

## POTS AND PIECES: THE ANATOMY MUSEUM OF THE OTAGO MEDICAL SCHOOL AND HOW IT CAME TO BE

Fieke Neuman

Curator, Anatomy Museum, Otago University Medical School, Dunedin

The lively environment of the modern day Anatomy Museum would probably shock some of the people who were responsible for its existence. They would see students from a variety of non-medical courses, in addition to medical students, freely able to handle the specimens and models and using the room as a classroom and resource centre. They would also see artists at work and school children on class trips. The proportions of men and women using the Museum would probably also be a surprise as would the fact that its curator is a young woman with orange hair, given to wearing brightly coloured clothes!

Each year about 800 students from the Otago University and Polytechnic have regular classes in the Museum and another 400 use its resources in other locations within the Department of Anatomy and Structural Biology. The Museum is not open to the public but about forty school and special interest groups make escorted visits if they can find a gap in the timetable. The Museum's resources include about 2000 catalogued specimens and models illustrating (mostly) normal human anatomy, a similar number of radiographs, a variety of permanent and semi-permanent displays, several computers that link into the Department's Computer Assisted Learning (CAL) packages, video and audiotape programmes and various other teaching materials for staff and students. Most of this material is freely available or, like the sets of bones, can be borrowed after filling in a register.

Amongst all this modernity and activity the Anatomy Museum still has many reminders of its past. The

room is filled with fine woodwork and natural light from the Edwardian-style skylights. Replicas of classical statues stand atop a glass case containing rows of fine plaster models while around the room are other unmistakable examples of model-making from the late 19th and early 20th century. Old and new combine with the ever-present fascination for human anatomy to produce a truly unique environment.

The Museum's early history was bound up with the establishment of the Medical School at the University of Otago and owed a great deal to the Professors of Anatomy who almost single-handedly brought it into existence. The University itself was established in 1871, only twenty three years after the first Scottish colonists arrived in Otago and ten years after the Otago gold rush. The Medical School was set up two years later to train doctors who would otherwise have gone 'home' to England for their training. Millen Coughtrey, aged twenty six was appointed the first Professor of Anatomy and Physiology in 1874 and classes for the first four medical students started the following year. The whole of the University at that time was in a building in the Exchange, in central Dunedin, which later became the Stock exchange (and was eventually pulled down to make way for John Wickliffe House). There are no records of an Anatomy Museum from that time but specimens from dissections would have been preserved and one can imagine enthusiastic local doctors providing curiosities for the fledgling Medical School.

The first few years were rather shaky. Coughtrey gave public lectures around

Otago to popularise the need for a Medical School but insufficient planning resulted in a failure to gain essential recognition from the 'Home' Universities. When Coughtrey resigned in 1876, because he wasn't allowed to treat patients and so make a reasonable living, the whole idea of a Medical School was nearly dropped. However James Macandrew, the Superintendent of Otago, was convinced of its importance to the new colony and eventually won over the University Council to try it again.

John Halliday Scott, another twenty six year old, was appointed Professor of Anatomy and Physiology in 1877 and so began a long period of growth for the Medical School that lasted for thirty seven years. Dr Scott had a strong Scottish character and had 'a genius for order and method'. Under his leadership and hard work the Medical School rapidly made progress. He became the first Dean of the Medical school in 1891.

Scott was a watercolour artist and was honorary secretary of the Otago Art Society from 1881 until his death. A painting by Scott of the Moeraki Boulders hangs in the Dunedin Public Art Gallery collection. Former students commented on his beautiful and clear blackboard drawings which they found painful to rub out at the end of the day. He painted wall charts (still used to this day) from material in the Dissection Room and took photographs of some dissections when photography was in its infancy.

The Medical School moved to the freshly built blue-stone buildings by the Leith stream in 1879, into rooms now occupied by the Geology

