

## History of the University of Birmingham Medical School, 1825 - 2001

### A Short History of the University of Birmingham Medical School, from 1825

Our beginnings date back to December 1825 when a Mr Sands Cox commenced a course of "anatomical demonstrations" in his father's house at 24 Temple Row, Birmingham.

In 1828 a school was constructed at Snow Hill and in 1841 the Queen's Hospital opened as teaching hospital underpinning the medical school. In the 1850's a rival school started in St Paul's Square with the General hospital as its teaching hospital, but fortunately common sense prevailed; the schools merged in 1868 and became a University Medical Faculty in 1900. The late Queen Mother and the Duke of Gloucester officially opened the Medical School on the University / Edgbaston site on 14th July 1938.

### The beginning...

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From the time of the Lunar Society in the mid to late eighteenth century, to the Institute for Biomolecular Research that opened in the spring of 2004, Birmingham has had a long and proud history of medical education, practice and scientific discovery. The hospitals and the Medical School, through its various guises has produced some of the greatest and best known figures in British Medical History and Birmingham doctors and medical scientists have made a number of important discoveries. It all, however, had very humble beginnings.

By the middle of the eighteenth century Birmingham had transformed itself from a small provincial market town of approximately 30,000 inhabitants into a major industrial and commercial centre. Located on the southern edge of the South Staffordshire coalfield, it was to the forefront of the Industrial Revolution based upon coal and iron, and the application of science and early technology to industry. It also became the home of a remarkable group of men, centred around the Lunar Society which included Matthew Boulton, James Watt, Joseph Priestley, Erasmus Darwin, William Withering, Josiah Wedgwood and others, whose enterprise, learning and innovation brought wealth and growing employment to the town. This employment brought with it a rapid growth in population, but until 1766 there was no hospital or other institution for the treatment of the sick.

It was that year that an infirmary wing (also known as the Town Infirmary) was added to the Birmingham Workhouse, originally opened in 1734, then located in Steelhouse Lane, opposite to what was to become the General and now the Children's Hospital. The Workhouse catered mainly for the sick poor, and therefore could not meet the growing needs of the overcrowded houses, with increasing casualties and sickness, especially as most of them were not parishioners and so not entitled to Poor Law Relief. A new hospital was urgently needed. The idea of establishing a General Hospital had already been realised the previous year when Dr John Ash inserted an advertisement in Aris's Birmingham Gazette on 26 November 1765 calling a meeting "to establish a General Hospital for the relief of the Sick and the Lame, situated near the town of Birmingham". As a result a subscription list was opened and a site of seven acres purchased in Summer Lane. The hospital was designed for one hundred beds at a cost of £3,000. Building was started, but in November 1766 it was suspended owing to the lack of funds; speculative investment in the new Birmingham to Wolverhampton Canal was of greater interest to potential subscribers. However, building was eventually resumed in 1777 and two years later, the General Hospital Birmingham was opened with forty beds, another thirty further being added in 1792. The early staff included as well as Ash, Dr William Withering, Dr Edward Johnston and Dr Erasmus Darwin.

At that time in England, the "jobbing doctors" - the apothecaries - had no qualifications and what medical education they had was gained as an apprentice or assistant to a master. They kept a shop and compounded and sold remedies as pills, potions and plasters. They had some practical knowledge of disease and the use of drugs and some experience of midwifery. The Licentiates of the Society of Apothecaries (LSA), who went on to one of the recognised London medical schools, were a higher class of practitioner. They had won from the physicians the right to prescribe, but left dispensing to the druggists. The hospital surgeons were part of an elite - they were members of the Company of Surgeons (which became the Royal College of Surgeons of London in 1800) and many were articled at very high premiums to leading surgeons in major hospitals. The Company prescribed a course of five years study of which four could be taken in the form of apprenticeship with one year of academic and clinical study. At the very top came the physicians, the only fully trained scientists in the community. After apprenticeship many went on to one of the ancient universities of England, Scotland or Ireland and obtained a degree (usually the MD) and then spent a time abroad.

The first tentative steps at medical education in Birmingham can be traced back to the winter of 1767-1768, when a course of twenty-eight weekly lectures on anatomy were arranged by Mr John Tomlinson, the first surgeon to the Birmingham Workhouse Infirmary, and later to the General Hospital. These classes were the first ever held outside London or south of the Scottish border. The first clinical teaching was undertaken by medical and surgical apprentices at the General Hospital, opened in 1779. The new General Hospital was allowed to take twenty-four apprentices, twelve for medicine and twelve for surgery who worked there for three years before moving on.

### William Sands Cox...

Some years later in 1825 when our story starts, most doctors continued to be trained by apprenticeship to an established surgeon or apothecary. Unless they possessed a university medical degree or the new Licentiate of the Royal College of Physicians of London (LRCP) and few did, the most usual route for the apothecary destined to work in the provinces, and who wished to practice medicine, was to take the examination for the Membership of the Royal College of Surgeons of London (MRCS) or more usually the Licentiate of the Society of Apothecaries (LSA). A statutory precondition of which for the latter, under the Apothecaries Act 1815, was attendance at a London (or other) teaching hospital for five years, under the tutelage of a physician. Unfortunately, many of these physicians were more interested in collecting tuition fees than teaching; students were too often left to their own devices, many reduced to idleness, messing about in mortuaries and the pursuit of extra-curricular activities.

