Medical History

The Otago Medical School, 1875-1975

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"I would like to say a word as to the influence of the Medical School on the medical profession itself. I believe it has made for unity and efficiency. It has raised the standard of practice all round, not only in Dunedin but throughout the dominion. It has kept the older men at work, and has incited the younger men to keep their knowledge up to date. It has encouraged friendliness and mutual helpfulness and discussion without which no progress can be made. If there is a higher ethical standard in Dunedin than in some other places in the dominion—and I have often heard that asserted—it is due to the influence of the University of its teachers and their professorial colleagues."¹

Prelude

Dunedin was founded in March 1848, when the pioneer ships arrived for the town planned by the New Edinburgh Settlement. Dunedin is the Gaelic form of Edinburgh, and Otago is an Anglo-Maori version of Otakou—place of red earth.

The Scottish aspirations for higher education were made possible by the discovery of gold in Otago in 1861. Soon Dunedin was the most populous town in the Colony and its business capital. The Provincial Council of Otago with its expansive superintendent James Macandrew, and supported by the Presbyterian synod, passed an ordinance in 1869 establishing a university with power to grant degrees in arts, law, and medicine. But there was no support from government. Land was endowed for a chair of mental and moral philosophy. The four founding professors were soon found in Britain, and the government was persuaded that the grandiose post office built in 1865 could be used to better purpose. The University of Otago opened there on 5 July 1871.

Macandrew kept a medical school in mind when in 1872 he

assigned more land to the university and initiated a discussion for classes in law and medicine. The local doctors were not keen, but the professor of mental and moral philosophy, Dr. Duncan Macgregor, a medical man as well, who also had persuaded the Dunedin surgeons to use Listerism for the first time in New Zealand in 1872, after initial doubts supported medicine. It seemed as if a two-year course might be possible. Eventually the university council on 9 December 1873 resolved to have a chair of anatomy and physiology, and recognition was to be sought at home for a two-year medical course. The salary was £600 with class fees and no right of private practice. From 18 applicants Dr. Millen Coughtrey, an Edinburgh graduate of 1871, was appointed in August 1874. He had the advantage of being on the spot as he had come to New Zealand on health grounds after teaching anatomy at the Liverpool Medical School.

As the University of Otago was being formed the government, bolstered by anti-Otago rivalries, enacted in 1870 the formation of a single University of New Zealand into which the University of Otago was to be incorporated. This university was empowered to grant degrees, including those of medicine. For the next three years there were violent quarrels over this Act, and Otago's ambition of becoming the first university of New Zealand was lost. After some painful compromises the University of New Zealand Act 1874 established this body as a degree-granting body only and modelled on the University of London. The University of Otago became a constituent college, but was allowed to retain its name. Finally a royal charter was granted to the University of New Zealand in 1876, and its degrees had Imperial acceptance.

Locally Otago had a third of the country's 342 000 white population and Dunedin had 18 500 people. There was the largest hospital in the Colony, with 190 beds, converted from the building used for the 1865 exhibition (fig.). The gold rush was over but the fleece was also golden.

Coughtrey went home on half pay to obtain recognition for a two-year medical course which could be used as a prerequisite leading to the completion of a medical qualification in Britain. He met with little encouragement. Otago had no right to grant degrees and neither was the parent university fully accepted.

University of Otago Medical School, Dunedin, New Zealand

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Dunedin Hospital in the 1870s (Hardwicke Knight Collection).

The Uncertain Decade

The University of Otago opened its 1875 session on 4 May with a prescribed two-year course in medicine. Coughtrey's ship back was late, and on 31 May he delivered his inaugural address in the room assigned to medical classes at the post office. At the opening there were four students, and one, Charles Low, became a doctor after going to Edinburgh. The course consisted of anatomy including dissection, chemistry, and natural history for the first year. No bodies were available for dissection, and though the Anatomy Act was passed in 1875 a school of anatomy was not gazetted until June 1876.

Some internal reforms were begun, and the university raised the standard for medical entry. There was some reorganization of Dunedin Hospital, which had more than the 100 beds deemed necessary by the British authorities for this medical course. In 1876 the University of Glasgow did recognize the local course.

