

- ²Two books giving full accounts of the history of the Garden up to recent times are Fletcher H, Brown WM. *The Royal Botanic Garden, Edinburgh 1670-1970*. HMSO, 1970, and Deni Bown *Four Gardens in One. The Royal Botanic Garden, Edinburgh*. HMSO 1992.
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- ⁴Grant, Sir Robert. *The Story of the University of Edinburgh*. London: Longmans Green 1884.
- ⁵Desmond R. Kew, *the History of the Royal Botanic Garden*. London: Harvill Press 1995.
- ⁶Rhandhama GS, Chadra KL, Daljit Singh (eds). *The Famous Gardens of India*. New Delhi 1978.
- ⁷The material for this section has been taken mostly from the Dictionary of National Biography and from Crawford DG. *Roll of the Indian Medical Service 1615-1930*. Calcutta: Thacker 1930.
- ⁸Roxburgh William. *Plants of the coast of Coromandel* 2 vol in 1. London, 1795-98. The College Library has a large 'elephant' folio volume of this, one of the most impressive botanical books of the 18th century. The original drawings were done by Indian artists and then engraved and hand-coloured. The engraver of some of the 200 illustrations, if not the majority, was Daniel Mackenzie; one illustration bears the name of F. Sansom, the engraver of the illustrations in the early volumes of *The Botanical Magazine* which began publication in 1787. Mackenzie had been employed as an engraver by Sir Joseph Banks when the latter was preparing the plates for the plants collected during Captain Cook's first voyage in 1768-71. He died apparently in 1800. He also engraved for Franz Bauer, outstanding artist and botanist who was 'Botanical Painter' to King George III. The Mughal emperors had been the patrons of Indian botanical artists and the latter found a new patron in the East India Company and its employees, Roxburgh and his successors.
- ⁹Sinha KK. Francis Buchanan (Hamilton): Physician botanist and surveyor. *Proc R Coll Physicians Edin* 1993; 23: 36-42.
- ¹⁰Wallich Nathaniel. *Plantae Asiaticae rariores* 3 vol. London, 1830-32. The College library has this impressive work in three large folio volumes. The drawings were done by Indian artists, including Vishnupersaud, and the plates and lithographs done by Maxim Gauci, a Maltese who had become a master of the new art of lithography. All coloured plates at this time were coloured by hand.
- ¹¹Wight Robert. *Illustrations of Indian Botany; or figures illustrative of each of the natural orders of Indian plants*. 2 vol. Madras, 1838-53. This work also in the College library contains 182 coloured plates. Again, Wight used Indian artists but he did the lithographs himself. Whilst on leave in Edinburgh, recovering from jungle fever in 1831-34, he had studied the lithographic process. The Library also contains his 6 volume work, published in Madras in 1840-53, *Icones plantarum Indiae orientalis*, with 2,101 plates. These are uncoloured, however, in the Library's copy.
- ¹²Royle John Forbes. *Illustrations of the botany and other branches of the natural history of the Himalayan mountains, and of the flora of Cashmere* 2 vol. London, 1839. Again, Indian artists drew the plants for Royle and Gauci produced the lithographs. The author wrote in his Preface '... the Author must express his conviction of the skill which Mr Gauci has displayed in the representations of the Plants figured, and in which he has been well seconded, first by Mr Clarke, and latterly by Mr Barclay in the Colouring'. There are 97 plates, including two of rhododendrons.
- ¹³Sudhir Chandra *Himalayan Explorers and Collectors*—John Forbes Royle 1799-1858. Reprinted from Himalayan Research and Development 1984. 3.(1) pp 70-4.
- ¹⁴Desmont A, Moore J. *Darwin* 1991 Penguin books.
- ¹⁵Hooker Sir Joseph Dalton. *The rhododendrons of Sikkim-Himalaya* 3 pts. 2 vol London, 1849. This is another book in the College library outstanding both for content and botanical illustration. The latter are again lithographs, made from Hooker's own sketches by Walter Hood Fitch. Fitch was a calico designer in Glasgow who was taken south by Hooker's father, Sir William Hooker, when the latter became Director of Kew. Fitch became the greatest botanical artist of the 19th century in Europe and the most prolific. For 40 years he was the sole artist of *The Botanical Magazine* and provided the illustrations for many books. Nearly one thousand published drawings of his have been recorded. Wilfred Blunt and WT Stearn in their *The art of botanical illustration* (Antique Collectors' Club, new ed. 1994) reckoned that Fitch although he produced 'faultless acres' of drawings yet he 'never entirely mastered Gauci's knack of achieving precision without losing sensitiveness of outline'.

TWO MEN AND A BUG: ONE HUNDRED YEARS OF TUBERCULOSIS IN EDINBURGH*

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The Royal Victoria Hospital, the first tuberculosis sanatorium to be opened in Edinburgh celebrated its centenary in 1994. The one hundred years encompass changes in the toll of tuberculosis unpredictable in 1894; then, the mortality rate for tuberculosis was over 300/10⁵ population; now the notification rate for tuberculosis in Edinburgh is <8/10⁵. These changes in tuberculosis morbidity and mortality did not occur by chance. Two men of vision and determination were largely responsible for Edinburgh's contribution to the success of the battle against tuberculosis—Sir Robert Philip (1857-1939) who developed the Edinburgh Scheme for Tuberculosis and Sir John Crofton (1912-) who demonstrated that the disease was curable by appropriate chemotherapy; both were to achieve national and international recognition in their own lifetime for their separate contributions.

SIR ROBERT W. PHILIP

Early career

Robert William Philip (Fig 1) was born in Govan in 1857 and moved to Edinburgh in 1866 when his father was appointed Minister to St John's, now St Columba's, Free Church. He was educated at the Royal High School on Calton Hill overlooking the underlying city wards of St Giles and the Canongate which had the highest death rates in the city from tuberculosis, over 3/1,000 per year. He graduated in Arts at Edinburgh University and later in Medicine with Honours in 1882, the year that Koch described the tubercle bacillus to the Physiological Society in Berlin.¹ Philip went to Vienna for postgraduate study where he saw for the first time the tubercle bacillus stained with hot alkaline methylene blue. He was quick to appreciate that if tuberculosis was due to transmission of infection with this bacillus then it should be a preventable disease.