Department. In 1881 Prof Scott obtained a grant of twenty pounds specifically for the Anatomy Museum and in 1892 some models were presented to the Medical School by Dr Maunsell, retired lecturer in surgery. A large group of models in the Museum date from this period. These include the plaster torso and head models from the Leipzig firm of Stegér as well as the replicas of classical statues by D. Brucciani and Co. of London. Their catalogue boasts of winning the Prize Medal at the International Health Exhibition in 1884. The Anatomy Museum statues include 'Venus de Milo' whose original stands in the Louvre; 'Lorenzo de Medici' by Michaelangelo; the 'Borghese Gladiator' whose detailed venous and muscle markings suggest that dissection was practised in Greece as early as 100 B.C.; and a dissected human body that was possibly made from drawings done by Vesalius in his book 'De Humani Corporis Fabrica' published in 1543. Several of the wax models of developing embryos may also have been obtained toward the end of the 19th century. Dr Ziegler's Studio for Scientific Plastics was found in Freiburg, Germany, by Dr Adolf Ziegler in 1852 in association with the Anatomy Department of the University of Freiburg. He made series of wax models in conjunction with the studies of several Professors who gave advice and checked the models for accuracy. Adolf Ziegler died in 1889 and the work was carried on by his son Friedrich. He improved the accuracy of models by building them up from enlargements of actual microscope sections, a technique developed by Professor His.

During the whole time that Scott was Head of the Anatomy and Physiology Department and later Dean of the Medical School he had only one assistant, the remarkably versatile but dour Alfred Jefferson. Jefferson was the dissecting room porter or 'corpses' friend' as well as preparing specimens for storage in Museum jars, making plaster casts of dissections and other models, doing carpentry and various odd jobs. He had been working for

Scott since 1878 but was not paid by the University until 1882 when Scott wrote 'but for him the Anatomical Museum would be in a very backward state'. In the memoirs of a former medical student he is described as 'capable and obliging but appeared rather morose, as if under a perpetual grievance'. At least 130 models and wet preparations in the present Museum are recorded as having been made at least 100 years ago and would have been produced as a collaboration between Scott, the anatomist, and Jefferson, the technician. In those times all medical specimens were stored together but later when the Pathology Department was established Anatomy and Pathology developed separate Museums - the Pathology Museum dealing with examples of abnormal structure and function while the Anatomy Museum concentrated on normal structure and development.

The 4th Intercolonial Congress of Australasia was held at Otago University in 1896, bringing many illustrious medical figures to Dunedin and making quite a splash in the Otago Daily Times (on one day competing with a story about a man who was crushed to death by a horse-drawn tram in Rattray Street). According to the Congress timetable Professor Scott gave lectures about interesting specimens from the Anatomy Museum, such as various parts (including VA2.17, also known as the potted penis) of a murdered 'Negro' sailor.

Scott's main scientific interest was Anthropology and he collected many Polynesian and other osteological materials which were kept in the Anatomy Museum. He published a major paper on the subject in 1893 and was interested in all areas of the subject. A Mr T. Andrew, photographer of Auckland, used to send Scott packets of photos of Pacific islanders, with notes about their customs, from his tours of the Pacific in the 1890s. Robert F. Damon ran an English company which made casts of objects of interest to naturalists including human remains, shells and fossils. From 1903 he sent Professor Scott catalogues

accompanied by letters advertising the latest wonders such as 'a choice series of 24 characteristic flint implements (palaeolithic) from the French caves of Baoussi-Baoussi...' (which Scott eventually bought).

In 1914 Scott died and not long after Jefferson resigned, bringing to a close a long period of hard work and development for the Medical School and its Museum. The following phase was dominated by Professor William Percy Gowland who had trained as a doctor in London. He brought a different style to the Otago Medical School, and with it implications for the Anatomy Museum. 'A Lancashire Lad' with a very loud voice, he was devoted to teaching elementary Anatomy and he also inspired much research in the field of Anatomy. He employed a series of medical graduates, starting with Mr H. Watt in 1915, who served as demonstrators in classes and carried out research projects. Many of these projects resulted in the preparation of wet specimens or glass models for the Museum.

Some of Gowland's demonstrators became famous in New Zealand or as Professors of Anatomy overseas. John Cairney was an Anatomy demonstrator from 1919 until 1924 when he won a Rockefeller Fellowship to study the brain of Sphenodon (Tuatara) with Professor Herrick at the University of Chicago. On his return in 1925 he was appointed Associate Professor of Anatomy, the first such position at the Otago Medical School. He researched the brain of Sphenodon (its forebrain, embryology of its grain, nerve endings in its muscle, heart and vascular system) as well as long anomalies, anomalies of the branches of the aorta and tortuous internal carotid arteries. He resigned in 1927 and later became Director General of Health. Archibald Durward was demonstrator of Osteology in 1923 and senior demonstrator in 1926. He carried on Cairney's work on the brain of Sphenodon as well as studies into the myology of the baboon. He received his doctorate for 'Cell masses in forebrain of Sphenodon Punctata' and