William Sands Cox (1801-1875) had partly trained in Birmingham, having been articled to his father, in Paris and at Guy's and St Thomas's Hospitals, London, where he obtained his MRCS in 1824, but had found the medical scene in London most distasteful. Coming from a wealthy Birmingham family - his father was Mr Edward Cox, surgeon to the Birmingham Workhouse Infirmary and General Dispensary, who had succeeded Tomlinson - he was determined to return to the city and help establish a school of medicine and surgery along strictly Christian lines, unlike, in his view, the London medical schools. It was to have the highest moral and ethical standards, where students under the ever-watchful eye of their tutors and sometimes their parents, were to behave and engage only in academic activities. His view of the London medical schools continued, and only three years later in 1828, when the Medical School was fully established, it was noted that it would prevent by necessity students from going to London and "...the distractions and allurements of the Metropolis will not thus be prematurely presented to the young Student." Sands Cox was determined, and rightly as it turned out, that the London-based Royal Colleges and other institutions would be bound to recognise the products of such well-run and ordered provincial medical schools, similar to those being established at the same time in the other great centres of trade and manufacture, Manchester, Liverpool and Leeds.

### First steps, 1825-1828...

Sands Cox advertised in Aris's Birmingham Gazette on the 7th November 1825 for students, and the first nineteen enrolled. Teaching commenced at twelve noon on the 1st December 1825, when Sands Cox started his "Anatomical Demonstrations with Surgical and Physiological Observations" in his father's house, 24 Temple Row. Among those attending in a supportive role was Dr Edward Johnston, physician to the General Hospital, 1779-1801, and sometime colleague of both Ash and Withering. Although at that time sixty-eight years old and later to become the first President of Provincial Medical and Surgical Association founded in Worcester in 1832, and what is now the British Medical Association, his patronage ensured the success of Sands Cox's venture.

The rapidly increasing number of students soon forced Sands Cox to abandon teaching in his father's house and find alternative and more spacious premises. In 1826, the Society of Apothecaries of London recognised Sands Cox as a teacher of anatomy, and each year his classes grew larger. In 1826 and 1827, Sands Cox went on a tour of the Medical Schools of Glasgow, Edinburgh and Dublin, with the intention of seeing for himself the best way of managing a medical school. He was already familiar with

the London Schools, having been a student at Guy's and St Thomas's Hospitals, and having lodged with an old school friend, Dr Edward Grainger, who founded the best private medical school in London, the Webb Street School. His intention from an early stage was to establish a proper Medical School in Birmingham.

## Early years...

With patience and tact, which would leave him in later years, he approached the leading clinicians of the town to interest them in the idea. Eventually he was able to arrange a meeting at his home on 15 April 1828, which was attended by senior members of the medical profession, impressed by his achievements so far, and who were prepared to help him. The chair was taken by Dr John Kaye Booth, physician to the General Hospital from 1812-1835, who was to become the first lecturer in medicine at the school and a great help when Sands Cox was to found the Queen's Hospital. This meeting resolved unanimously to form the Birmingham School of Medicine and Surgery and it was agreed that students attending the courses of lectures would present themselves for examination of the Royal College of Surgeons of England, the Society of Apothecaries of London and the Royal College of Surgeons of Edinburgh. A further meeting the next day chaired by Dr Richard Pearson, successor to Withering as physician to the General Hospital from 1792 to 1810, agreed that Sands Cox ask the physicians and surgeons of the General Hospital or the General Dispensary, with the request that they assist with the teaching in the new school. He wasted no time and by 23 April, the programme of lectures was complete. Pearson gave the introductory address to the new Medical School on 28 October 1828. Johnston became the first Chairman (President, 1831-1845), and Sands Cox carried on as Honorary Secretary, and the Medical School immediately recognised by the examining bodies.

A new building was opened in the following year on a site now occupied by Snow Hill Station, equipped with a lecture theatre, a library and an anatomy museum. The curriculum was further developed, and the students attended for clinical instruction the Birmingham Workhouse (or Town) Infirmary. The General Hospital, as a whole, was unwilling to take part in clinical teaching, because many, but not all, of the physicians and surgeons were not prepared to sacrifice their lucrative positions of taking on apprentices. One was Francis Galton (later Sir Francis Galton) the geneticist and father of "eugenics", who was apprenticed there in 1838 before moving to King's College, London.

For the young medical student in the 1830s studying anatomy, one of the imperatives was the procurement of cadavers for dissection. As had become allowed by the Anatomy Act 1832, the bodies of executed prisoners, amongst others, provided an irregular source of supply. It is recorded that two students of the Medical School went to Warwick to bring back the body of one Michael Ford, a hanged murderer. They brought him back fully dressed, sitting between them in a carriage. The story goes that they stopped for a brandy at an inn in Deritend, then on the outskirts of Birmingham. Their drinks were served without them getting down, but were asked by the landlord if the gentleman in the middle would like a drink. They dropped their glasses and immediately drove off in the confusion to cries of "Bodysnatchers!"

