

Mimicking the dead

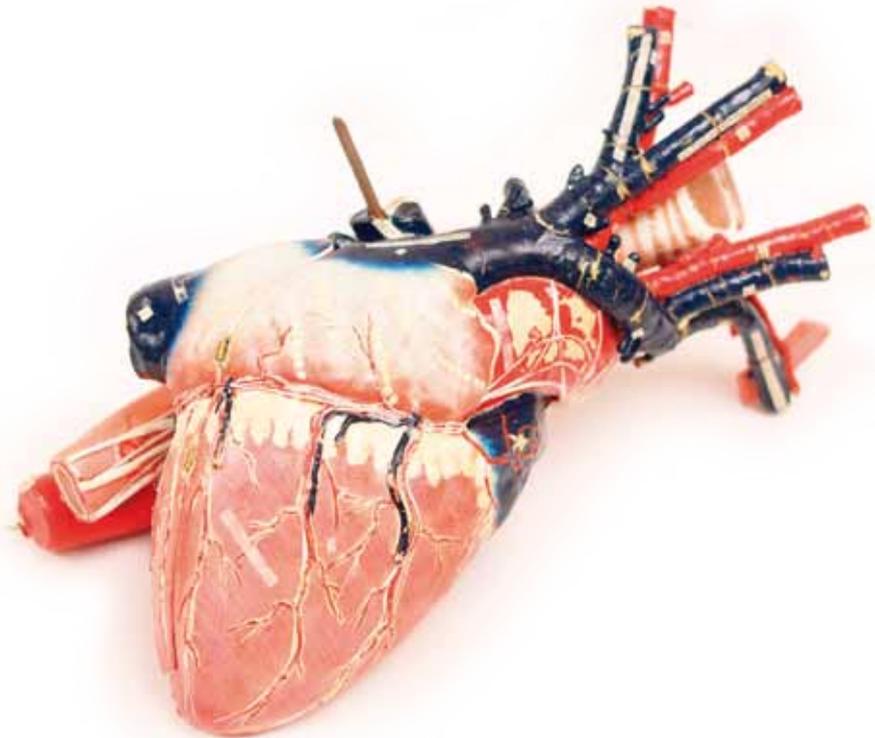
Nineteenth-century papier-mâché anatomical models and the teaching of anatomy at the University of Melbourne

Alexandra Gerner

Amongst the specimens, slides, preserved body parts and disease samples in the Harry Brookes Allen Museum of Anatomy and Pathology at the University of Melbourne are a number of papier-mâché anatomical models. These were powerful tools of instruction for 19th-century anatomy students, substituting for hands-on dissection when cadavers were difficult to source. At the time their use was the most modern method for simulating dissection in anatomy schools throughout the world.

The Harry Brookes Allen Museum's collection of papier-mâché models comprises 11 items: three eye models, two tongues, two larynges, an over-sized external and inner ear, an inner ear, a heart, and a half-head. At least eight of these models, including the oldest from 1889, were made by the French company Auzoux, the founding and pre-eminent producer of papier-mâché models. The latest model, an eye, was supplied by H.B. Selby & Co. some time after 1917.¹

Papier-mâché was first used to make anatomical models in the 1820s by French medical student Louis Thomas Jérôme Auzoux (1797–1880), who named his technique *Anatomie clastique* (derived from the Greek word *klastos* meaning broken in pieces, because the models could



be taken apart to reveal the full structure). Dissection was difficult in the 19th century, due to religious and cultural beliefs, the lack of adequate preservation methods, and insufficient supplies of cadavers. Dissections were generally only performed on the bodies of convicted murderers, although the British *Anatomy Act* of 1832 gave officials of poorhouses, workhouses, asylums

and other benevolent institutions the legal right to hand over to anatomy schools the bodies of those who died within their establishments. This was often done despite any prior objections to dissection expressed by the deceased.² A similar *Anatomy Act* was legislated in Australia in 1862. Bodies were also not readily donated to science because of the stigma attached to dissection, partly based

Model of the human heart, made by
Maison Auzoux, Paris, 1889, papier-mâché,
wire wound with ribbon, glue, paint,
24.0 x 11.0 x 13.0 cm. Cat. no. 516-500277,
Harry Brookes Allen Museum of Anatomy
and Pathology, University of Melbourne.
All photographs by Ryan Jefferies.

on Christian beliefs that a person could not be resurrected if their body was desecrated.