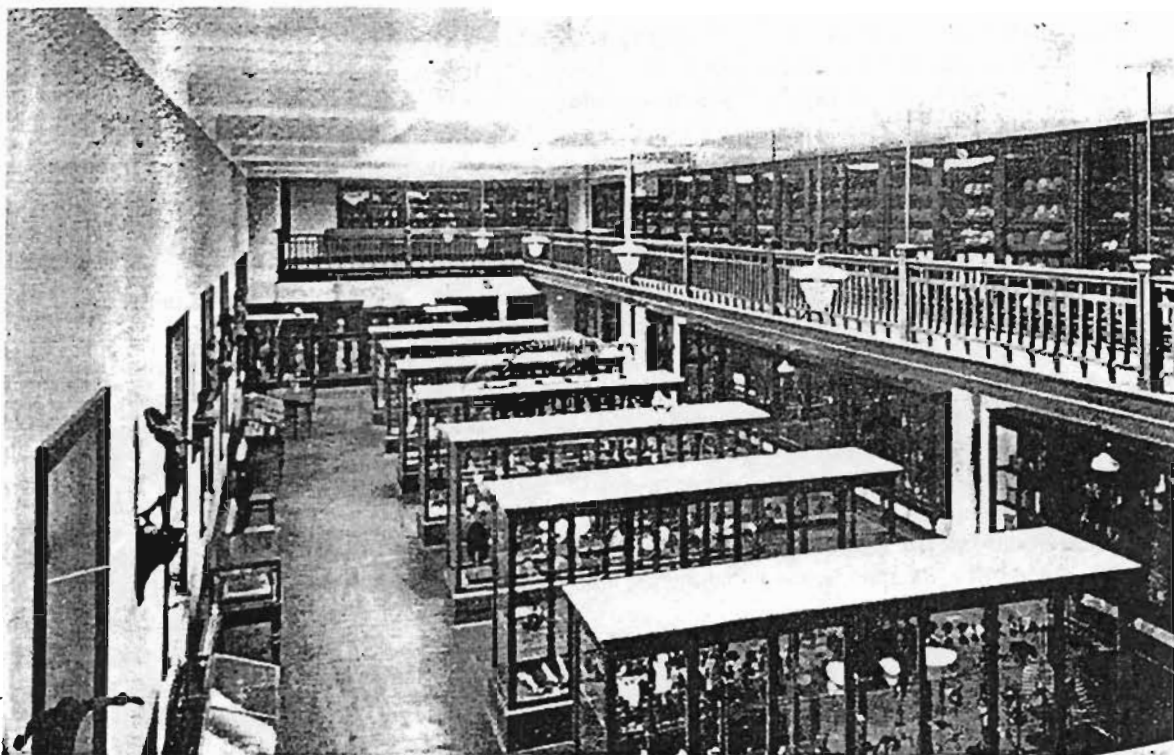


Fig 1. The Anatomy Museum 1927

became Associate Professor in 1927. He resigned in 1931 and went on to become Professor of Anatomy at Leeds University.

Morris Axford was a demonstrator in 1925. He did research on the autonomic nervous system and had a large wax model produced for the Museum (NSP.100). R.L. Flett, who was a demonstrator in 1927, did research on heart muscle and leontiasis ossea (a condition where hypertrophy of the frontal bones gives the sufferer a vaguely leonine appearance), models of which are still in the Museum. Perhaps the most famous of the demonstrators was Derek E. Denny-Brown (1924) who carried out studies on the innervation of muscle and was elected to a Beit Memorial Fellowship in 1926, later becoming Professor of Neurology at Harvard University.

Gowland also increased the staff of the Department of Anatomy significantly by employing technical officers, secretaries and an artist, in addition to the anatomy steward who cared for the bodies in the dissecting room. Many of these people had long

careers and left their mark on the Museum as well as other areas of Departmental activity. Jeff Howard was a technician for forty years (between 1927 and 1967). Over this period he made some models and preparations for the Museum and also did wax reconstruction work, similar to the method used by the Ziegler studio. He also did a great deal of photography and preparation of histological slides. Margaret Ogilvie started work in 1941 as secretary for Professor Gowland, following her sister Joyce who had left when she married Jeff Howard. Margaret became a full-time illustrator for the Anatomy Department in 1972 and retired in 1982. In the year before her retirement Margaret painted a series of 466 small teaching charts, copies of the large posters which hang in the dissecting room. Mr J.C. McAnsh started work as Steward on the same day as Margaret Ogilvie in 1941. He came from Scotland qualified as a professional sweetmaker planning to get a job making Queen Anne chocolates, but surprisingly perhaps ended up at the Anatomy Department. Far less surprising was the fact that he

was often called upon to make sweets and cakes for departmental parties, and his retirement in 1958 was cause for a big farewell by staff and students.

