

JAN TOERIEN AND THE HISTORY OF THE ANATOMY AT THE UNIVERSITY OF THE FREE STATE

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ABSTRACT

The Department of Anatomy at the University of the Free State (UFS) was established in 1970 and the first head of department, Professor Mattheus Johannes Toerien, assumed duties on 1 January 1971. However, little is known about the establishment and growth of anatomy as a department and this biomedical subject at the UFS. One individual in particular, played a pivotal role in this and the authors here aim to capture the development of anatomy education at UFS and the role of Professor Mattheus Johannes Toerien. Here the authors describe and provide new insights to the early years of anatomy education, the role of Toerien and the establishment of the Toerien-Museum of Anatomy.

Key words: Mattheus Johannes Toerien, anatomy, Jan Toerien Anatomy Museum, University of the Free State

INTRODUCTION

The first Medical School in South Africa opened on 6th June 1912 at the South African College (SAC), known today as the University of Cape Town. Prior to this (from 1860 to 1880), students interested in a career in medicine had to study at Leyden University and then later University of Edinburg (Louw, 1969). Medical education at Edinburgh underwent dramatic changes at turn of the 19th-century and this was marked by the employment of full-time professors for the basic scientific disciplines (Lawrence, 2006). The anatomists no longer ruled at the pinnacle of medical education, as was the case prior to this, and previously the reputation of any school largely depended on that of the anatomy professor (Lawrence, 2006). The expansion of the British Empire scattered Edinburgh's anatomists across the globe and two, Robert Black Thomson and Maxie Drennan, set foot on African soil at the start of the 20th-century (Macalister, 1916, Correia *et al.* 2013). They were both students

of Sir William Turner (1832-1916) and another of Turner's students, Sir Anderson Stuart, later indirectly influenced medical education in South Africa through Raymond Arthur Dart. Stuart left Scotland in 1883 after being appointed at the University of Sydney as the Dean and Foundation Professor in Anatomy and Physiology. Stuart was later, in 1887, joined by one of Turner's anatomy demonstrators namely, James Thomas Wilson (Smith, 2006). Dart became known as one of Wilson's prodigies and moved to South Africa and succeeded Edward Philip Stibbe as head of anatomy at the University of the Witwatersrand (Keith, 1950; Tobias, 1990, Correia *et al.*, 2013). The sixth South African medical school open its doors on 6 June 1969 at the University of the Free State (UFS), Bloemfontein, South Africa (Retief, 1974). A detailed account of the first five years of the Faculty of Health at the UFS has been provided by Retief (Retief, 1974).

However, little is known about the establishment and growth of the department of anatomy and this biomedical subject at the UFS. One individual in particular played a pivotal role in this and the authors here aim to

capture the development of anatomy education at UFS and the role of Professor Mattheus Johannes Toerien in these pioneering years through.



Figure 1: The first anatomy students in the dissection hall in the museum in Block A.