Further expansion and the encroachment of the Great Western Railway meant another move, which was made in 1834, to a site in Paradise Street, opposite what is now the Birmingham Town Hall; the land a gift of Mr Edward Cox. The early Medical School had by now assembled an extremely competent and talented team of teachers, covering all the essential subjects then required for qualification. In the eight years to 1835, when the Medical School had ninety students, not a single student had failed the examination of the Royal College of Surgeons of London. Amongst these in the period 1832-1836 was William Bowman, later to become Sir William Bowman Bt FRS, the famous physiologist, ophthalmic surgeon and "father of histology." By now such was the Medical School's reputation, that physicians and surgeons of national standing were attracted to present lectures to the Student Debating Society, the forerunner of today's University of Birmingham Medical Society or "MedSoc".

## Queen's College and Queen's Hospital...

The next few years were marked by success after success. In 1836, King William IV, not long before his death, accepted the office of Patron of the school, which now became "The Birmingham Royal School of Medicine and Surgery". However, all those associated with the Medical School were becoming increasingly uneasy about the completely inadequate facilities available for the clinical teaching of the medical students at the Workhouse Infirmary. The Royal College of Surgeons demanded attendance at clinical instruction in surgery for three years and the University of London and the Society of Apothecaries also demanded periods of clinical instruction. With the General Hospital still not willing to co-operate because Sands Cox demanded that he control the teaching, with which the hospital were reluctant to agree. Therefore in 1840, after obtaining ample funds, Sands Cox, with customary enthusiasm and determination, set out to establish a hospital with the prime purpose of teaching students.

Within a year the hospital was planned, built, and was opened on 24 October 1841 on a site in Bath Row, with a capacity for 130 patients, but only 70 were equipped. The hospital was later enlarged in 1845, 1867 and 1873, It was only one year after similar teaching hospitals were opened in London, University College Hospital and King's College Hospital. In April of that year Queen Victoria had graciously agreed, in response to a petition, that it be known as The Queen's Hospital, at Birmingham. The Queen's Hospital was the first provincial hospital opened specifically for teaching, and staff, both resident and honorary, were appointed on the strict understanding that they gave instruction to medical students.

In 1843 Queen Victoria granted a Royal Charter establishing Queen's College, incorporating the Royal School. This gave the senior academic staff the right to be called Professor and the students were now entitled to sit the examinations to obtain a certificate for them to be admitted to the medical degrees of MB and MD of the University of London. William Sands Cox FRS, as he had become that year, was the first Dean of Medicine.

## The troubled years, 1847-1867...

It was the ambition of Sands Cox to expand Queen's College into a great provincial University, the first of its kind in England in a major city. He now had the support of two wealthy Midlands clergymen - the Reverend Samuel Warneford, Rector of Bourton-on-the-Hill, Gloucestershire, and founder of the Warneford Lunatic Asylum in Oxford, who had contributed £27,000 to the building of the Queen's Hospital; and the Reverend James Law, Chancellor of the Diocese of Lichfield. With their backing, two additional Royal Charters were granted to the College in 1847 and 1851, designed to create an Anglican University with a curriculum that included architecture, civil engineering, law, literature, arts and theology, as well as medicine and surgery. The college was no longer to be exclusively medical, but under the influence of Warneford, non-Anglicans such as nonconformists, Jews and Roman Catholics were to be firmly excluded. Such a grandiose scheme would prove to be expensive and soon Queen's College was plunged into debt, which was not relieved on the death of Warneford in 1855, when the expected legacy to the college did not materialise. The College could hardly look with much optimism to the prosperous and largely non-Anglican citizens of Birmingham with their nonconformist traditions, for over the years after 1851, as a result of Warneford's strong influence over Sands Cox, it had become even more of a very narrow and all-pervasive Anglican institution, trying to emulate Oxford, and failing. Warneford's opinions can be illustrated by his plans to "...prevent the spirit of my intentions being perverted by posterity, and to guard against the subtle designs of the Jesuits and malignant dissenters."

The response to what was happening at Queen's College was twofold. Firstly, it went from financial crisis to financial crisis, and struggled into the 1860s with increasing debts, a demoralised staff and an acrimonious governing body, not helped by an increasing irascible Sands Cox, also Principal of the College for a year in 1858-1859, after which he was forced to resign, and whose autocratic pioneering qualities were no longer appropriate for an institution which had come of age. Secondly, and more importantly, exasperated by Queen's College's narrow religious intolerance, a group of General Hospital physicians and surgeons, led by Dr Bell Fletcher, founded a rival secular medical school in 1851 at 12 St. Paul's Square, called Sydenham College, named after the progressive English physician, Dr Thomas Sydenham (1624-1689). It also eventually had Departments of Classics and Mathematics. Free from clerical domination, it proved a great success at the expense of Queen's College, was managed prudently and achieved vital early recognition by the Royal Colleges and the Society of Apothecaries.