The decision to build the Lindo Ferguson Building was made in 1919 because of overcrowding by ex-soldiers enrolling in Medicine after the First World War. Eight years later in 1927 the Lindo Ferguson Building, named after the Dean of the Medical School, was finally complete. Several cost cutting measures were made to keep within budget, such as an absence of fire escapes - a dangerous situation not remedied until 1959. Transferring the Museum specimens, lab equipment, furniture and cadavers from the old Medical School was a big job. The man who normally transported cadavers for the Department with his one horse carrier van had to be convinced with quite a lot of whisky, at the Department's expense, to help out on the day.

In the purpose-built Anatomy Museum displays were kept in large glass cabinets and were not accessible to students. The mezzanine floor housed

the big Scott collection of Maori and Moriori bones and was closed to students. There was a special room underneath the southern end of the mezzanine for viewing X-rays. Specimens from the Museum were used in dissecting room classes but no regular classes were held in the room. Because so many of the exhibits in the Museum had been prepared to an advanced level of anatomical accuracy, study was encouraged by postgraduate medical students preparing for Fellowship examinations. Former students remember the Museum as rather forbidding, in part because its most significant use by them was during oral examinations. It was a Museum in the old-fashioned sense of the word - quiet, still and impressive - and stayed that way right up to the 1970s. Wax models, such as a series of dissected head and necks of bewiskered Edwardian gentlemen, and most of those associated with the research projects, were made by Thomas H. Kelsey, a highly skilled modeller and artist. Most of his work was produced between 1927 and 1929 when improvements were carried out in the Museum. Better shelving, lighting and new museum jars were required to fill the teaching demands of several newly established clinical departments. Mr Kelsey worked under the supervision of Dr Durward and used special techniques which he guarded well. He would sometimes lock himself in his basement workshop and work through the night to complete projects. Unfortunately, he had to leave when the Medical School needed money for the salary of a part-time librarian.

In 1929 and 1930 Gowland travelled around the universities of America and Europe on a Rockefeller Scholarship observing anatomy teaching and research. His diary, kept at the Hocken Library, has notes on research, new teaching methods for histology and gross anatomy, and the layout of dissecting rooms, laboratories and Anatomy Museums. He noted that the Anatomy departments of both Dublin's Trinity College and Amsterdam University were built on

graveyards, and that the skeleton of Burke (the famous body-snatcher) was on display at Edinburgh University. At Leiden University the Anatomy Museum contained a display of mouse skeletons arranged as an orchestra and audience. In Germany there were no written examinations in Anatomy and Professor Poll of Hamburg University examined students using a spot light in the Museum. At the Madrid Instituto Cajal Gowland had a long interpreted conversation with Cajal who expressed an interest in New Zealand. At Basel he saw models made by Professor His and the first microtome made by His in 1860, as well as the human skeleton presented by Andreas Vesalius in return for having his book printed there.

Gowland would have reached the statutory retirement age of 65 in February 1944 but in 1943, during the Second World War, the Prime Minister decreed that the medical intake would be increased from 100 to 120 students a year. Gowland had three years earlier reported overcrowding in his Department, and when his protest at the latest increase was not supported by the University Council, he resigned from the end of that year. I am sure he would be saddened to see how much worse the problem of overcrowding has become since then.

William Edgar Adams did his M.Sc. at Otago and then went on to do medicine as a student of Professor Gowland, graduating in 1935. He worked as a senior demonstrator at Otago, and was later lecturer at Leeds University where Archibald Durward was the Professor of Anatomy. He returned to New Zealand to take over the Chair of Anatomy, rather more suddenly than he had planned, when Gowland resigned. Adams was Head of Department from 1944 until 1969 when he was appointed Dean. His research field was neurology and this led to a series of plaster models of brain dissections for the Museum. He was a traditionalist and maintained the Department and its Museum much as it was under Gowland. During this period, though, the subject of Anatomy

began to be taught to students other than medical students, starting with those from Physical Education and Dentistry. Although women had been admitted to the University from its inception, women medical graduates, the first of whom was Emily Siedeberg in 1896, were rare in the early years. It wasn't until the 1950s that significant numbers, about 10%, regularly appeared in Anatomy classes.