On his return to Edinburgh in 1883 he served his term as a resident in the Royal Infirmary. Following this he was appointed assistant physician to Sir Thomas Grainger Stewart in the Royal Infirmary and simultaneously as an assistant in the New Town Dispensary at 17 East Thistle Street. At the same time he began research on the aetiology and treatment of tuberculosis for which he was awarded an MD with gold medal in 1887.² Philip was not satisfied with the management of tuberculous patients in the New Town Dispensary. Cough mixtures were prescribed and while the seriously ill might be admitted to hospital, more often they were simply visited at home by a medical student. No attention was paid to the social component of the disease which Philip now appreciated was infectious.

The first tuberculosis dispensary in the world

Philip felt there should be a directory for each patient containing details about

*Based upon the Royal Infirmary NHS Trust Medical Archive Lecture, 1994.

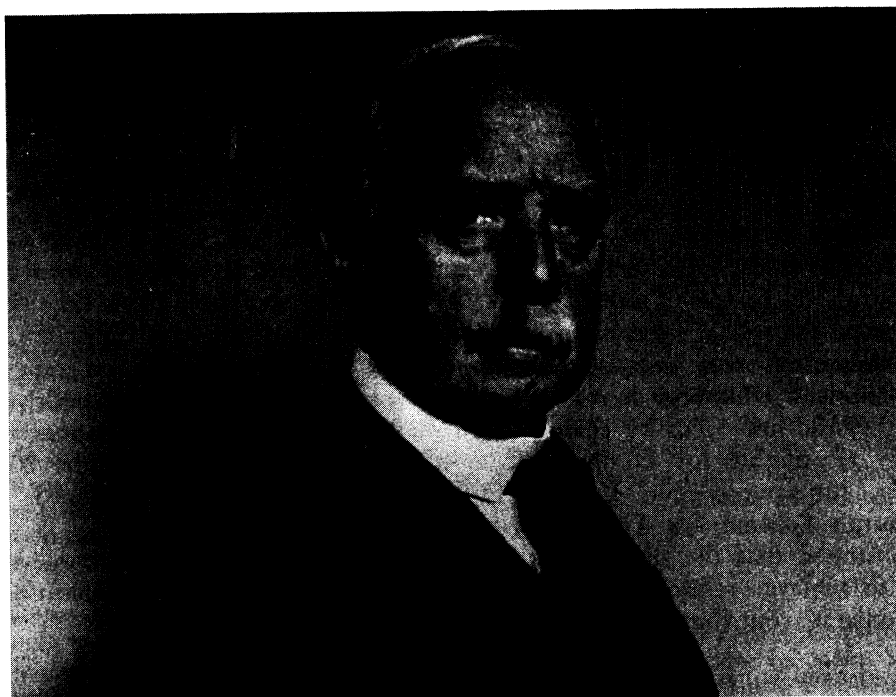


FIGURE 1

Sir Robert W. Philip.

their disease and their environment. The environment needed to be improved, with an emphasis on access to fresh air, and the patient taught how to prevent the spread of infection. The family should be the unit of medical care and contacts of the patient examined for evidence of disease—the 'March Past' of contacts (Fig 2). Care should be provided by specially trained doctors and nurses, operating from a new institution which was to be called a Tuberculosis Dispensary.

As is often the case, Philip was not encouraged by his senior colleagues. A respected Professor of Medicine told him 'Not to think of such a thing. Phthisis was worn to a very thin thread. The subject was exhausted'. Undaunted, and 'with the help of a few kind friends', in 1887, Queen Victoria's Jubilee Year, he opened the Victoria Dispensary for Consumption and Diseases of the Chest in three small rooms in a first floor flat at 13 Bank Street, at the top of the Mound. A plaque erected on the centenary of his birth by the National Association for the Prevention of Tuberculosis declares that this was 'the first clinic in the world dedicated to fighting a disease of which he foretold man's eventual mastery'.

The case register for this clinic resides in the vault of the Royal College of Physicians in Queen Street.³ The first patient was a 25-year old clerk from Musselburgh who did have phthisis. In the first full year, 1888, 212 new patients were seen of whom 43 had phthisis. The other common diagnoses were smoking related with bronchitis (44), catarrhal pneumonia (31), bronchial catarrh (23), bronchitis and emphysema (12) and dyspepsia (5).

In 1891, the clinic moved to larger premises at 26 Lauriston Place where there were consulting and laboratory facilities and also rooms from which the Sanator-