Conversely, human dissection was regarded by medical professionals as an integral part of their education; unravelling the layers of the human body demonstrated its internal workings. Throughout Europe, universities built dissecting theatres where students, and often the general public, could view dissections in progress.³ As dissection became more popular, both as public spectacle and for instructional purposes, there was an increased demand for bodies. Anatomical models—initially made of ivory, wood or wax—were developed for demonstrative purposes. But these had several drawbacks as substitutes for dissection: they were inflexible and expensive, and the wax models were easily distorted by repeated handling. Auzoux saw papier-mâché as an inexpensive alternative that could be easily manufactured by unskilled workers. Each part of a model was made by lining lead moulds with layers of glued paper, flour paste, shredded paper, chopped rags and Auzoux's secret ingredients: calcium carbonate and powdered cork. The two halves of the mould were aligned, forced together by a wooden press until dry, and then the components

were reinforced with wire prior to being painted with a paint that included cinnabar and lead oxide. The arteries, veins, and nerves were crafted from wire, which was wound with coloured ribbons and then painted and glued into place. The models all had removable sections and realistic components, which allowed them to supplement the hands-on dissection experience demanded by students. The anatomical accuracy and detail of Auzoux's models distinguished them from other 19th-century anatomical models, and they were received with widespread acclaim by medical schools.⁴

In 1882, University of Melbourne graduate Harry Brookes Allen (1854–1926) was appointed as professor of descriptive and surgical anatomy and pathology to ease the workload of George Halford (1824–1910), the university's first professor of anatomy, physiology and pathology. While Allen's devotion to his alma mater was never questioned, in many ways it blinded him to new developments in teaching and research. Pathology was unquestionably his pet discipline; the Medical Students' Society magazine, *Speculum*, claimed that the Anatomy Department had been 'starved at the expense of Pathology'.⁵ Allen oversaw a period in which the Medical School and Anatomy Department grew

rapidly but were characterised by high failure rates, inadequate teaching and chronic problems in sourcing cadavers.

Direct observation of the human body was essential for studying anatomy, yet difficulties in obtaining cadavers were rife throughout the 19th century. The Melbourne Medical School opened in 1862 with three students. In 1872 only 20 students were undertaking dissection at the University of Melbourne, yet by 1883 there were approximately 100 students, and this number almost doubled by 1906.⁶ Both Allen and Halford repeatedly requested assistance from the University Council 'with a view to obtain increased facilities for the supply of subjects for anatomical demonstrations'.⁷ Allen even went so far as to send a request directly to the premier of Victoria, appealing for special permission to 'forward the bodies of patients dying friendless to the medical school'.⁸ According to *Speculum* in 1889, the growing trouble in sourcing bodies was now 'chronic'.⁹ Professor Allen was in touch with 'every charitable institution in the colony', including those as far away as Ballarat, yet responses were not positive, as organisations believed they would become unpopular if it were known that they donated bodies to science.¹⁰

Student results and morale suffered as a consequence of the lack of dissection subjects. Students were 'double-banked': several worked simultaneously on the same body, a practice commonplace in Melbourne throughout the late 1880s. Students were therefore completing their medical degrees with an 'imperfect knowledge' of the human body, despite paying fees entitling them to one body each.¹¹ In 1894 *Speculum* reported that 'prevailing depression has invaded the dissecting room ... four bodies for one hundred men'.¹² Furthermore, this shortage minimised demonstrations using real bodies; teachers relied instead on diagrams or preserved dissections, although these proved less effective than demonstrations with a real body.¹³ As late as 1898 there were still complaints about the lack of bodies; this continued until around 1905.¹⁴ Meanwhile the situation was ripe for the use of anatomical models. Students could practise the order of the dissections and learn the different body parts and positions, in order to be better prepared when a body did become available.