Coughtrey had expansive plans for the second year of the course but his advice was not accepted by the university. Two local doctors were appointed as lecturers in medicine and in surgery. As they could not gain recognition from home their appointments lapsed, and this part of the course was abandoned. There was one student for 1876. Coughtrey, besides being frustrated and underemployed, had ignored the bar to private practice. His excuses satisfied neither the university nor the local doctors. The issue built up into a major row, and he resigned on 21 December 1876.

This came at a bad time, as the Provincial Council, which was Macandrew's power base, was in dissolution. Then Macandrew's rival, William Rolleston, superintendent of the Province of Canterbury had used his waning powers to gazette a medical school at Christchurch. Though this school was never viable, its potential threat for the next year or two spurred Otago on. Macandrew, now on the university council, supported medicine with staunch resolve, or else it might have been abandoned. Early in 1877 the university's agents in Edinburgh selected Dr. John Halliday Scott for the vacant chair. He was 26 years of

age, an Edinburgh graduate, and appointed on the same term as his predecessor.

Scott arrived in Dunedin in July 1887 and quietly set about getting things going. Two students were enrolled in 1877, and numbers never fell below five. During 1878-9 the University of Otago moved into new buildings on the Leith site, where there was a building for anatomy and chemistry. This site is 800 m from Dunedin Hospital.

The appointment of a lecturer in surgery in 1878 allowed surgery to be included in the two-year course. At the end of 1878 the University of Edinburgh gave full recognition to this course for its own four-year course. Links with Edinburgh were to be strong.

Scott's plans for a full four-year course were accepted by the University of Otago in October 1881. The University of New Zealand, once it was assured that staff were available, approved the course for the degrees of M.B., Ch.B. (N.Z.) on 3 March 1883. This was through just in time, as the years 1880-96 were to be ones of severe financial depression for New Zealand.

Scott Wins Through

The four-year course of 1885 followed the Recommendations of the G.M.C. of Great Britain, and ever since this policy has been maintained. In 1887 William Ledingham Christie emerged as the first Otago medical graduate when he was registered by the Registrar-General and was removable only after criminal conviction. This first graduate, who was an early M.D. also, did what many after him have done and practised overseas. Women had been eligible for all classes since a resolution of the council of the University of Otago in 1871, but not until 1891 was Miss Emily Siederberg enrolled, and she graduated in 1896.

Slowly the clinical staff were increased, and all appointments were part-time and shared with Dunedin Hospital. The university established the faculty principle in 1890. Scott became dean of the faculty of medicine and Coughtrey was vice-dean, for he had stayed in Dunedin without rancour and was chairman of the hospital honorary staff. The Royal College of Surgeons of England and the Royal College of Physicians of London fully recognized the Otago course in 1888.

Dunedin Hospital was under the control of a board of trustees, who were elected locally after 1885. When a new operating theatre was provided in 1887 they were able to extract an increased grant from the university on the grounds that it was partly for the benefit of medical students. There was a show of independence when the lecturer in medicine was not re-elected to the hospital staff in 1889. Hence it was only too apparent that the university should have representation on the controlling body of the hospital. Despite numerous pleas over many years the government always refused to enact this, taking a stand on the democratic nature of local body elections. For decades there was to be friction over the academic and service needs of Dunedin Hospital.

In 1889 it was alleged that Dunedin Hospital was unsanitary. A royal commission of inquiry was instituted and the hospital found patently unsanitary and in bad condition. The trustees admitted the defects, and the first properly designed hospital wards in New Zealand were built. More seriously, in 1893 the external examiner in surgery failed some students in the final examination, and the University of New Zealand had to rectify this with another examination, when all passed. Nationwide accusations were made about the adequacy or otherwise of the clinical teaching facilities in Dunedin. The senate of the University of New Zealand was forced to make inquiry, when the Otago Medical School was declared to be making excellent use of its clinical resources and these were sufficient.