The Spalteholz preparations and Hammer models in the Anatomy Museum were probably acquired during Adams' time. The Spalteholz preparations were developed by the German anatomist Prof. W. Spalteholz of Leipzig and produced by the Workshop of the German Museum of Hygiene around 1959. A special technique was used to make small specimens such as the lung or kidney of a transparent, except for the blood vessels. It was a lengthy process and involved depilation, fixation, decalcification, bleaching dehydration and finally a special preserving liquid. Hammer's Studio for Plastic Art, run by Dr Bezold at the University of Munich, made plastic models of such things as the human ear. According to a catalogue 'The models are painted true to nature and executed in durable dextrine substance.' For a cost of 25% more, the models could also be made in 'marble-work'.

Bill Trotter was an Anatomy demonstrator in 1947 and 1948 and was on the Anatomy Department staff from 1949. In 1969, after Adams' appointment as Dean, Bill became Professor of Anatomy, retiring in 1983. One of his major achievements was turning the Anatomy Museum into a classroom containing several smaller tutorial rooms and also getting rid of nearly all the locked glass museum cases, thereby making the models and specimens from them accessible to students. The major rebuilding started in 1972 and wasn't complete until 1982.

Three technicians who had joined the Anatomy Department staff during Gowland's and Adams' time had a

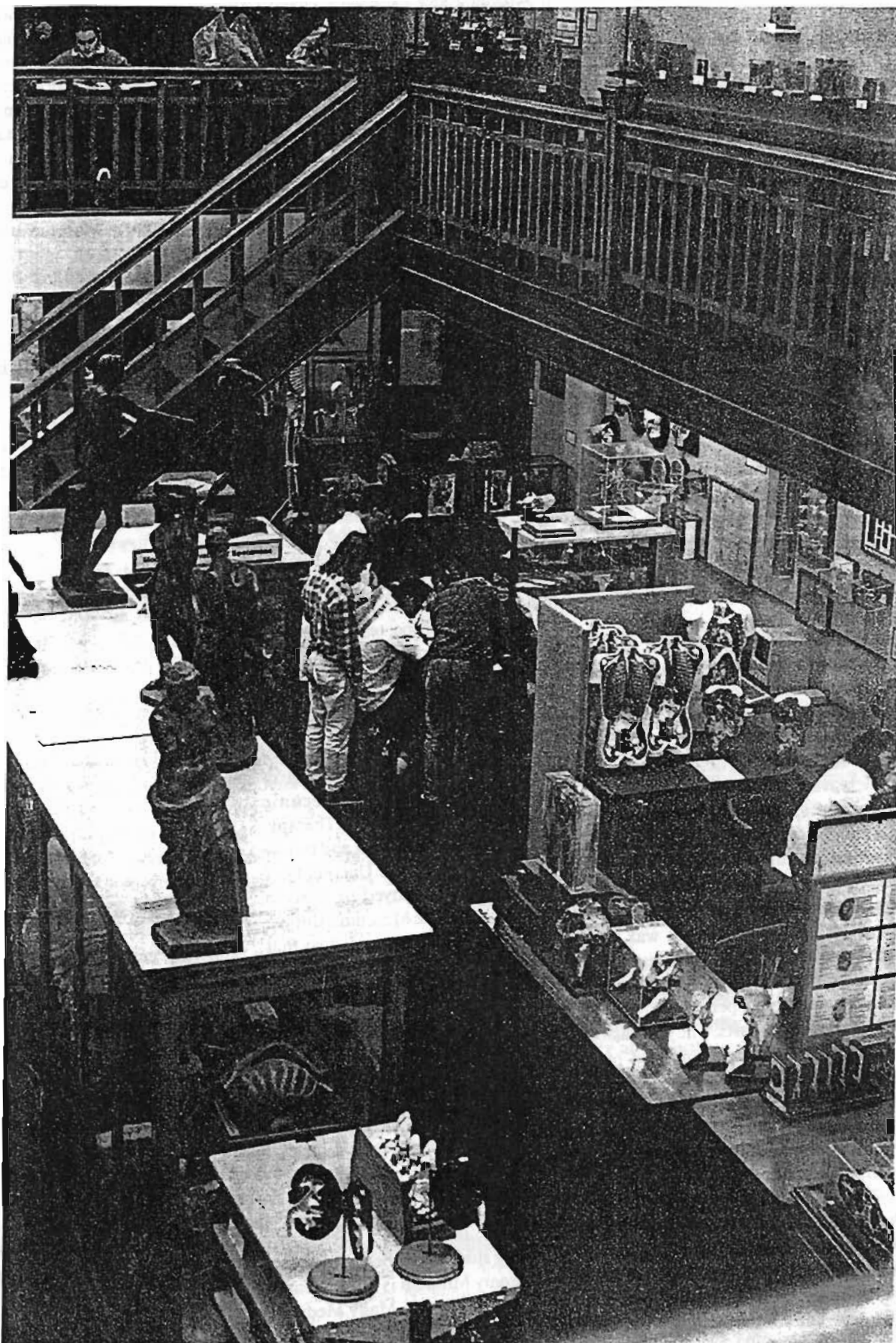


Fig 2. First Year Physiotherapy Students during a class in the Anatomy Museum.



profound influence on the Museum, particularly during its upheavals in 1972. Keith Pickersgill was on the Anatomy Dept technical staff from 1945 until he died suddenly in 1988. He helped get specimens out of the big glass cases, made perspex museum jars and some models in fibreglass and plaster. Charles Unwin was Anatomy Steward from 1958. From 1972 to 1978 he worked exclusively in the Museum. He was a skilled cabinet maker and made the fine wooden bases, with drawers for keys, for many wet preparations. He also hand carved a number of models in wood. Margaret Ogilvie has already been mentioned as an artist. As the Museum underwent its metamorphosis Margaret painted keys and diagrams for the models and repainted some of the old plaster models. Associate Professor Len Robinson, who joined the staff in 1952, took special responsibility for the Museum and worked with the three technicians on the production of models and their keys.

Models from the firm of Auzoux made their way into the Museum around the time of the renovations. New models were needed to meet the demands of increasing student numbers, but there were few worthwhile anatomical models available. The French Auzoux models were some of the best and incorporate three separate collections: Tramond, Auzoux and Nicolas-Augier-Roux. The Tramond collection consists of specimens of bones or are based on bone built up with wax to represent the soft