Inadequate teaching and facilities were additional problems. In the November 1888 and February 1889 anatomy examinations, 64 per cent of students failed the two classes for which Allen was responsible. Allen

attributed this to the unavailability of bodies, but the students complained about the lack of effective teaching and Allen's inconstant attendance throughout the term. It was not uncommon for the university's teaching staff to split their time between several duties. Allen was dean of the faculty, chair of two disciplines (anatomy and pathology), chair of a royal commission into Melbourne's sanitary conditions, member of an inter-colonial congress into the extermination of rabbits, and secretary of the inter-colonial medical congress held at the university in January 1889—a heavy workload. Students complained both in *Speculum* and to the Medical Faculty and University Council about Allen's poor availability.¹⁵ The Council hired two demonstrators, yet their appointments were short-lived; both were replaced within months. By the end of 1889 more than five different demonstrators had come and gone.¹⁶

The lack of consistent demonstrators also contributed to students' dissecting-room behaviour. Medical students had a reputation for being 'the hardest drinkers, the greatest smokers, and the rowdiest men' at the university.¹⁷ The best senior students were rewarded with the title 'prosector' and were given the task of supervising dissections.¹⁸

This ameliorated the staffing woes and also gave students some measure of responsibility, although it is likely that most misbehaviour occurred under the prosectors' supervision. There was a lively trade in body parts amongst students, and 'meat fights'—throwing body parts—were also common during dissections. As described in *Speculum*:

Many, when time hangs heavily on their hands, practise aiming chunks of semi-putrid muscle across the room at their bosom friends ... it requires a good deal of practice to enable one to aim straight ... On leaving the room for the day, pocket a femur or pelvis from the skeletons which the authorities have considerately supplied to enable students to complete their own set of bones.¹⁹

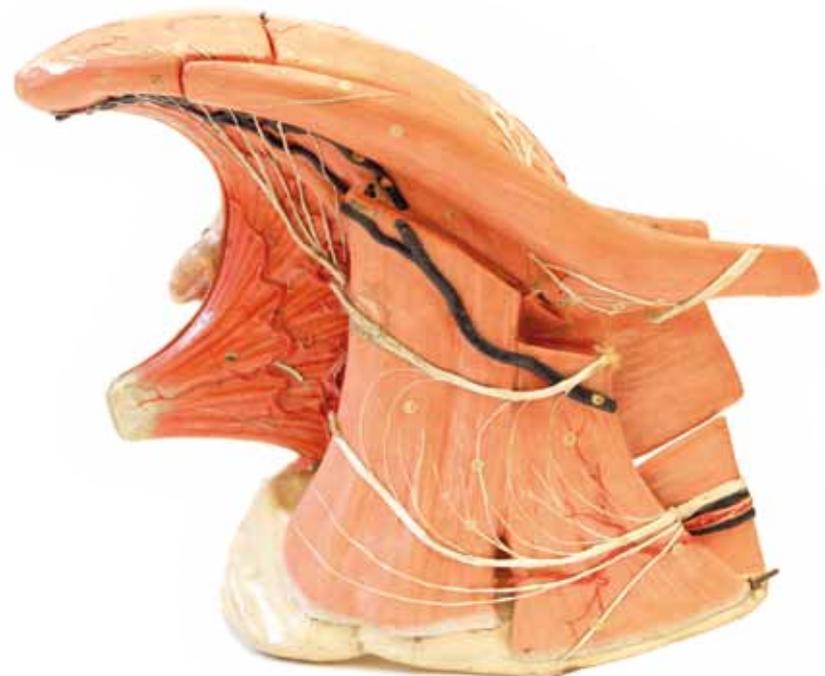
Teaching methods were also criticised by students, who found lectures uninspiring. Although he was well regarded by his students, Allen's lecturing style was not highly praised. According to former student and successful pathologist Sir Roy Cameron, Allen 'was not an exciting lecturer ... he seldom showed any emotion and he fixed his eyes on the centre of the room and seldom lifted them'.²⁰ According to an article in *Speculum* in 1889,