Moreover, the General Hospital happily re-opened its doors to medical students, now from Sydenham College, which it helped found, for clinical instruction. In 1860, by which time the General Hospital had 240 beds, there was a considerable influx of students into Sydenham College, as men were anxious to benefit from the last chance to qualify before The Medical Act 1858 came into force. This established the General Medical Council and limited the right of practice to those whose name appeared on the Medical Register. Those who had been acting as Assistants and many pharmacists closely connected with medicine, enrolled in quite large numbers as students, in order to qualify before the deadline.

As a result, Sydenham College prospered, moving into larger premises in Summer Lane later that year.

By 1867, Queen's College was facing possible closure. Its rate of expansion was too rapid and had debts of £10,000. Bitter quarrels broke out and Law even suggested that the College be sold and the resultant income used to fund a medicine-only college attached to the Queen's Hospital. Sands Cox's colleagues now had to act, and over his head appealed to the Charity Commissioners for changes, the result of which was the passing by Parliament of the Queen's College (Birmingham) Act 1867. It brought an end to this unhappy time. Sands Cox resigned, bitter and disappointed, and retired to Kenilworth in Warwickshire, to write *The Annals of Queen's College* (four volumes), where he died on 23 December 1875. He was subsequently buried in Aston Parish Church. Regardless of his managerial failings, he is recognised as the founder of the Medical School and he is commemorated by the Sands Cox Society, which brings together medical and dental graduates from the University.

## A new beginning...

The 1867 Act repealed the charters of Queen's College and effectively created a new institution, and medical education became free from religious influences forever and separated the management of the Medical School and the Queen's Hospital. Birmingham was then not large enough to maintain two medical schools, so Sydenham College dissolved itself on 14 April 1868 and became incorporated into Queen's College with the fusion of academic staff, a development greatly enhancing the importance and reputation of the Medical School, which rapidly grew in prestige. Clinical Teaching was now to take place at the General and the Queen's Hospitals; and in 1873 the Birmingham Clinical Board was formed by the two hospitals to co-ordinate it. Under the Board, students were to be equally divided between them. The Board continued its work until 1911, when it became part of the University.

The year 1884 saw the establishment of the first full-time Chair, that of Anatomy, held by Bertram Windle (later Sir Bertram Windle), who was to play such an important role in the life of the Medical School and the University in later years. The Professorship of Pathology was revived and the organisation of that subject and others was established along modern lines. Following the Dentists' Act 1878, the necessity for dental education arose and a fully equipped department for the teaching of dentistry was established in 1881. It was associated with the Dental Hospital, the first of its kind in Britain, first established in a small house in Broad Street until it moved to larger premises in Newall Street in 1882. As part of the new University, it was eventually in 1901 to award the first dental degrees in the country.

The number of medical students rapidly increased from 60 in 1868 to 250 in 1892. It was during these years that the students were fortunate enough to receive instruction from some of the most distinguished names in British medicine at that time. They included Mr Oliver Pemberton and Mr Furneaux Jordan (Professors of Surgery); Sir Walter Foster MP (later Lord Ilkeston) (Professor of Medicine) - who resigned in 1892 on his parliamentary duties becoming more demanding; Sir James Sawyer (briefly Professor of Pathology, then Professor of Medicine); Dr James Russell, (Professor of Medicine) an early public health specialist, who formed the original Pathology Museum; Dr Richard Hill Norris (Professor of Physiology); Mr Priestley Smith (Professor of Ophthalmic Surgery); Dr Gilbert Barling (later Sir Gilbert Barling Bt) (Professor of Pathology); and the internationally renowned surgeon and gynaecologist, Mr Lawson Tait (Professor of Gynaecology).

## Medical research...

A narrative of the politics, administration and the great names of medicine of the period, too often absorb a history. What usually gets left behind is a record of what happened in the wards and the laboratories, how the Medical School and the city's rapidly expanding hospitals contributed to the advancement of biomedicine and clinical research in the period. By the time the Medical School had been established, Birmingham already had an established record in the field. Already in the eighteenth century, under the auspices of the Lunar Society, the physician (and grandfather of Charles Darwin), Dr Erasmus Darwin of Lichfield was advocating the clinical use of electricity. Another member of the society was Joseph Priestley, who first isolated oxygen in 1774 and lived and worked in Birmingham between 1779 and 1791, continuing his groundbreaking research into human physiology. Another colleague in the Lunar Society, Dr William Withering, was the first in 1785 to describe the use of digitalis in treating heart disease, still in use today as the drug digoxin.

In the nineteenth century, no less important work in biomedical science and clinical practice was being carried out. One of the first nineteen students who enrolled in 1825, Langston Parker, later a surgeon at the Queen's Hospital, was the first in Birmingham in 1847 to use ether as an anaesthetic. In 1880, the eminent General Hospital surgeon, who pioneered aseptic surgery, Sampson Gamgee invented the absorbent cotton wool and gauze surgical dressing, which today still bears his name (as does the hobbit Sam Gamgee in J R R Tolkien's *Lord of the Rings*). The Professor of Physiology, Richard Hill Norris became the first in 1878 to describe the function of platelets in the blood. Birmingham surgeon and gynaecologist, Lawson Tait, carried out numerous pioneering surgical procedures, including in 1883 the world's first successful operation on a ruptured ectopic pregnancy. A Professor of Physiology at Mason College, Berry Haycraft, was the discoverer of hirudin; the anticoagulant produced by the leech salivary gland, who with his successor E. W. Wace Carlier undertook advanced work on the coagulation of blood. The theory current at the time was that the vitality of the blood vessels themselves was enough to prevent coagulation. Carlier and Haycraft, however, showed that the process required the presence of a chemically inert solid was required for clotting.