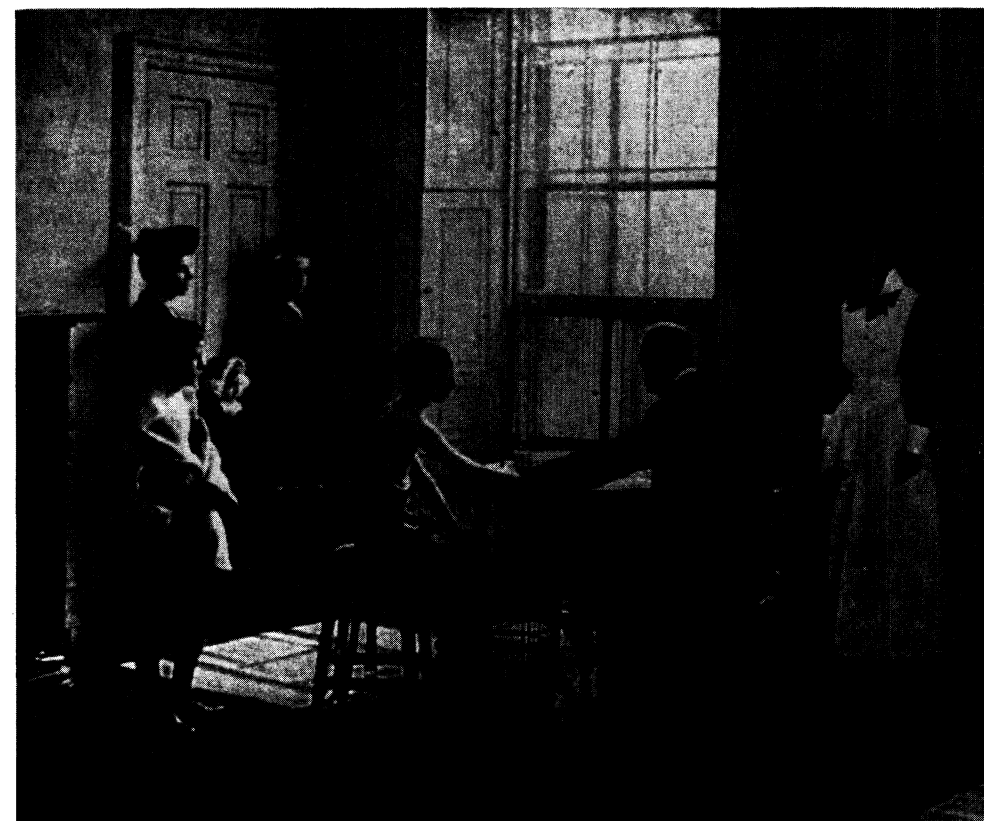


FIGURE 2

'March Past' of the household to detect early cases.

ium Committee of Volunteer Ladies, the forerunners of our Health Visitors, could operate. Home visits by doctors and nurses were also made; in 1904 over 2,000 visits were made by doctors and over 1,000 by nurses. The first visit to the home was important in compiling Philip's directory and the nurses had to complete a schedule for each patient covering the nature of their illness, their occupation, the type of accommodation, ventilation, sleeping arrangements (several people might share the same bed) and various other aspects including the possible source of infection, procedures taken to disinfect secretions and an assessment of the household economy.

In 1912, the Royal Victoria Dispensary (regal status was granted by Edward VII in 1904) made its second move to the former St Cuthbert's United Free Church in Spittal Street just outside the old city walls. There it remained until 1991 when it transferred as the Royal Victoria Chest Clinic to the out-patient department of Chalmers Hospital. On the occasion of the last move an interesting discovery was made in the administration files; a cutting from the *Edinburgh Evening News* in 1955 announced under the caption 'Repeat Prescription', 'A 77-year old man who had attended the Dispensary before, attended again when his chest problems recurred and proudly presented his prescription for renewal. The prescription (Fig 3) was dated 1902! The prescription was contained in a Victoria

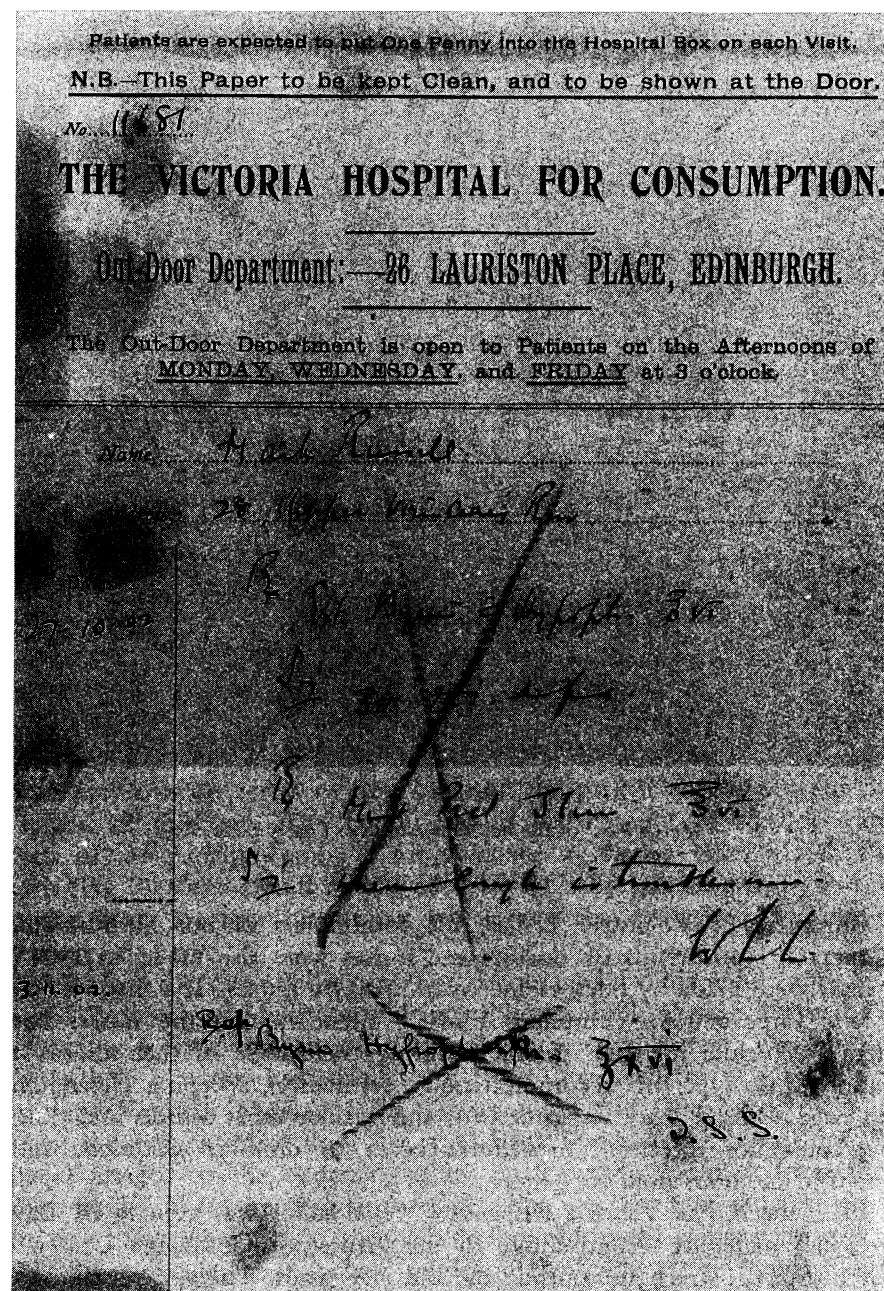


FIGURE 3
 The early prescription.