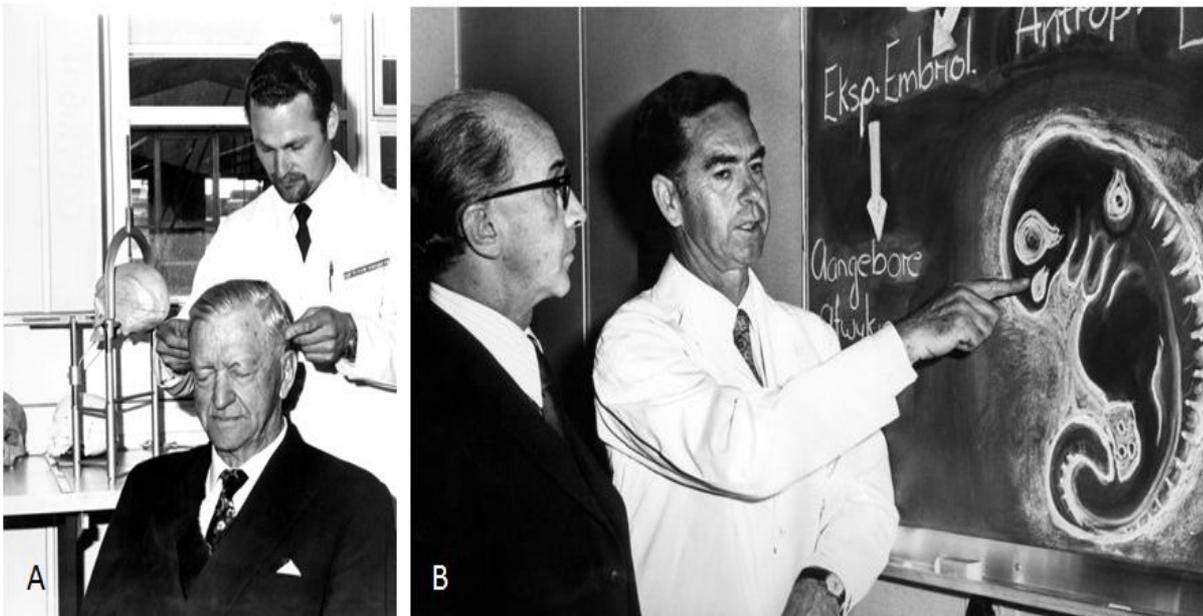


Figure 2.: A: Mr. C.R. Swart State President in office from 31 May 1961 to 1 June 1967, had his cranial capacity measured by Dr. P. van Deventer. B: J.P. van der Spuy's visits to the Department of Anatomy and Prof. MJ Toerien explaining aspects of embryological development.

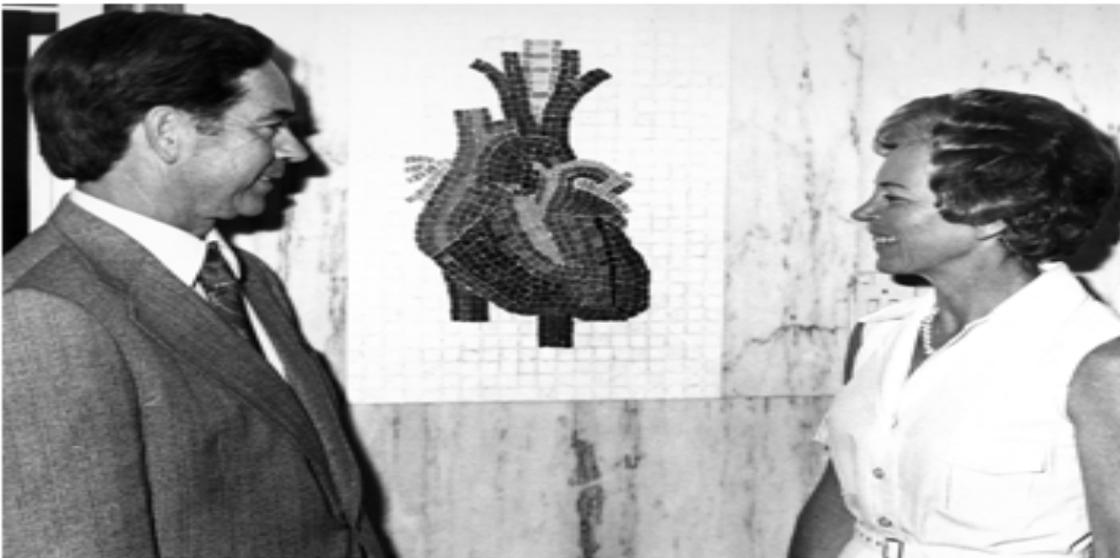


Figure 3: Prof M.J. Toerien and Mrs. R. Rautenbach in front of the Anatomy Museum, with the mosaic she created for the entrance to the museum. Today it is known as the Toerien Museum of Anatomy.