Model of the human tongue, made by Maison Auzoux, Paris, 1889, papier-mâché, wire wound with ribbon, glue, paint, 28.0 x 22.0 x 29.0 cm. Cat. no. 516-500265, Harry Brookes Allen Museum of Anatomy and Pathology, University of Melbourne.

more demonstrations were needed, as a typical lecture was ineffective, consisting of a professor standing in front of up to 100 students with:

one of the small bones of the skull, and on this he delivers a very learned disquisition, while his audience are for the most part dozing contentedly, or endeavouring with praiseworthy energy to distinguish the little protuberances and depressions which it would take Sam Weller's 'pair o' patent double million magnifying gas microscopes of extra power' to detect at such distance.²¹

Students believed hands-on learning was a more effective way of learning. They lamented the lack of teaching aids common in the well-established British universities. In 1887, *Speculum* pondered whether prepared dissection plates and frozen human sections would ever be available for Melbourne students, who instead relied on descriptions and textbooks.²² In 1892, *Speculum* noted that some improvement had taken place in the Anatomy Department, which had acquired 'beautiful anatomical preparations, frozen sections, and exquisite models ... used in teaching Anatomy'.²³



In 1905 the combined chair of anatomy and pathology was finally split and Allen's immense workload was relieved by the arrival of Richard Berry (1867–1962). Berry brought with him an enthusiasm for the Anatomy Department that had been lacking under Allen. Upon his arrival, Berry's first impression of the department was bleak, noting that 'it contained literally nothing, not even a skeleton, though later I discovered quite a lot in the cupboard'.²⁴ Luckily for Berry, his arrival also coincided

with increases in the availability of cadavers, so he was not faced with the same drastic shortage of bodies as had characterised Allen's reign.

No records survive in the University of Melbourne Archives relating specifically to the purchase, donation or use of the papier-mâché models now housed in the museum's collection. Using other records from the archives, we can make some suppositions as to the arrival period and use of the models at the university.²⁵

Model of the human eye, made by Maison Auzoux, Paris, 1889, papier-mâché, wire wound with ribbon, glue, paint, 22.0 x 17.0 x 29.0 cm. Cat. no. 516-500066, Harry Brookes Allen Museum of Anatomy and Pathology, University of Melbourne.

There is evidence in the finance committee minutes and Allen's own correspondence to suggest that some models may have been purchased while he was professor of anatomy. Throughout this period Allen made repeated requests for additional apparatus purchases for the department. These requests correspond to times when it faced serious problems, particularly around the late 1880s. The earliest models in the museum's collection are from 1889—the year in which 64 per cent of Allen's anatomy students failed their examinations—and therefore could have been purchased in response to these poor results.

Significantly, records show that Allen petitioned the University Council and the finance committee for an advance and increase of his budget to purchase apparatus during a scheduled trip to the United Kingdom and Europe in 1890.²⁶ Allen may have used this money to purchase the papier-mâché models in an attempt to fix his department's problems. A further entry in the 1891 Medical Faculty minutes discusses a specific focus on upcoming eye dissections.²⁷ The existence of two Auzoux eye models in the museum's collection, one of which is dated 1889 (illustrated opposite), suggests that this focus on eye dissections led to their purchase. In 1898 Allen applied for a

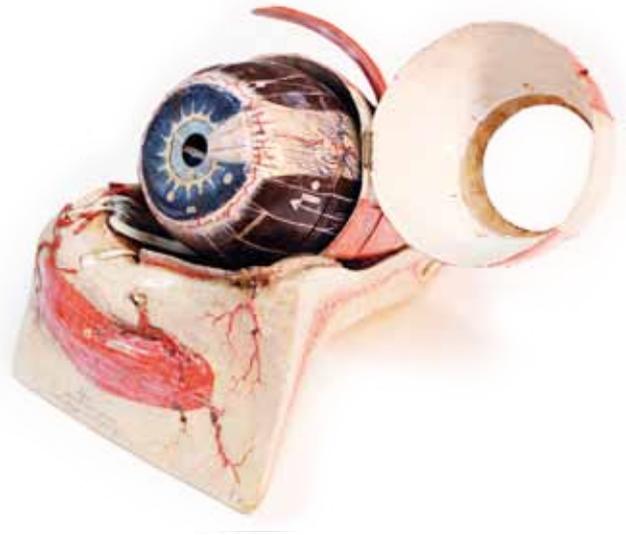
further £250 to purchase apparatus, as 'no anatomical models or diagrams have been purchased for many years'.²⁸ In April, May and June 1899 Allen was in correspondence with the French model makers Maison Tramond and Jules Talrich, ordering wax and plaster models.²⁹ There is no mention of papier-mâché models in Allen's papers, but nor is there any specific mention of the purchase of wax and plaster models in either the finance committee correspondence or the Medical Faculty minutes.