## Mason Science College...

On 23 February 1875, the same year as the death of Sands Cox, Sir Josiah Mason, the Birmingham industrialist and philanthropist, who made his fortune in making key rings, pens, pen nibs and electroplating, founded his Science College, the buildings of which were opened in Edmund Street on 1 October 1880. He had considered adapting either Queen's College or the Birmingham and Midland Institute, founded in 1854 for the diffusion and advancement of science, literature and art, but decided on a new institution and building. The facilities in its science departments were so greatly superior to anything in Queen's College and the College was finding it difficult to arrange adequate instruction in the subjects required for the Preliminary Science Examination for the London MB. Accordingly in 1882 their Departments of Chemistry, Botany and Physiology were transferred to Mason Science College, soon followed by the Departments of Physics and Comparative Anatomy. In the face of opposition from many of their Queen's College colleagues, many who resigned, the sage advice of Tait and Windle, now Dean as well as Professor of Anatomy, prevailed and on 22 June 1892, the Medical Faculty of Queen's College transferred to a building in Great Charles Street, backing onto Mason College, a house owned by Tait between 1873 and 1882. From 1 September 1892 it became called the Queen's Faculty of Medicine in Mason Science College, leaving the small Department of Theology in Paradise Street to exist by itself, and to decline into relative obscurity. Perhaps based on the Queen's College experience, the one restriction that was laid upon the Trustees of Mason College was that "no lectures or teaching or examinations shall be permitted in the institution upon theology..." Amongst students at this time was Guy Dain (1870-1966), later Sir Guy Dain, the eminent Selly Oak general practitioner and Chairman of the BMA who graduated in 1894.

During the years of the development of Birmingham's hospitals, a number of specialist institutions had been built and were expanding. In 1817, the forerunner of the Royal Orthopaedic Hospital was opened in New Street, moving to 21 Great Charles Street in 1858 and for some years (1877-1887) sharing premises with the Ear, Nose and Throat Hospital, until eventually moving to its present site in Bournville. The Eye infirmary first opened in 1824 at 35 Cannon Street, treating only out-patients, but moving in 1854 to a 15 bed institution in Steelhouse Lane, moving again in 1863, and finally in 1884 to a purpose-built hospital in Edmund Street with a capacity for 70 beds, where it stayed until the 1990s. The Birmingham Children's Hospital opened in Steelhouse Lane (in the former premises of the Eye Infirmary) with 10 beds, until they obtained their own building in Ladywood in 1917, moving to the former site of the General Hospital in 1998.

The Birmingham Women's Hospital was founded in 1871 at 8 The Crescent (off Broad Street) until a purpose-built hospital was built in Sparkhill in 1905, which closed in the 1990s and merged (together with the Sorrento Maternity Hospital) with the Birmingham Women's Hospital.

## The University of Birmingham...

The transfer of the Medical School to Mason Science College gave considerable impetus to the growing importance of that College, and in 1896, a move to incorporate it as a University College was made. As the result of the Mason University College Act 1897 it became incorporated as Mason University College on 1st January 1898, with the Right Honourable Joseph Chamberlain MP becoming the President of its Court of Governors. Before 1897, the Medical School, now led by Windle, was pressing the need to be given the power to grant and validate its own degrees as a chartered University. Great medical teachers of international distinction that could be attracted to the Medical School were tiring of teaching students for external London degrees. The enthusiasm which the Medical School's advocacy generated, combined with the ceaseless work of Chamberlain and others, led to the granting of the Royal Charter by Queen Victoria on 24 March 1900. The Calthorpe family offered twenty-five acres of

and on the Bournbrook side of their estate in July. The Court of Governors of the University Act 1907 put the Royal Charter into effect, on 31 May. The transfer of Mason University College to the new University of Birmingham, with Chamberlain as its first Chancellor and Sir Oliver Lodge as the first Principal, was complete. Under the leadership of Sir Gilbert Barling, Dean from 1905 to 1912, the full integration of the Medical School (now the Faculty of Medicine) within the University proceeded rapidly. In 1911 the newly constituted Clinical Board granted honorary university status to all clinical teachers in associated hospitals.

University status brought with it the need to confront major issues of medical education of the day. One such issue was whether women should be admitted. The admission of women as clinical students at the Queen's and General Hospitals had already been discussed in 1899 to no conclusion, although as far back as 1877 the newly formed Women's Hospital had unlawfully but enthusiastically appointed a woman Resident Physician, Dr Louisa Atkins, who had received her MD in Zurich. Although Tait believed passionately in women being allowed to study medicine and advocated it forcefully, that was one piece of advice that was not to be taken until some years later.

