disinfector, hid in blankets, without harm!
But at the fate we've met of late imagination swoons —
Frizzling to death by millions in combustible spittoons!
Well, when assailed by these alarms I had begun to quake,
Professor Symmers welcomed me for old acquaintance sake.
Said he — 'Can I believe my eyes, and have we met at last,
Sole Tubercle Bacillus left alive in all Belfast?
Nay, come; I'll gladly take thee in, and gladly give thee place
Upon this spacious agar slope, last scion of thy race.
With glucose will I nourish thee, and human serum too,
And thou shalt grow apace, and I will put thee oft on view —
The parasite that lived and throve — believe it now who can —
In pre-Exhibition ages on pre-Exhibition man'.'

The murmur ceased, the microbe passed; the relics are on view —
A crimson speck, in balsam, on a ground of methyl blue.

For many years the author of these lines was unknown, but the text was found with the papers of Professor Sir Robert Johnstone after his death, and there is good evidence that he was the writer.

EXPLANATORY NOTES TO APPENDIX III

Professor Lindsay	See text, page 11
Surgeon Kirk	T S Kirk, surgeon to the Royal Victoria Hospital
Mr Birrell	Augustine Birrell (1850–1933). Chief Secretary for Ireland (1907–1916)
Stripper	A cow coming to the end of a lactation
Thomas	Sir Thomas Houston, bacteriologist to the Royal Victoria Hospital
Apple-jelly speck	The lesion of a lupus vulgaris
Sir John	Sir John Byers. See text, page 24
A band	The Women's National Health Association
Professor Symmers	W StC Symmers. Professor of Pathology in the Queen's University of Belfast
Exhibition	See text, Chapter 6.

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