In 1906 Professor Berry donated 'a collection of anatomical models of the value of £100' to the Anatomy Department.³⁰ While no additional information was provided, it is possible that this included some papier-mâché models. In his unpublished memoir, 'Chance and circumstance', Berry describes a visit to Paris in 1896 to purchase new models, while working for the Royal College of Surgeons in Edinburgh, although he does not mention any specific purchases.³¹ The museum's eye model supplied by H.B. Selby & Co. was most likely purchased by Berry, or donated during his tenure at Melbourne, suggested by its post-1917 dating. As it is mounted it was probably placed directly in the museum for display. By 1917 it was also likely that newer forms of

models were in use for teaching.

The past is often elusive. In writing history we encounter both the known and the unknown. Therefore we may never know exactly when or how the collection of papier-mâché anatomical models came to be in the possession of the Harry Brookes Allen Museum of Anatomy and Pathology. These models have historical and scientific value as examples of one of the most innovative techniques in simulating dissections during the 19th century. Given the Anatomy Department's troubles during the latter part of that century, we can hypothesise that these models assisted students in their medical education. While today they have been replaced by more practical and economical plastic models and computer simulations, they still occupy an important place in the history of the University of Melbourne, and specifically its Department of Anatomy and Neuroscience.

This article is based on the author's research paper, 'Nineteenth century papier-mâché anatomical models and the teaching of anatomy at the University of Melbourne', written for the Master of Public History program at Monash University in 2011. The project was undertaken with the support of the Harry Brookes Allen Museum of Anatomy and Pathology and the University of Melbourne's Cultural Collections Projects Program.



Alexandra Gerner currently lives in Perth. She is completing her Master of Public History by correspondence while undertaking a student placement at the Western Australian Museum.

For more information about the **Harry Brookes Allen Museum of Anatomy and Pathology**, see <http://mdhs.unimelb.edu.au/harrybrookesallenmuseum>. Examples of anatomical models from the collection are on display in the exhibition *The art of teaching: Models and methods*, in the Leigh Scott Gallery, Baillieu Library, until 3 February 2013.