The first female medical student to matriculate in 1900 and subsequently take the MBChB degrees was Florence Price, and amongst other early women medical students was one Miss Hilda Shufflebotham of Moseley, later Dame Hilda Lloyd (subsequently Dame Hilda Rose), the first woman Professor of the University, who was elected in 1949 also the very first woman President of a Medical Royal College, that of Obstetrics and Gynaecology. In the session 1916-1917, when men were away at the front, they formed 40 percent of the entry and again became hospital resident officers.

## The Edgbaston Campus...

The removal in 1909 and the following years of the science departments of the University to the new site in Edgbaston with its famous redbrick architecture of Sir Aston Webb, created both problems and opportunities for the Medical School. The opportunities were in that space was now free for expansion with Science and Engineering moving to Edgbaston, but its activities were now dispersed between the Edgbaston campus, the Queen's Hospital, the General Hospital, now located on a new site on Steelhouse Lane, and Edmund Street, in the former buildings of the Mason Science College, where much of the Medical School was now located.

It was the University's policy to rapidly concentrate all its activities on the Edgbaston campus, but a number of factors stood in the way, the first and foremost being the First World War, when the Edgbaston campus buildings themselves were used by the Royal Army Medical Corps as the Southern General Hospital between 1914 and 1919. Beginning with 520 beds on mobilisation, it expanded to 1520 and eventually in 1918, with outlying sections and affiliated hospitals, such as Dudley Road, it controlled 3264 beds in which a total of 130,569 patients were treated.

## Between the wars...

However, impetus for change was now coming from another direction. After the Armistice it soon became apparent that Birmingham's hospital services were proving to be increasingly incapable of meeting the needs of a vastly expanding population. From 1920 onwards various schemes for expansion of hospital facilities in the city were considered. A preliminary step was the amalgamation of the General and Queen's Hospitals and the fusion of their staffs. This was effected by Act of Parliament in 1926 and the Birmingham United Hospital was created. In 1925 the expansion of both hospitals were suspended, whilst a third major hospital in the suburbs was considered. However, the Edgbaston option was finally favoured and thus it came about that the present Medical School building and the Queen Elizabeth Hospital (previously called the Central Hospital) were opened simultaneously on the Edgbaston campus in 1938, after years of planning and the efforts of Dr Stanley Barnes, Dean of the Faculty in the 1930s, Sir Harry Vincent and Sir Charles Grant Robertson (Principal, 1920-38) and the generosity of Alderman W. A. Cadbury, who bought the land and then presented it to the City under a deed. It was the last great achievement of the voluntary hospitals system, which had served the people of Birmingham well for many years, before the much-welcomed creation of the National Health Service in 1948.

With the opening of the Queen Elizabeth Hospital (or "QE" as it became known) the Queen's Hospital was phased out and closed as a general hospital in 1940. However, the building soon re-opened in 1941 as the Birmingham Accident Hospital, led by the surgeon Mr (later Professor) William Gissane, that was to achieve together with its MRC unit, a world-wide reputation in the treatment of trauma and burns. This was all part of a larger plan for the concentration of a series of specialist hospitals on the Queen Elizabeth Hospital site that only partly came to fruition in 1968 when the Maternity Hospital was opened. Finally, it was only towards the end of the century that the Queen Elizabeth Psychiatric Hospital and the new Women's Hospital (incorporating the Maternity Hospital) were opened, and in 1995 the General Hospital finally closed and the wards and the departments were transferred to the Queen Elizabeth and Selly Oak Hospitals.

Medical research did not take a back seat during this time. The period saw Birmingham's medical discoveries being made both in the laboratory and the hospital ward and operating theatre. For example, following the work in the Chemistry Department by Professor Norman Haworth (later Sir Norman Haworth) on carbohydrates and synthetic vitamin C, for which he received the Nobel Prize for Chemistry in 1937, the pioneering paediatrician, Leonard Parsons (later Sir Leonard Parsons) was in 1932, the very first to use this synthetic vitamin C to treat scurvy in children. In the world of drug trials, Dr Mary Evans and Dr Wilfred Gaisford at Dudley Road (now City) Hospital in 1939 inaugurated the clinical trials of the world's first antibiotic M&B (sulphapyridine) for the treatment of lobar pneumonia - and the antimicrobial age was born.

## The Second World War and after...

In 1939, the year that the Second World War broke out, there were 400 medical students. Teaching was now taking place in many other hospitals in the City other than the Birmingham United Hospital (The Queen Elizabeth and General). These included the Maternity Hospital (of the Birmingham Lying-In Charity), the Children's Hospital, the Birmingham and Midland Eye Infirmary, the City Infectious Diseases Hospital at Little Bromwich (now The Birmingham Heartlands Hospital), the Birmingham City Mental Hospital, Winston Green (later All Saints Hospital), and many others. On the professorial staff, were a number of important names in the history of medicine and medical science. These include Professor Sir Beckwith Whitehouse (Midwifery and Diseases of Women), Professor Leonard Parsons (Paediatrics), Professor Lancelet Hogben (Zoology, and later Medical Statistics), Professor Humphrey Humphreys (Dental Surgery), Professor J. F. D. Shrewsbury (Bacteriology), Professor Peter Gilding (Physiology), to name but a few. The Medical School - depleted because many of the staff and students went away to serve in HM Forces, many with distinction, many never to return - still trained students, but the war effort and medical research associated with it was at the fore. Again war interrupted progress and all building was stopped for the duration.