Hospital (pre-regal status) envelope with clear instructions about opening and dispensing times at Lauriston Place and a note that the cost was one penny but bottles had to be supplied by the patient'.

The prescription (Fig 3) was issued on two occasions and had two components; extract of bynin (malt) with hypophosphites, considered to nourish and to counter general debility; mist. pect. stim. was a stimulant or expectorant mixture containing ammonium bicarbonate, tincture of opium and liquid extract of senega or rattlesnake root. The mixture was to be taken as indicated when cough was troublesome. The initials of the signatories of both the initial and the repeat prescription are of interest; WLL was Dr W. Lesley Lyall and ISS was Dr Ian Struthers Stewart—they were to be the first two Honorary Secretaries of the Tuberculosis Society of Scotland, the forerunner of the present Scottish Thoracic Society (see below).

Edinburgh's first sanatorium

Philip was pleased with the results of his dispensary service but he and his subscribing friends, who were later to form the Royal Victoria Hospital Tuberculosis Trust, had not forgotten his original intention of establishing a hospital for the treatment of tuberculosis. To Philip it seemed that the Edinburgh fresh air should be as effective as the fresh air in the German sanatoria⁴ in hastening the cure of tuberculosis. Craighleith House and its 7½ acres of ground in the north of Edinburgh were purchased and the Victoria Hospital for Consumption was opened 100 years ago in August 1894 with two three bedded male wards and four wards for eight female patients. By 1903, when King Edward graciously consented to become patron of the hospital, Philip's plan to develop the hospital further came to fruition with the addition of the first three of eight south-facing wards contained in 'butterfly' wings. Philip had a keen interest in the plans for this new hospital and frequently made alterations to them. While poring over the plans with the architect on one occasion he could not help noticing that his initials, RWP, appeared from place to place. On modestly enquiring whether this reflected his impact on the developments, he was more than a little put out to discover that RWP stood for rain water pipe!

The mainstay of treatment at the Royal Victoria Hospital was rest and fresh air, either in the hospital or in the numerous covered shelters which were dotted around the grounds and were in use in all seasons. When the omens were favourable regular exercise and work would be introduced into the regimen. Regulated exercises included walking at different paces on different levels of ground, respiratory exercises and various other callisthenics. When this stage was past, regulated work which might range from picking and bunching flowers from the hospital garden to road making, was introduced. Dr Christopher Clayson, a past President of the Edinburgh Royal College of Physicians, recalls that soon after he graduated, when he was under Philip's care, sanatorium patients were expected to wear coloured lapel badges; white was for rest in bed, green for graduated exercise and red for graded work—nobody wore them unless the great man was known to be coming.⁵

In 1906 a school for children was opened at the Royal Victoria Hospital and, the lessons were conducted in the open air (Fig 4).

The hospital for advanced cases

In 1903 Philip concluded negotiations with the city authorities allowing him to

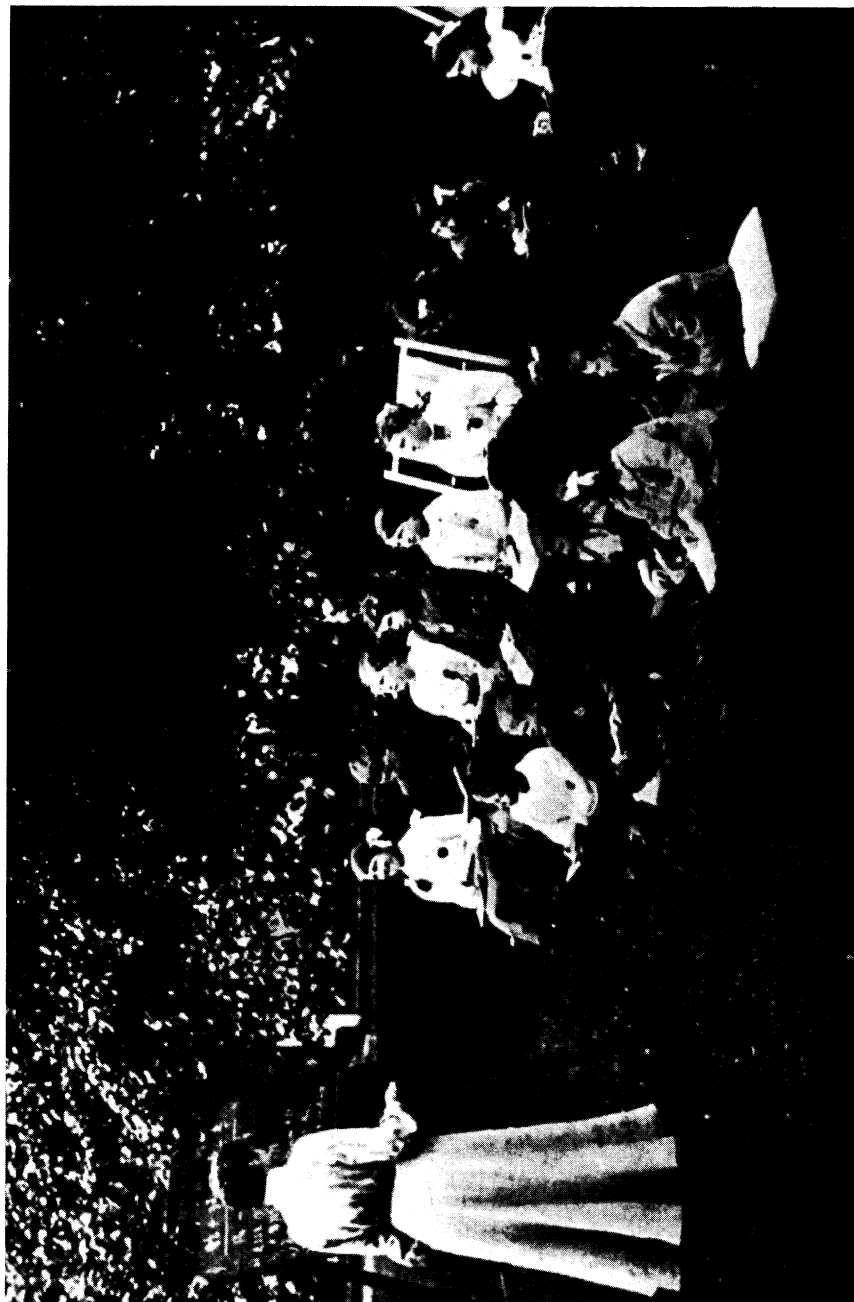


FIGURE 4
A school in the open air.