- 1 1917 was the year the company changed its name from H.B. Silberberg & Co. (Samuel Furphy, *Selbys the science people: A history of H.B. Selby Australia Limited*, Melbourne: Australian Scholarly Publishing, 2005, p. 41).
- 2 For a detailed discussion of the *Anatomy Act* and problems in sourcing cadavers see Helen MacDonald, *Possessing the dead: The artful science of anatomy*, Carlton: Melbourne University Press, 2010; and Ruth Richardson, *Death, dissection and the destitute* (2nd edition), University of Chicago Press, 1987.
- 3 Victoria Hobday, 'A body of evidence: An art historical perspective on eighteenth and nineteenth century wax anatomical models', unpublished thesis, Master of Curatorship, School of Art History, Cinema, Classics and Archaeology, University of Melbourne, 2006, p. 15.
- 4 Laurie Slater, 'Clinical: Medical antiques—the practice of phisick—anatomy models', *GP*, June 2008, p. 35.
- 5 *Speculum: The Journal of the Melbourne Medical Students' Society*, no. 86, May 1913, p. 9. *Speculum* has been digitised by the University Library and may be searched online at <http://dtl.unimelb.edu.au>.
- 6 Harry Brookes Allen, 'University of Melbourne Medical School jubilee 1914', cited in Ross L. Jones, *Humanity's mirror: 150 years of anatomy in Melbourne*, South Yarra: Haddington Press, 2007, p. 86.
- 7 'Allen to Council', 1 December 1887, meeting no. 16, series UM 515, Faculty of Medicine minute books (microfilm). Accession no. 1997.0128, University of Melbourne Archives.
- 8 'Dissections', 8 August 1889, meeting no. 35, series UM 515. University of Melbourne Archives.
- 9 *Speculum*, no. 16, January 1889, p. 17.
- 10 *Speculum*, no. 16, p. 17.
- 11 *Speculum*, no. 16, p. 17.
- 12 *Speculum*, no. 30, August 1894, p. 30.
- 13 Jones, *Humanity's mirror*, p. 87.
- 14 See *Speculum*, no. 38, July 1897, p. 72; no. 39, November 1897, p. 74; no. 40, May 1898, p. 26.
- 15 'Council minutes regarding student complaints', 18 March 1889, meeting no. 5, series UM 174, University of Melbourne Council minute books (microfilm), accession no. 1993.0044, University of Melbourne Archives.
- 16 See 'Council minutes regarding Professor Allen's duties', 25 March 1889, meeting no. 6, series UM 174, University of Melbourne Council minute books (microfilm), University of Melbourne Archives; 'Council minutes regarding request for demonstrator of anatomy', 27 February 1888, meeting no. 4, series UM 174; 'Council Minutes regarding applications for demonstrator of anatomy', 6 May 1889, meeting no. 9, series UM 174; Council minutes regarding additional demonstrator of anatomy', 13 May 1889, meeting no. 11, series UM 174.
- 17 R.J.W. Selleck, *The Shop: The University of Melbourne, 1850–1939*, Carlton: Melbourne University Press, 2003, p. 144.
- 18 Jones, *Humanity's mirror*, pp. 92–3.
- 19 *Speculum*, no. 21, June 1890, pp. 67–8.
- 20 Sir Roy Cameron in 'Sir Harry Brookes Allen, 1854–1926', *Pathology*, vol. 16, no. 3, 1984, p. 255.
- 21 *Speculum*, no. 16, p. 15.
- 22 *Speculum*, no. 11, October 1887, p. 12.
- 23 *Speculum*, no. 27, March 1892, p. 157.
- 24 R.J.A. Berry, 'Chance and circumstance', unpublished typescript, [1954], p. 110. History of Medicine Collection, Brownless Biomedical Library, University of Melbourne.
- 25 The following records from the University of Melbourne Archives were used: Sir Harry Brookes Allen papers 1860–1948, accession no. 1976.0006; Series UM 174, University of Melbourne Council minute books (microfilm), accession no. 1993.0044; Series UM 312, Correspondence series 1871–1912, Registrar's office, accession no. 1999.0014; Series UM 419, Medical School correspondence 1856–1909, accession no. 1993.0046; Series UM 441, University of Melbourne finance committee minute books 1853–1938 (microfilm), accession no. 1979.0190; Series UM 515, Faculty of Medicine minute books (microfilm), accession no. 1997.0128.
- 26 'Finance committee minutes regarding Professor Allen's apparatus advance', 19 December 1889, meeting no. 19, series UM 441.
- 27 'Medical Faculty minutes regarding eye dissections', 4 August 1891, meeting no. 15, series UM 515.
- 28 'Professor Allen to finance committee', 19 October 1898, file no. 204, series UM 312.
- 29 For Allen's correspondence with Jules Talrich, see 'Correspondence: French medical equipment supplies', 19 May 1899 and 4 July 1899, series 1/14, Sir Harry Brookes Allen papers 1860–1948. For Allen's correspondence with Tramond, see 'Equipment', 11 April 1899, series 3/17, Sir Harry Brookes Allen papers 1860–1948.
- 30 'Finance committee minutes regarding Professor Berry's donation', 24 September 1906, meeting no. 4, series UM 441.
- 31 Berry, 'Chance and circumstance', pp. 75–6.