It was the years immediately after the war, under Sir Leonard Parsons as Dean, that were in many ways the most important in its development since its foundation. They were years of great progress and expansion, reflecting the widening interests of medicine and its increasing specialisation. The pre-clinical departments (as they were then called) led by some of the greatest figures of their day - such as Professor Sir Solly Zuckerman (later Lord Zuckerman) in Anatomy - were enlarged and became major international centres of research. Much of the early work of Professor Peter Medewar (later Sir Peter Medewar) on the rejection of skin grafts, which led to the discovery of a substance which serves to reunite nerves, and the discovery of acquired immunological tolerance, which led to his Nobel Prize for Medicine in 1960, was carried out during his time at the University, between 1947 and 1951. Amongst developments led by women academics in the Medical School, Professor Charlotte Anderson (Leonard Parsons Professor of Paediatrics and Child Health) was one of the team who in 1952 demonstrated that the gluten fraction of wheat was the cause of coeliac disease, which led to the introduction of gluten-free diets.

Until 1946, the teaching of clinical subjects retained its non-professional status. In that year it was recognised that there was the need for whole-time clinical professors to be appointed in Medicine, Surgery, Obstetrics and Gynaecology, and Paediatrics and Child Health with Professorial Units and facilities for laboratory research. These chairs were filled by eminent clinicians, and in addition to some of those listed above now included Professors Melville Arnott (later Sir Melville Arnott) (Cardiology) A. L. d'Abreu (Thoracic Surgery), Arthur Thomson (later Sir Arthur Thomson) (Medicine), Dame Hilda Lloyd (Obstetrics and Gynaecology), Sir Douglas Hubble (Paediatrics), Thomas McKeown (Social Medicine) and John Squire (Experimental Pathology), all of whom brought great distinction to the Medical School.

One area of major importance at this time was, of course, the creation of the NHS in 1948. The management of all the city's hospitals now came under the control of the Birmingham Regional Hospitals Board, with the exception of the teaching hospitals or the United Birmingham Hospitals, as they became known. This group included the Queen Elizabeth, the General, the Children's, the Midland Nerve, the Women's, the Maternity and the Dental Hospitals. However, for the first time many of other hospitals in the region were put at the disposal of the Medical School for clinical postgraduate study and recently qualified young doctors by a progressive Regional Hospital Board. From 1 January 1953, most of these hospitals provided, together with the United Birmingham Hospitals, approved posts for the compulsory residential year between

## New developments...

As the years progressed, new Chairs and centres of research were established to meet the changing needs of medical education and clinical services, including Clinical Chemistry, Pharmacology, Neurosurgery, Psychiatry, Anaesthetics, Cancer Studies, Neuropathology, Virology, Human Genetics, Therapeutics and Clinical Pharmacology, and subsequently Cardiovascular Medicine, Rheumatology and Geriatrics. The Medical School now under the leadership of Sir Arthur Thomson (or "AP" as he was known), Dean from 1950-1959, with the support of another clinician turned administrator, Sir Robert Aitken as Vice-Chancellor, continued to advance its reputation and become a world leader in undergraduate and postgraduate medical education and medical research. We now see some major clinical developments, including the work on heart pacemakers and plastic heart valves by Leon Abrams and also in thoracic surgery, the work by Professor John Leigh Collins, who created the 'Collis esophageal procedure'.

Major changes from the end of the 1950s and the 60s to the end of the century include the opening of the Barnes Library in 1959, the transfer of the Dental School and Hospital to a new building adjacent to the General Hospital in 1965, and the opening of the Medical School's West Wing in 1969 to provide a large lecture theatre that could accommodate all the pre-clinical students in one go and much needed accommodation for the Department of Pathological Studies.

In 1973 the Medical School saw the opening of the Wolfson Centre, followed in 1982 by the Clinical Teaching Block at the General Hospital, which was closed on 30 October 1995 in order for the building to become the Children's Hospital in 1998 on its move from Ladywood Road, but happily the building soon became occupied by the Institute for Child Health. The period also saw the controversial collaboration of the Medical School in developing the Godfrey Huggins School of Medicine at the University of Salisbury, Rhodesia (now Harare, Zimbabwe) including during the post UDI period. This time also saw the expansion of undergraduate teaching to Dudley Road (now City) Hospital.

In the 1980s the Medical School boasted no less than four Presidents of Royal Colleges, all holding office simultaneously: Sir Geoffrey Slaney (Surgeons), Sir Michael Drury (General Practitioners), Sir Raymond (Bill) Hoffenberg (Physicians) and Bob Curran (Pathologists), a record unlikely to be equalled again anywhere.

Student numbers increased dramatically over these years, with the introduction of the Bachelor of Medical Science degree, both for three years and intercalated, along with a number of new postgraduate programmes. In 1966, the title of the Faculty was changed to the Faculty of Medicine and Dentistry, in recognition of the growing size and importance of the Dental School; two of its Professors had or were to become in their time Vice-Chancellors of the University: Humphrey Humphreys and Edward Marsland. When faculties were abolished in 1997, the Schools of Medicine, Dentistry and Health Sciences (the latter bringing together nursing and physiotherapy) were created, but still kept their links through teaching and research.