locate patients with advanced tuberculous disease in two wards in the new Fever Hospital at Colinton Mains, now known as the City Hospital. Philip felt that the medical and nursing needs of these patients were significantly different from those with earlier and presumably curable disease. Although most patients accommodated there would die from tuberculosis, the hospital certainly did not operate as a penitentiary; a health education film produced in 1911 by the National Association for the Prevention of Tuberculosis and entitled 'The Story of John McNeil' shows the patients playing golf in ankle high grass between the wards.⁶ Ninety years later, in 1993, the descendant of that service, the Respiratory Medicine Unit was transferred to the Royal Infirmary of Edinburgh.

The farm colony

In 1910 a farm colony at Polton, near Lasswade, was opened. It was linked to the Royal Victoria Hospital and provided different types of adult work and training for patients who were considered well enough to leave the hospital but perhaps not well enough or sufficiently equipped to return to the community. The activities were agricultural such as planting potatoes, harvesting and caring for pigs, goats and hens. This was, perhaps, the least successful of Philip's ventures but indicates how his vision extended beyond the management of the disease alone to concern for its consequences.

Notification of tuberculosis

As early as 1890 Philip had pressed for compulsory notification of tuberculosis only to be told by Dr Henry Littlejohn, Edinburgh's first Medical Officer of Health, not to throw himself against a stone wall.⁷ The public and the profession were decidedly against such an idea. However, by 1903, Philip had established voluntary notification in Edinburgh and by 1906 local government had been awakened to its responsibilities under the Public Health Act and made pulmonary tuberculosis compulsorily notifiable in Edinburgh in 1907, followed by non-pulmonary tuberculosis in 1914.

The Edinburgh scheme for tuberculosis

When formal procedures for notification of tuberculosis had been secured, what came to be known as the Edinburgh Scheme for Tuberculosis was fully operational (Fig 5). The lynch pin was the Dispensary. Patients were seen, diagnosed, treated and advised at the Dispensary. Their personal and family circumstances were assessed; their homes were visited by Dispensary doctors, nurses and voluntary workers; the curable might be admitted to the sanatorium for rest, fresh air, good food and eventually exercise, and more advanced cases were secluded in the City Hospital where most of them would die. Rehabilitation was possible in the farm colony at Polton and in colonies situated at the Royal Victoria Hospital itself. Notification of cases to the Medical Officer of Health not only allowed the progress of the fight against the disease to be monitored but also ensured appropriate public health measures such as contact tracing.

In 1912, the Astor Committee, the Departmental Committee on Tuberculosis, was set up under Mr Waldorf Astor MP to report on policy with respect to tuberculosis in the United Kingdom. Philip was an influential member of this Committee and it was he who determined the Committee's findings which, not

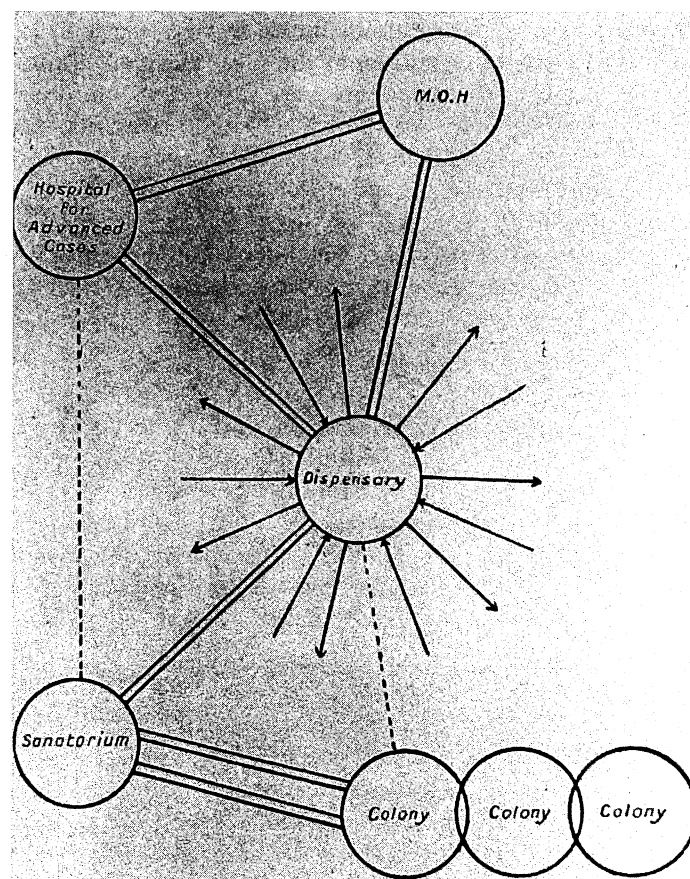


FIGURE 5

The general plan of the Edinburgh anti-tuberculosis scheme.

unsurprisingly, largely recommended the implementation of the Edinburgh Scheme nationwide. One important difference was the recommendation that sanatoria be at more isolated sites (ostensibly on the grounds of cost) leading to the appointment of two different kinds of specialists—Medical Superintendents of Hospitals and Tuberculosis Officers of Dispensaries, the latter usually a senior member of the Staff of the Medical Officer of Health.

In 1913, Philip was knighted and in the same year Dr John Guy was appointed Tuberculosis Officer with Sir Robert retaining his position as Consulting Officer. Although it was less apparent in Edinburgh, throughout the nation the Tuberculosis specialists in dispensaries and sanatoria were now but one step removed from the health service in general and would remain so until the advent of the National Health Service.