The 1890s were years of gloom which were reflected in a falling off in enrolments. Scott pressed for reforms and a separate chair for physiology. This was supported by the university, but there were no resources and the original endowments were overcommitted. A reluctant government agreed to subsidize on

£1 for £1 basis any public subscription. Then the first public appeal was made in 1902-03, and, as the depression was over, money was soon raised and a special endowment made for a chair of physiology. Dr. John Malcolm of Edinburgh was appointed to this in 1905, and in addition the university buildings were enlarged. The government was now making annual grants to the university and its medical school.

Serious problems developed over midwifery teaching. Most deliveries were done in the home, and the G.M.C. had increased its requirements. The Midwives Act 1904 registered midwives and set up the St. Helen's hospitals for maternity on a national scale. However, the premier, Richard Seddon, for a personal quirk refused to let medical students into them. The government was persuaded to assist in the conversion of the women's refuge in Forth Street for midwifery teaching. Some limited access to the Dunedin St. Helen's Hospital was given to medical students after 1909.

The university in 1909 gave professorial recognition to part-time clinical teachers but without extra emolument. The first full-time professor of public health and bacteriology was appointed in 1911. The Otago Medical School was now firmly established, and with 140 enrolments in 1913 it was fast outgrowing accommodation. Early in 1914 there was a government grant towards extension and for a chair of pathology. Also some land on Great King Street opposite Dunedin Hospital was set aside. More was needed, and a public appeal soon raised the money, which in turn was subsidized. Scott died in harness on 25 February 1914. His competent style had advanced the Otago Medical School from being a dubious starter to being an unshakeable reality.

The Mastery of Lindo Ferguson

The faculty of medicine in 1914 recommended the 56-year-old urbane and resolute H. Lindo Ferguson as dean. He had been on the hospital staff since 1883 and was professor of ophthalmology. It was felt that a man of leadership and financial independence was needed, and he continued in private practice. It was also agreed there should be a subdean.

The first world war, which was to decimate the nation's young manhood, then began. An intake of 50-60 medical students a year was accepted with some qualms. The course was compressed, but a third of the staff went on active service. The 1914 building of 2340m² did go ahead and was opened in April 1917; the full-time professor of pathology had been appointed in 1915.

With great foresight and in advance of the times, the University of Otago in 1917 expressed a desire to have full-time clinical teachers, and undoubtedly this stemmed from the reports of Flexner and Haldane. A private benefaction in 1918 allowed the university to have an extra chair of medicine, but when this was filled in 1919 from Britain no less than the prime minister expressed his displeasure—in vain.

By the end of the war there were 275 students in the medical course, and the numbers were soon swelled by returned soldiers. The preclinical buildings were patently overcrowded, and the clinical facilities were shown to be deficient when 41 students failed their final examinations in 1923. Extra teaching was arranged at Christchurch Hospital, when most passed. In 1923 the medical course was extended to six years.

Ferguson put relentless pressure on the government, and eventually the prime minister agreed to more buildings as overseas recognition of the school might be in jeopardy. By now Ferguson had evolved his master plan of a complete medical school on the Great King Street site. A new building here for anatomy and physiology was opened in February 1927. The royal commission on the University of New Zealand 1925 made recommendations about clinical teaching, which were accepted, and in 1926 regular sixth year teaching was begun at Christchurch, while Wellington and Auckland followed a year later.

Medical research began to emerge, and Ferguson in 1920 had

donated £1000 for this. Gradually some private and State support were found. The *Proceedings of the University of Otago Medical School* appeared in 1922, and the institution of the degree of bachelor of medical science in 1925 was another step towards this.

Midwifery, both nationally and locally, was unsatisfactory. The national maternal mortality was unacceptably high, and it was recognized that the raising of the standard of obstetrics began at student level. The government was not very responsive but eventually agreed to subsidize a public appeal in 1930. Dr. Doris Gordon masterminded this national appeal, which rapidly raised enough to endow a full-time chair of obstetrics and an obstetric scholarship and to provide a new hospital. The maternity hospital was shelved because of the slump, and the Queen Mary Hospital was not opened until 1938. However, the Otago Medical School did have its first full-time professor of obstetrics and gynaecology in 1931, when Bernard Dawson was appointed; there were few such chairs in the Dominions or elsewhere. For the future all established clinical chairs were to be full-time.