In the last twenty-five years, the medical community in the city, led by the Medical School, continued as a world leader in research, continually making major discoveries in the biomedical and clinical fields. These include the development of advanced allergy vaccines, the synthesis of artificial blood, the first trials of the contraceptive pill outside the USA, the early work by A. D. Barnes on renal transplantation and at the Accident Hospital, the revolutionisation of intravenous drips for burn victims. In 1979 the new Department of Haematology was opened, made possible by a major grant from the Leukaemia Research Fund and in the following year a ten-year study into natural history of 'early' gastric cancer was completed. The 1980s saw researchers in the Medical School take on board the ethnic diversity of Birmingham and the West Midlands, which contributed to better understanding of health care of Afro-Caribbean and Asian populations. Important studies included those on the increase of malaria in the region, acute myocardial infarction in Asian in Birmingham and studies of sickle-cell anaemia amongst Afro-Caribbean infants. Also in the 1980s, important studies were carried out at the Birmingham Children's Hospital by the Birmingham Reflux Study Group, into non-operative versus operative treatment of severe vesicoureteric reflux in children. One of the great milestones in the history of the Medical School was in 1982 with the opening of the Institute for Occupational Health, making the University of Birmingham the leader in this field in the country and internationally. Over the past decade, the Liver Research Laboratories at Birmingham have been going from strength to strength, developing the 'split liver' technique to enable one liver to be transplanted to both an adult and a child. In addition, important work has been carried out into the chronic rejection of transplanted livers, with the future aim of eradicating this major problem. More recent research in 2001 includes the development of the world's first male fertility home test by the Department of Reproductive Medicine (in conjunction with the company Genosis), and the UK's first clinical trial of gene therapy for prostate cancer by the CRC Institute for Cancer Studies. After her retirement as Director of the Nuffield Institute of Social Medicine in the University of Oxford, the Medical School gave a home an academic refuge (and a long-overdue professorship) to the renowned epidemiologist Dr Alice Stewart, who achieved world-wide fame, in which she demonstrated that workplace exposure to radiation is twenty times more dangerous than the then safety standards permitted, after discovering the link between foetal x-rays and childhood cancer. Unloved by the establishment, she retired again at the age of 95 undaunted.

## Into the twenty first century...

The present and future of the Medical School is built on all these past achievements. Today it is a world leader, especially in the areas of immunity and infection, cancer studies, organ transplantation, endocrinology, neuroscience and primary care. The recent period has also been marked by the change in hospital locations and the closure of some older buildings and their nucleation on larger sites. In 1998 the first full-time Dean, Professor William Doe, arrived from Australia and immediately developed a series of major initiatives that take the Medical School into the new millennium.

They included, amongst others, (1) Being awarded the greatest increase in student numbers awarded to any medical school, increasing the annual intake to over 400; (2) The "Black Country Strategy," the much-needed expansion of clinical training; (3) The graduate entry scheme for medicine; (4) The award of funding by the Joint Infrastructure Fund (partnership between the Government and the Wellcome Trust) for the multi-million pound Institute for Biomedical Research which opened in 2004; (5) The Wellcome Trust Clinical Research Facility at the Queen Elizabeth Hospital; (6) The establishment of the Henry Wellcome Building for Biomolecular Nuclear Magnetic Resonance Spectroscopy, Europe's leading facility; (7) The establishment, with the UHB NHS Foundation Trust and UCE, of the Royal Centre for Defence Medicine; (8) The Building of the Wolfson Centre for Medical Education; and (9) The development of the Institute for Translational Medicine.

At the beginning of the twenty first century, the School saw ex-Birmingham student, Sir Paul Nurse, former Director-General Cancer Research UK and currently President of Rockefeller University, New York, was awarded the Nobel Prize for Physiology and Medicine, for his work on the way cells reproduce, with the aim of devising a way to halt the growth of cancer. Also in 2002, the Medical School saw two of its professors as Presidents of Royal Colleges, Professor Sir John Temple of the Royal College of Surgeons of Edinburgh, and Professor Peter Hutton of the Royal College of Anaesthetists.

## Acknowledgements...

We are grateful to the following works, which were invaluable in writing this short history:

- J. T. J. Morrison (1926), William Sands Cox and the Birmingham Medical School, Birmingham, Cornish Brothers;
- A. P. Thomson (1957), A Short History of the Medical School, Birmingham, The Faculty of Medicine; A. P. Thomson (n.d.), History of the Medical School (as appeared annually in the Faculty Handbook);
- K. D. Wilkinson (ed.) (1925), The History of the Birmingham Medical School, 1825-1925, Birmingham, Cornish Brothers (Special Number of the Birmingham Medical Review, December 1925);
- R. A. Cohen, "The Birmingham Dental Hospital", Birmingham Medical Review, 1957-58, 20: 331-337; and the lecture notes of the late Dr. B. T. Davis, sometime Assistant Dean, Senior Tutor and Historian of the Medical School.