The Royal Victoria Hospital Tuberculosis Trust and Southfield Sanatorium

In 1914 the Royal Victoria Dispensary, Royal Victoria Hospital and the farm colony were all handed over to the Corporation of the City of Edinburgh and the Royal Victoria Hospital Tuberculosis Trust was founded. In 1917 the Trust

funded a Chair of Tuberculosis to which Sir Robert Philip was appointed as the first ever Professor of Tuberculosis. Trust monies were also invested in patient services not only locally but nationally where need was apparent. In 1919 Southfield Hospital was purchased by the Trust and in 1922 it opened its doors as a sanatorium colony and effectively the first University Department of Tuberculosis. By then Sir Robert had responded to a letter from Dr Struthers Stewart, Sanatorium Superintendent at Tor-na-Dee in Aberdeenshire, and the Tuberculosis Society of Scotland had been founded in 1921 with Sir Robert as President, and Drs W. Lesley Lyall and Ian Struthers Stewart as Joint Honorary Secretaries.

Among the papers delivered to the Tuberculosis Society in its early days were reports on 'detuberculation' or treatment of patients with injections of tuberculin which Philip favoured for many years although there was no evidence of any beneficial effect. Sanocrysin or gold injections, initiated on the basis of favourable reports from Sweden,⁸ were soon abandoned because of severe side-effects. Zomotherapy, treatment with a diet of raw meat, eggs and stout, though nutritious, was never popular with the patients.⁵ At Southfield the regimen of fresh air, exercise and sunshine was continued and, for those children not benefiting from sanatorium treatment, heliotherapy or sun-lamp therapy was introduced at the Royal Victoria Dispensary in the 1920s. Treatment with artificial pneumothorax was carried out to a small extent at Southfield Sanatorium and other surgical interventions such as phrenic nerve crush were conducted at the Royal Infirmary.

In addition to these treatments, Philip was concerned about preventing tuberculosis and in 1922 he established with the help of the Trust the first tuberculin-free herd of cattle at Gracemount Farm. More importantly, he demonstrated that the production of tuberculosis-free milk was economically viable and set the scene for the abolition of bovine tuberculosis in man. Although keen on prevention, Sir Robert was not so keen to endorse BCG vaccination which had been utilised in many countries long before he died in 1939. Indeed, Philip's influence may well have been the main reason why BCG was not introduced in the UK until 1949. It seems that Philip had a stormy friendship with Calmette, one of the originators of the vaccine, and Christopher Clayson recalls Sir Robert planting a sapling in the grounds of Southfield Sanatorium in the 1930s and saying 'Dear boy, when you and I can smoke a cigar together under the shade of this tree, we can talk again about BCG'.

Philip's contribution to tuberculosis control

By the time Sir Robert died in 1939 the mortality rate from tuberculosis in Scotland had fallen from over 300/100,000 in 1887 to almost 50/100,000. It will never be possible to assess fully what contribution Philip made to this fall in mortality, and also in morbidity. What is clear is that he heightened public and governmental awareness of the disease. Transmission of disease was interrupted by the isolation of infectious cases in hospital; sanatorium treatment with good food, fresh air and exercise gave hope to those less severely affected; milk from tuberculosis-free herds reduced the incidence of bovine tuberculosis; notification and public health measures such as health education and contact tracing may have prevented some disease and allowed earlier intervention in those who were affected. The Edinburgh Scheme for Tuberculosis was adopted worldwide; the 'March Past' of contacts is as important today as it was in Philip's day;⁹ both

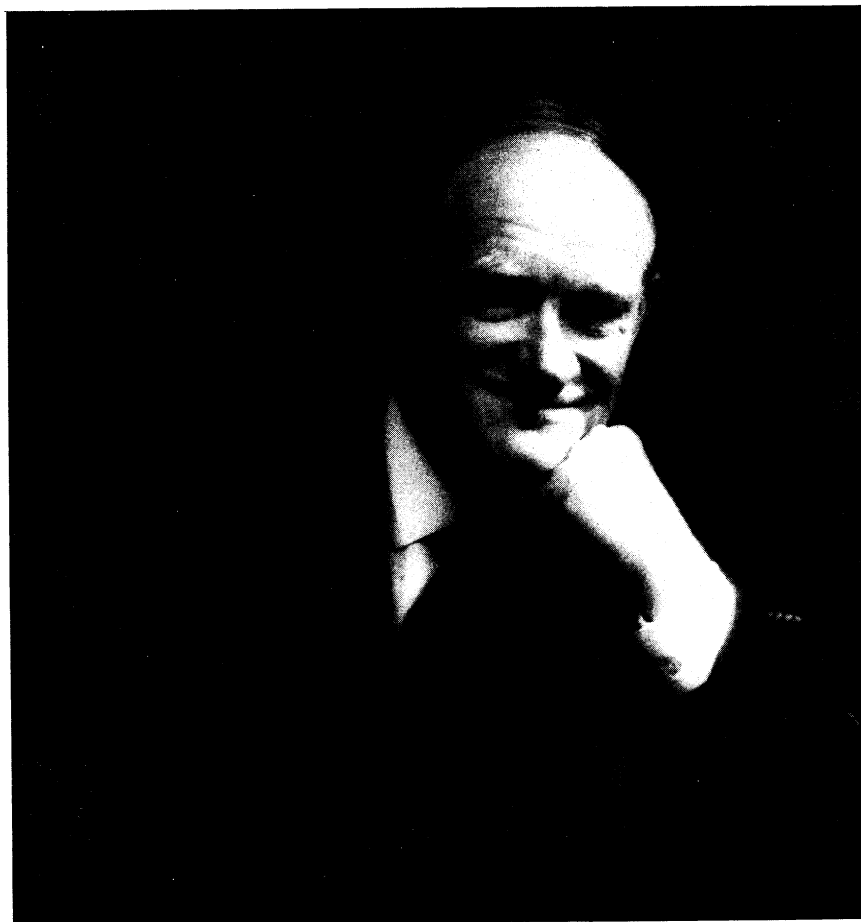


FIGURE 6
Sir John Crofton.

serve as testimonials to the visionary contributions of a great man. His knighthood apart, his distinction was recognised by his Presidency of the Royal College of Physicians of Edinburgh from 1918 to 1923 and of the British Medical Association in 1927.