Despite the slump of the 1930s the entry of medical students continued to increase. The slump relief programme allowed some rebuilding of Dunedin Hospital, and at last the original building of 1865 was demolished. Sir Lindo Ferguson, despite his age, did the first operation in the new eye theatre in 1935. At the end of 1936 he retired aged 79 years. He had had a successful personal style whereby he had persuaded the government to find over a quarter of his budget, had secured the endowment of three chairs, and two buildings had been erected which transferred the Otago Medical School to its present site. The faculty of medicine had become the largest in the university, and its dependence on central support made it somewhat separate from the rest of the university, which was only too pleased to be relieved of the burden, as it had its own survival problems. The Otago Medical School had gained international recognition, and its graduates were welcome anywhere, where they rose to distinction. This loss of talent was inevitable in view of the size of New Zealand and the meagre openings available locally.

Hercus in Command

Without doubt Charles Hercus was the man for the deanship in 1937. After graduating from both the Otago Medical and Dental Schools he had a distinguished career at Gallipoli and became professor of public health and bacteriology. For 13 years he had been subdean. His goal was to further Sir Lindo's master plan. The faculty was reorganized and the sixth year clinical teaching outside Dunedin recognized by setting up branch faculties, each with a subdean and with access to the Otago faculty.

Again war was to benefit the school, as by 1940 the limits of accommodation had been reached. Bravely it was indicated that the intake should not exceed 100 a year. The Labour government had just recovered from a conflict with the doctors over the introduction of social security in 1941. Quite rapidly in 1943 they made a deal with the University of Otago and Hercus that an intake of 120 annually would be accepted while finance would be available for a new building and extra staff. This was not to the taste of the professors of anatomy and physiology, who resigned. In the event there was a relatively high failure rate in the preclinical examination, and the number in each clinical year did not exceed 100 until 1958. There were difficulties over the building, and this was not completed until September 1948. This 5700 m² block had a large lecture theatre and housed pathology, bacteriology, preventive medicine, and medical research.

The curriculum was kept in line with the recommendations of the G.M.C. in 1947, and a compulsory preregistration year was introduced in 1952. There was now to be increasing pressure for a second medical school in Auckland.

Hercus's most important contribution was to put medical research on a sound basis and to ensure that it was an integral

part of the academic scene. He had a considerable hand in the establishment of the Research Committee of the Department of Health in 1937. While its purpose was nationwide, for some long time most of the support came to Dunedin. The committee was reconstituted in 1950 and an independent Medical Research Council of New Zealand formed.

After the war Dunedin entered into a period of extraordinarily creative medical research, whose flood lasted about 15 years. There was to be the stupendous work of Eccles followed by McIntyre in neurophysiology, Smirk in hypertension, the Bielschowskys in cancer, Purves and Griesbach in endocrinology, Adams and his pupils in anatomy, and Woodruff in experimental surgery. Now the world was shown that not only could Otago produce excellent doctors but it was equally the home of first-rate research.

Hercus was able to extract ever increasing support from the government and to finance the surgical research unit in 1956. Eventually some 80% of his budget was a direct government grant. When Sir Charles Hercus retired aged 70 in 1958, well and truly was the school of international standing in all respects. Unbeknown his retiral was to presage the end of an age and a style. The first three deans had each in his own way been the personification of the Otago Medical School and with strength of purpose made its identity.

To Crisis and On

Dr. Edward Sayers, a distinguished Auckland physician, was selected as dean from 1958. Hardly had he settled down when in 1960 the government disbanded the University of New Zealand, so that in 1961 the University of Otago regained its long lost independence as a university. The University Grants Committee was set up, and from 1962 the quinquennial grants had to cover all university activities. Thus the Otago Medical School lost its privileged position and returned to an uneasy fold. However, Sayers in 1960 had been able to persuade the Wellcome Trust to endow a research chair in medicine for Sir Horace Smirk if a building could be provided. The Wellcome Institute was opened in 1963.