tissues. The Auzoux collection consists of models made in a special kind of paper mache with several detachable parts. The Nicolas-Augier-Roux collection consisted of fibreglass casts of dissections. These dissections were unusual because they were from young healthy people - criminals who had been given the death penalty. The moulds were made between the Wars by Dr Augier and Mr Roux under the supervision of Professor Nicolas at the University of Paris. Professor Gowland met this trio and saw their models in 1930 when he was on his sabbatical tour.

Russell Barnett has been Museum Preparator since 1979. He has a special talent for making fibreglass models and uses it for original models as well as making copies of the older, more fragile models. He also uses the very modern technique of plastination with which anatomical specimens can be preserved without having to keep them in fluids. The process involves the gradual replacement of all the water in a specimen with various concentrations of solvents and finally silicone or epoxy plastic. There are currently over 100 catalogued museum specimens that have either been prepared by plastination or the similar technique of resin embedding.

The current Head of Department is D. Gareth Jones, who has held the post since 1983. He has very much fostered the use of the Museum as a classroom and resource centre. In the last few years the development of Anatomy as a science subject and the growth of research into cellular anatomy using electron microscope techniques has led to the Department's name change to that of Department of Anatomy and Structural Biology. With Physiotherapy becoming a degree course, increases in the numbers of Physical Education students and of anatomy classes for Polytechnic courses such as Occupational Therapy, the Department has grown and is now one of the largest in the University. I was originally employed in 1986 to dust and care for the Museum exhibits, but the job rapidly expanded so that now I have become the Museum's Curator. I organise additions to the catalogue, maintain several computer databases, teach staff and students about the many resources available, produce original displays and generally encourage the active use of the Museum.

I am not sure what the future holds. Rapid changes in the structure of the University in recent times and increasing student numbers mean that the Anatomy Museum is by no means at the end of the road. Many Medical Schools in Australia and England lost their old-style Museums when they

restructured but are now, several years later, regretting the resources that they lost. This Anatomy Museum is still in existence because it did not remain a static display of curiosities and instead adapted to the changing needs of students. Some of the changes yet to come may seem difficult but looking back over the past, will probably be no worse than those that led to the development of the Museum in the first place.

[Fieke Neuman has a B.Sc. and is enrolled in the Diploma in Museum Studies at Massey University]