SIR JOHN CROFTON

Early career

John Crofton's (b. 1912) (Fig 6) earliest memory is of hearing the bullets fired in the Easter Rebellion impact on the ceiling of his nursery in Dublin in 1916. He was educated at Cambridge and St Thomas's Hospital. He served in the armed forces during the 1939-45 war and his experience of typhus in Africa was to be the subject of his MD thesis in 1946. Following demobilisation he worked initially in neurology and diabetes at St Thomas's but later with Dr Guy Scadding at the Brompton Hospital where he had responsibility for patients with tuberculosis. In 1948 he was appointed Co-ordinator of the Medical Research Council Streptomycin Trial and experienced the early benefits of chemotherapy

and the disasters which attended the subsequent appearance of drug resistant organisms. He also participated in the early trials of PAS as a single agent and of streptomycin and PAS combined, the latter combination proving less likely to lead to drug resistant organisms. In 1951 he became Senior Lecturer to the Hammersmith and the Postgraduate School and it was his attachment at that hospital which led his predecessor in Edinburgh, Professor Charles Cameron, to announce to those enquiring, that he was to be succeeded as Professor by a 'young registrar from a municipal hospital in London'.

Edinburgh in 1951

When John Crofton moved to Edinburgh in 1951 the notification rate for tuberculosis, which had risen dramatically during the war, remained high at 160/100,000. He inherited responsibility for 400 tuberculosis beds in three hospitals with a waiting time for admission of one year. The Edinburgh service was provided by two sets of doctors who were separately responsible for the out-patient clinics and the hospital beds. Crofton obtained more beds, negotiated for and won new Consultant appointments, and patiently but persistently unified the service so that within one year after the service was operating as he wished the waiting list had disappeared. Streptomycin and p-aminosalicylic acid (PAS) had been used in the UK but, as Crofton knew from his MRC experience, used as single agents these drugs frequently produced initial clinical improvement only for deterioration later as the tubercle bacilli developed drug resistance. This phenomenon is well described in Colin Douglas's novel *Sickness and Health* where a fine character sketch of the early John Crofton is thinly disguised as Consultant Dr Jimmy Jameson.¹⁰ Dr Jameson's patient, a little girl, has tuberculous meningitis; his kindly and caring management of the girl's father does not detract from the efficient arrangements for the X-raying of her contacts after 'one of the girls' has been round to see them; Dr Jameson sounded 'a bit like General Montgomery on the wireless'. The girl was treated with streptomycin, began to recover and then died after the organism had become resistant following the treatment. Sorting out the particular problem of drug resistance was where John Crofton made his major contribution to the tuberculosis field; a contribution as far-reaching, if not more, than that of his distinguished predecessor, Sir Robert Philip.

Crofton enlisted the aid of a notable team of physicians including Norman Horne, Ian Grant, Jimmy Williamson, Andrew Douglas and (the late) Ian Ross. On the laboratory side he had the support of Archie Wallace and Sheila Stewart. An early priority was setting up regular liaison meetings with the Medical Officer of Health's Department and weekly review meetings at which all sputum positive cases under treatment in the community were assessed. Crofton was quick to realise, on the basis of the early work with chemotherapeutic agents that tuberculosis would only be cured when patients with the disease were treated with at least two drugs to which their tubercle bacilli had been shown to be sensitive. With the introduction of isoniazid, therapy became standardized to include an initial phase of three drugs, streptomycin, PAS and isoniazid followed by a continuation phase of two drugs, PAS and isoniazid.

Combination chemotherapy cures tuberculosis

In a letter to the *American Review of Tuberculosis* in 1958¹¹ in response to an

ongoing debate about the metabolism of isoniazid, Crofton illustrated that if tuberculosis is treated with at least two drugs to which the organism is known to be sensitive the infection disappears from the sputum and the patients recover. Emergence of drug resistance was not a problem if properly supervised and monitored chemotherapy was used. Spot checks on urine samples for the presence of PAS were used to monitor compliance. This announcement of dramatic progress in the chemotherapy of tuberculosis was greeted with some disbelief, but when the full Edinburgh study of patients enrolled in 1953 was published¹² it showed without a doubt that, given appropriate treatment with two or more drugs for long enough, which might be up to 18 months, all patients with tuberculosis could be cured. The phenomenon of emerging drug resistance in the tubercle bacillus had been beaten. Crofton also showed that the treatment was as efficacious when administered to out-patients as when given to in-patients, thus dramatically reducing the demand for the in-patient beds for tuberculosis which he had inherited in 1951.

The impact of effective combination therapy in Edinburgh was described by Crofton in 1960 in his Marc Daniel's Lecture entitled 'Tuberculosis Undeclared'.¹³ The numbers of resistant organisms isolated declined rapidly; mortality and notification rates for tuberculosis fell more sharply in Edinburgh than in any other centre in the world because of meticulous attention to treatment especially in difficult patients, and the need for surgical intervention in tuberculosis diminished dramatically. The schools BCG programme, which started in 1951, could not have contributed to these changes in a major way; more efficient case finding by X-ray campaigns may have made a minor contribution.

Crofton's lecture title 'Tuberculosis Undeclared' was carefully chosen but his conclusion was clear; there was no reason given the then current state of knowledge why tuberculosis should remain undeclared. Tuberculosis could be eliminated if everyone was prepared to take sufficient trouble; complacency had to be avoided. Physicians had to base their prescribing on the pattern of drug resistance in the community. It was not enough just to prescribe; it was the physician's responsibility to ensure that patients were not only informed about their medication but also that it was taken regularly and appropriately. Health visitors were recognised to be indispensable in the supervision of domiciliary chemotherapy and compliance could be checked by regular urine checks at clinic reviews to ensure that the medication was being taken. Most patients were compliant but, in time, strategies had to be developed for the management of those who, for social reasons, most commonly alcohol-related, were non-compliant or unreliable. It seemed that tuberculosis was, as Philip's centenary plaque observed, a disease over which 'he foretold man's eventual mastery'.