Sayers did not face the new order with equanimity, and nor was the university enthusiastic about its costly faculty. However, the U.G.C. would not budge from government intent. There was a stormy settling-in period, but the university did have great difficulty in meeting the basic needs of medicine, which were different from those of other faculties. Further, the University of Auckland in 1965 was authorized to proceed to the second medical school.

When Sir Edward Sayers retired in 1967, no successor could be found and morale sank. To formulate a new approach the University of Otago commissioned Professor R. V. Christie, of McGill University, to report on the needs of the medical school. Christie reported in April 1968 and underlined the problems that had been made only too clear by Sayers. Now Christie was to be successful in persuading the U.G.C. that the Otago Medical School must have more support, and if it did not materialize collapse was possible. It was agreed there should be more staff and that the clinical intake to Dunedin be reduced, but the overall output would be maintained by developing a clinical school at Christchurch (pop. 292 000) 320 km away. Confidence was restored in Dunedin.

W. E. Adams, who had been acting dean, became dean in September 1968 and had a clinical dean to assist him. The triumverate of the vice-chancellor and the two deans was successful in implementing the Christie recommendations and in meeting the challenge for more doctors which soon followed. One problem solved in 1968 was that of university representation on the Otago Hospital Board, when it was enacted that the university could nominate five members to this otherwise elected body. Otago remains unique in this respect.

During 1969 it became apparent that New Zealand would need another 200 doctors a year if she was not to fall too far

behind modern standards. Auckland was still in the development phase, so Otago accepted an annual intake of 150 whose clinical years would be streamed between Dunedin and Christchurch. After some dispute about a third medical school, Otago agreed to accept an intake of 200 from 1975, when in 1978 there would be a stream for the new clinical school at Wellington (pop. 327 000), 650 km to the north.

Curriculum revision, which had begun before Christie's visit, was completed and fully implemented by the beginning of 1974. The revised plans meant more buildings. A new medical library and administration block planned by Sayers was opened in 1972 and a medical sciences building was built rapidly in 1973. At last, the Great King Street site was filled. A new hospital block of 500 beds was agreed to and is scheduled for completion in 1979. To seal the union between hospital and medical school, a footbridge across the busy Great King Street was opened in 1974.

The Christchurch Clinical School opened on time early in 1973 with Professor G. L. Rolleston as clinical dean. Now there are chairs of medicine, obstetrics and gynaecology, pathology, psychological medicine, public health, and surgery. The Wellington Clinical School appointed Professor G. F. Hall dean from 1972 and has filled its chairs of medicine, pathology, and surgery for its expected intake in 1978. Adams was to remain dean of the Otago Medical School until the centennial year, but he died suddenly in May 1973 and was succeeded by Professor J. D. Hunter, because the clinical dean, Dr. R. O. H. Irvine, had become vice-chancellor of the University of Otago at the beginning of that year.

The Centenary

The evolution of the Otago Medical School has to be seen against the development of the country when in the 100 years the population grew nearly ten times to 3 million and there emerged a stable society, a productive pastoral economy, and a high standard of living. Whenever and wherever the school had been started there would have been many problems. For only too long higher education was of low priority. Also there was the unresolved, and even now not entirely resolved, issue of how much to do in New Zealand, how much to do abroad, or whether professional skill should not be just imported. Now the Otago Medical School has qualified three-quarters of the country's practising doctors, while a second medical school is largely staffed by its graduates, and the clinical schools at Christchurch and Wellington greatly extend the range of opportunity, which should give the critical mass for self-development.