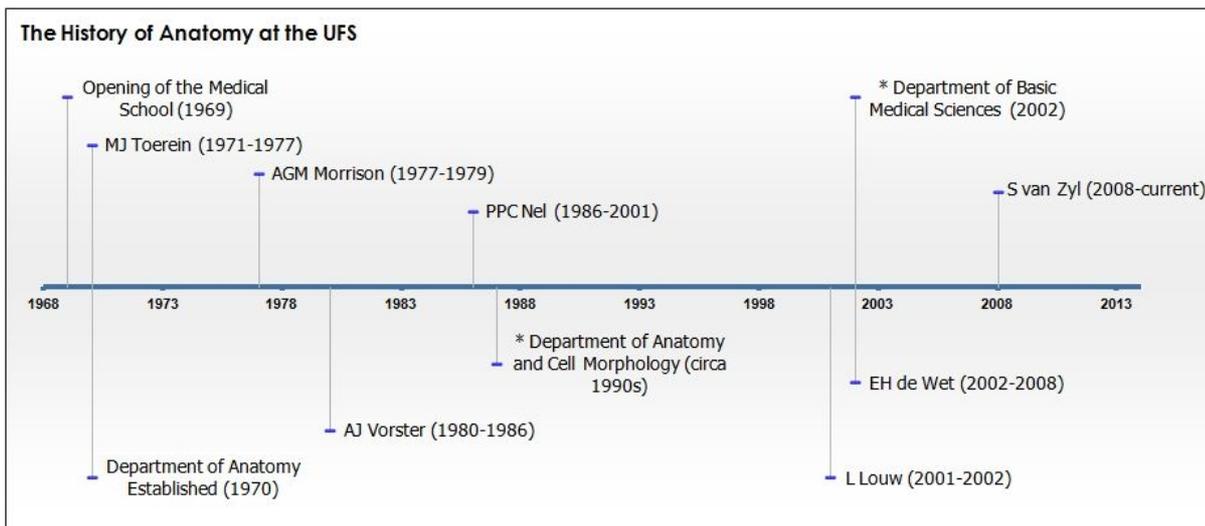


Figure 4: Toerien was succeeded by Prof. A.G.M. Morrison a former surgeon (1977 – 1979), A.J. Vorster then (1980 – 1986), and Prof. P.P.C. Nel (1986 – 2001). Nel was succeeded by Louw and De Wet respectively and Dr. S. van Zyl currently serves as Head. (* denotes the points of a name change).

The origin of the Department of Anatomy at the University of the Free State

The Department of Anatomy was established in 1970 and the first head of department, Professor Mattheus Johannes Toerien, assumed duties on 1 January 1971. The Department was temporarily housed within the Faculty of Natural Sciences and the department relied on the limited facility at the National Hospital’s mortuary for dissection purposes. The first anatomy

lectures followed later in February 1972. An initial 45 medical students were enrolled for the degree M.B.Ch.B. (Bachelor of Medicine, Bachelor of Surgery) of which only two were female students (Retief, 1974).

The early years were marked by changes and in March 1972, the department moved into the partially finished Block A of the Medical Faculty building (Retief, 1974). Today, this building is known as the François Retief Building and was named after the founding dean, Prof. Pieter

François Retief, of the newly established Free State Medical Faculty (Retief and Cilliers, 2010). Cadaveric dissections were conducted in the early established anatomy museum in Block A (Fig 1). During this time, while the building was still in its developmental phase, both students and academic staff had to endure an average temperature of 4°C for the sake of the cadaveric material. Block A was finally completed in late 1973 as recalled by Retief (Retief, 1974).

Prof. Toerien established the faculty's first Medical Research Council supported research unit that focused on Experimental Embryology in 1973 despite the limited academic facilities available before the completion of the Block A (SAMJ, 1974). The main research interests of the unit were on organ development and autoradiography. Shortly after his tragic death in 1977, the unit was unfortunately dissolved (Retief, 1977). In December 1973, Prof. Toerien and Mrs. D. Hendriks published a manuscript titled *Experimental endolymphatic hydrop* in the South African Medical Journal (Hendriks and Toerien, 1973).

The work of the Department of Anatomy was introduced to the public on 29 August 1973. This allowed several tours, which were lead by the department and both academic and non-academic personnel associated with the department. Visitors were provided with information on the nature of their operations and the value of this to medical education. On that day, the Minister of National Education (the Honourable J.P. van der Spuy) a former student of the University of the Free State, also came to visit the department. This momentous occasion was marked by a personal tour lead by the head, Prof. M.J. Toerien as depicted in Figure 2A. Also during the open day, State President, Mr. C.R. Swart, had his cranial capacity measured by Dr. P. van Deventer (Figure 2B). Dr. van Deventer, a senior lecturer at the department, found that Mr. Swart had a cranial capacity of 1,798 cm³ with a known population average of 1,400 cm³. Anthropometry formed part of the

foundational aspects of a traditional curriculum during those years.

Prof. M.J. Toerien

Mattheus Johannes Toerien was born on 3 November 1925 in Nieuwoudtville, a small town situated in the Northern Cape in South Africa. He started his profession as a scientist and biologist. In 1946 he obtained a B.Sc. and 2 years later a M.Sc. degree in Zoology at the University of Stellenbosch. He was awarded the British Association medal in 1950 for this Master's dissertation (Retief, 1977).

Toerien was appointed as academic officer at the Transvaal-Museum in 1949, but in 1950 he started working as a research assistant in Palaeontology at the Bernard Price institute. From 1951 to 1955 he was affiliated with the anatomy department at Wits University and in 1952, he obtained the first of two Ph.D. degrees. His research was conducted at the University of the Witwatersrand under the leadership of world renowned Professor Raymond Dart (Retief, 1977). His thesis involved studies on the morphology of the bony palate of mammal-like reptiles and was titled: *The evolution of the palate in South African Anomodontia and its classificatory significance*.

Toerien's early (1964 to 1966) academic career saw him travel abroad to the State University of New York and in 1966 at the Hubrecht International Laboratory for Experimental Embryology in Utrecht. He then later worked at the Anthropology Institute in Zurich, Switzerland from 1957 until 1970. In 1970 he returned to University of Stellenbosch after accepting a position as lecturer in Anatomy. His thesis for a D.Sc. (Zoology) was completed in 1969 and for this he investigated the embryonic development of the cartilaginous part of the skull: *The developmental morphology of the chondrocranium of Podiceps cristatus*. From here Toerien moved to the UFS and in 1971 he was appointed as the first head of the Department of Anatomy (Retief, 1974; 1977).