Not content with solving Edinburgh's tuberculosis problems, Crofton disseminated his experience widely. The Edinburgh treatment was shown to work worldwide in the International Union Against Tuberculosis trials in the early 1960s with which Crofton was closely associated. He travelled to all continents, lecturing, advising and sharing his experiences with colleagues and politicians alike. Typically, on his retirement from the Chair in Edinburgh, he set out for Nepal to advise on tuberculosis services which he continued to do until age (77 years) disqualified him. Throughout this time he also continued to advise the World Health Organisation on tuberculosis, to lecture on tuberculosis and to pursue major interests in Smoking and Health as well as other health problems of

the multiply-deprived.

Like his predecessor Sir Robert Philip, John Crofton's distinguished contributions to the management of tuberculosis and to medicine were recognised by his election to the Presidency of the Royal College of Physicians of Edinburgh in 1973 and by the award of a knighthood in 1977.

Tuberculosis in the 1990s

Following the introduction of the principles of effective chemotherapy, tuberculosis mortality and notification rates continued to fall in the developed world. The introduction of new drugs such as rifampicin and pyrazinamide allowed the duration of chemotherapy to be shortened to six months making compliance more achievable.¹⁴ In the developing world where tuberculosis prevalence was high, although resources were low, rates also began to fall in countries where national tuberculosis programmes were developed in collaboration with the International Union Against Tuberculosis.

Crofton's 1960 warning about complacency was brought starkly into focus in the 1980s with the advent of the human immunodeficiency virus epidemic. Notification rates for tuberculosis stopped falling and then rose in the USA; in New York City the increase in tuberculosis notifications reached epidemic proportions.¹⁵ Those infected with tuberculosis were not compliant with therapy; public health services previously considered adequate were overwhelmed and unsupervised chemotherapy led to the emergence and transmission of infection with multiple drug resistant organisms.¹⁶ Only recently has this epidemic in New York been reversed by a massive investment in public health services and provision of directly observed therapy for patients with tuberculosis.

The problems identified in New York are small compared to the problems in developing countries where tuberculosis morbidity and mortality were already high before the full impact of the HIV epidemic was appreciated. In many countries tuberculosis rates are rising steeply and in some the majority of patients diagnosed have underlying HIV infection. In many developing countries tuberculosis rates that had been falling are now rising and with the increase in HIV infections the potential for wider transmission of infection has also increased. As WHO observed¹⁷ there is now a global tuberculosis emergency; at worst, multiple drug resistant tuberculosis infection, like HIV infection, may spread worldwide.

CONCLUSION

In Edinburgh over the last century, Sir Robert Philip and Sir John Crofton laid the foundations for the control, prevention and successful treatment of tuberculosis. These foundations have been elaborated upon by the introduction of new drugs and regimens but remain essentially unaltered. Today there are more cases of tuberculosis in the world than there were when Koch described the tubercle bacillus to the Physiological Society in Berlin in 1882. Tuberculosis is no less curable and no less eradicable today than it was in the 1950s. That this is so is recognised by the World Bank which ranks the treatment of tuberculosis worldwide as the single most cost effective health intervention available in the world today, at less than 100 dollars per patient cured.¹⁷ The time has now come for the foundations which were so industriously laid by Sir Robert Philip and Sir John Crofton in Edinburgh to be built upon with equal industry and application

by governments and the profession together.

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THALES TO GALEN: A BRIEF JOURNEY THROUGH RATIONAL MEDICAL PHILOSOPHY IN ANCIENT GREECE

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Part II: Hippocratic Medicine

Hippocrates (Fig 4) was born on the Aegean island of Cos (c. 460BC), of an old family or guild of priest-physicians, Asclepiads, who were reputed to be able to trace their ancestors back to the God of Healing. His name became synonymous with treatises devoted to medicine, written mostly by his pupils. The Hippocratic *Corpus* represented the final philosophical and intellectual break from Homeric irrationality. Its timeless principles and ethics as expressed in the Oath have been passed down from generation to generation of physicians, providing a moral standard by which to practice. Hippocrates advocated the employment of powers of observation and logical thinking from which the physician could deduce the course of a particular illness and its potential outcome.

Before the arrival of the Hippocratic authors, medical thought suffered from two major drawbacks. Firstly, the philosophical enquiry that led to the progress of rational medical thought was secondary to the philosophers' discourses on the attributes of nature. Secondly, the sources for this progress are fragmentary statements that happen to have been preserved because they were quoted by later writers, notably Aristotle. The dominance of irrational medicine in ancient Greece was ended in the fifth century when Hippocrates is reputed to have removed medical practice from the temples, and created on the Aegean island of Cos, his birthplace, a rational and empirical art of healing;¹ however secular superstitious medicine seems never to have disappeared entirely.^{2,3} Perhaps it is sufficient to say that in the fifth century in the Coan School associated with the name of Hippocrates, the training of physicians and the practice of medicine were put on a rational and systematic footing. So was established a firm tradition of rational medicine which was never lost in the centuries thereafter.⁴

Hippocrates travelled widely in Greece and Asia Minor, and by the time of his death in Thessaly in 377BC,⁵ where his tomb was still to be seen in the second century AD, the treatises of the Hippocratic *Corpus* were written. Fifty entire treatises have come down to us, and with other medical text fragments compose what is referred to as the *Corpus Hippocraticum*⁶ (Table 4). However, the available evidence from his own time provides no confidence that any of the works were by Hippocrates himself. Inconsistencies between one work and another indicate that these were probably works of multiple authors, perhaps under the editorship of Hippocrates himself.⁷⁻⁹ Scholars are deeply divided as to which works may have been actually by Hippocrates. The overall conclusion is that the *Corpus* represents a collective drive towards medical rationality. We see in it for the first time, for example in the treatise *Ancient Medicine* (Gk: *peri archaies iatrikes*), the distinction between medicine and philosophy clearly drawn and a breaking away from poetic fantasy and a diety-directed cosmos.¹⁰

The *Corpus* was to be vastly influenced by many great minds of the age, such

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