The University of Otago Medical School enters the centennial year with the sober knowledge that the confidence of its founders in the future was not misplaced. Standards have been maintained and despite isolation there has been an awareness of the essence of modernity, which has been exploited with intelligent adaptability. The past is not the future, but if the attributes that have made it successful continue to be used then a continuing place in the sun is assured. The virtues ascribed to James Macandrew, father of the medical school, will still need to be exercised, for he had "the unquenchable courage of his convictions, an unsurpassed faith in himself and his destiny, and, above all, an almost incredible tenacity of purpose."²

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Surgery of Violence

1. Civilian Bomb Injuries

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Urban guerilla warfare seems to have become a part of life (and death) in the 1970s, and of its many weapons the bomb is perhaps the most repulsive and the most feared. The terrorist's bomb differs from that of conventional warfare as it is nearly always delivered by hand or in a motor vehicle. In these catastrophes quite a small charge, perhaps only 2-30 lb (1-14 kg) in a suitcase or parcel, is carried into a confined space. The casualties are caused by the blast itself, by flying debris, and occasionally by falling masonry. The wartime aerial bomb on the other hand was inevitably enclosed in metal, was very much larger, and caused its casualties mainly by falling masonry and flying metallic fragments. For example, if a 500-lb (230-kg) aerial bomb landed within a crowded bar there would probably be few survivors for the surgeon to worry about.

The car bomb contains a much larger charge of explosive, up to 500 lb (230 kg) or even more, placed within the vehicle. When such a bomb explodes without warning, people close by may suffer serious injury, but the majority of casualties receive relatively minor injuries from flying debris.

Organization

Perhaps the greatest problem from the surgeon's point of view is the simultaneous arrival at casualty of large numbers of patients, often in the evening when the majority of the senior medical staff have gone home. The initiation of a disaster plan and the organization of the casualty department will be discussed in a subsequent article. However, certain aspects of organization can be conveniently dealt with here.

When the staff has been mobilized we generally find it desirable to leave the most senior surgeon in the casualty department, sorting and categorizing the injured. The most seriously injured patients go straight to the resuscitation room in the casualty department, where it is essential to have the help of an anaesthetist. One cannot overemphasize the importance of rapid restoration of blood volume, maintenance of the airway by intubation if necessary, and the use of intercostal drains where indicated, even before x-ray films have been taken.

At the Royal Victoria Hospital we are fortunate in having an admission unit and, in addition, a large recovery room immediately adjacent to a suite of four theatres equipped for general surgery. These two areas are capable between them of accommodating 30 casualties. Those requiring immediate and major surgery are transferred to these areas with appropriate x-ray films, thus avoiding unnecessary disturbance of ordinary ward patients. A further senior member of the staff, often an anaesthetist, should be available to supervise the continuing resuscitation, to organize the distribution of casualties among the surgeons available, and, where indicated, to call in surgeons of other disciplines. It is also his duty to decide the priority of operation as the clinical state of the patients already admitted changes or as other more urgent cases arrive from the casualty department.

With this system the provision of beds at ward level becomes a less urgent matter. Ward patients can be discharged or transferred simultaneously with the other activities. We have found the senior nursing staff invaluable in making these arrangements. It has been our experience that on average less than 25% of the patients arriving at the casualty department require admission. This figure can of course reach over 50% after explosions in a confined space.

Types of Injury

Those closest to a large explosion may be blown to pieces by the force of the blast and do not need the services of the hospital. In those coming to hospital the wounds are characterized by their multiplicity and by the associated gross soiling which may occur. The common basic injury is a combination of bruises, abrasions, and lacerations. Wounds vary in size from minute punctures, due to glass or metal fragments, up to huge lacerations, often impregnated with all sorts of foreign bodies. The most bizarre was that of a woman whose thigh was transfixed by the leg of a table in the Abercorn Restaurant explosion (fig. 1). Perhaps the most macabre foreign body we have encountered was that of a 14-year-old youth, who lost his right hand when the bomb he was throwing exploded prematurely. He was found to have a small wound in his neck, and when this was explored, the missile proved to be the terminal phalanx of his missing thumb. Tattooing of the skin of exposed parts from propelled dust is commonly seen, but this is of little immediate importance.

The majority of the wounds have been peripheral, the legs accounting for over a third of all injuries treated. While the head has been the site of injury in about a third of all patients, the majority of the wounds were of a superficial nature; some,

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