Toerien, through his work and publications distinguished himself and received a number of prestigious accolades. Awards such as

the Council of Scientific and Industrial Research (CSIR) scholarship, international postdoctoral research fellow of the American Health Department and the Ernst Oppenheimer Memorial Trust has enabled him to do research at international research institutions. He was also a member of the South African Academy for Science and Art, the International Institute of Developmental Biologists, Anatomical Society of Southern Africa, Royal Society of South Africa (SA), Council of the Study of Evolution, and the Genealogical Society of SA.

Toerien unexpectedly died after arriving in New York due to a heart attack on 13 August 1977, just two months after he received the esteemed Havenga-award for Biology (Retief, 1977). After his sudden passing away, late Prof. Toerien was awarded the Silver medal for extraordinary service from the Medical Research Council in March 1978. The award was accepted by his wife, Johanna Toerien. Prof. Toerien left behind his wife and three children, Herman, Nico and Marteli. It was during this period that the Anatomy museum was named after Prof. Toerien and known today as the Toerien-Museum of Anatomy. The exact date of the name change remains unknown but personal communications with relatives believe it to be short after his tragic death. The museum boasts an array of embalmed specimens, plastinated preparations and osteological material for the use as a study aid to students and faculty and a mosaic of the heart marks the entrance today (Figure 3). Anatomical pathology specimens have their own designated museum at the Department of Anatomical Pathology.

Toerien's successors and the development of the Department of Basic Medical Sciences

The next three heads (Figure 4) of the department were as follow: Prof. A.G.M. Morrison a former surgeon (1977 to 1979), A.J. Vorster a former urologist (1980 to 1986), and Prof. P.P.C. Nel, a natural scientist (1986 to 2001). During Nel's headship, the department was renamed the Department of Anatomy and Cell Morphology (Fig. 4). Nel, during his tenure,

pioneered aspects of anatomical pedagogy such as audiovisual aids, self-directed learning, as well as the introduction of plastination and the use of these specimens. The latter served as an invaluable tool for the faculty and students. In 2001, Nel was appointed as the program director of the M.B.Ch.B. programme and Prof. L. Louw was appointed as the acting head of department until the amalgamation of the departments of Anatomy and Cell Morphology and Medical Physiology in August 2002. This amalgamation led to another name change and today anatomy falls under the auspices of the Department of Basic Medical Sciences (Fig. 4). The change came after a faculty decision that the departments of Anatomy and Physiology as it integrated disciplines of Clinical Medicine would be more valuable. The decision also followed international trends during that period and was marked by the global notion to move away from cadaveric dissections, and the use prosections and anatomical models instead.

The newly established Department of Basic Medical Sciences creates the ideal environment for an integrated approach to learning and research. Prof. G.J. van Zyl acted as the head of department, followed by Prof. E.H. de Wet as the first permanent head of department in December 2002. She was succeeded by the current head of department, Dr. S. van Zyl in 2008 (Fig. 4).

The Department of Basic Medical Sciences Today

The department of Basic Medical Sciences is committed to providing each student with a solid anatomy and physiology foundation to launch their careers. The vision of the Department of Basic Medical Sciences is to be a national leading and international acknowledged department with a holistic approach to integrated teaching and learning, as well as quality research. The institution's mission includes setting high standards for integrated modular learning programmes in Health Sciences and to place a high premium on academic standards, sound administration, and quality research.

Field specific training currently offers the following in Anatomy and Cell morphology: applied and comparative anatomy, biological anthropology, embryology, and histology. The following focus areas are currently offered in Medical Physiology: general and applied physiology, biochemistry, exercise physiology, neuroscience, nutrition, and energy. Apart from teaching and training programmes for undergraduate and postgraduate medical students, lecturers in the Department of Basic Medical Sciences are also involved in numerous undergraduate and postgraduate teaching and training programmes for the School of Nursing, School of Allied Health Professions and the Faculty of Natural and Agricultural Sciences. The department continue, as with other Southern African medical schools, to acclimatized to these global trends in medical pedagogy and employ both traditional, PBL (problem-based learning) and hybrid curricula (Kramer *et al*, 2008).

Academic teaching at the Department of Basic Medical Sciences is subject specific as well as integrated.

The department annually trains circa 1000 to 1025 undergraduate and postgraduate students. Postgraduate training is offered by structured courses with exams or dissertations. The department has a long history of excellence in research, both nationally and internationally. Current research areas include epidemiology and clinical-related studies, field specific studies as well as medical education-related research. It can be said that these research efforts were sparked many years ago through the ground-breaking efforts of Toerien early in the 1970s.

Conflict of interest

The authors have no conflict of interest.

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