

Henry W. Gray and Henry V. Carter: united and separated by a human anatomy textbook

Henry W. Gray y Henry V. Carter: unidos y separados por un libro de anatomía humana
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ABSTRACT

Henry W. Gray (1827-1861) and Henry V. Carter (1831-1897), physicians and surgeons from the Saint George's Hospital in London, England, worked together in anatomical dissections to get the most accurate representation possible in accordance with Gray's written text. Beside, Henry Gray as professor of Anatomy and curator of the hospital's museum did outstanding anatomical works. He was a member of the Royal Society and the Royal College of Surgeons. The excellence of Carter's illustrations contributed greatly to the success of their *Anatomy, Descriptive and Surgical*. Carter received neither credit nor royalties for his work. However, later Henry Carter had a successful career as a researcher on Leprosy and other tropical diseases in India. Their famous textbook known as Gray's Anatomy, is now regarded as one of the most influential human Anatomy textbooks. The aim of this paper is to present a brief review of Henry W. Gray's and Henry V. Carter's contributions in the medical field.

Keywords: Henry Williamson Gray; Henry Vandyke Carter; anatomists, Human anatomy; Gray's Anatomy

RESUMEN

Henry W. Gray (1827-1861) y Henry V. Carter (1831-1897), médicos y cirujanos del Hospital Saint George de Londres, Inglaterra, trabajaron juntos en disecciones anatómicas para conseguir la representación más exacta posible para integrarlos con el contenido escrito por Gray sobre anatomía humana. Por otra parte, Henry Gray, como profesor de anatomía y curador del museo del hospital, realizó destacados trabajos anatómicos. Fue miembro de la *Royal Society* y del *Royal College of Surgeons*. Las excelentes ilustraciones de Carter contribuyeron en gran medida al éxito del texto *Anatomía, Descriptiva y Quirúrgica*. Henry Carter nunca obtuvo ningún crédito ni regalías por su trabajo. Sin embargo, posteriormente, Carter tuvo una exitosa carrera como investigador de la lepra y otras enfermedades tropicales en la India. En la actualidad, el libro conocido como *Anatomía de Gray*, se considera uno de los manuales de Anatomía humana más influyentes. El objetivo de este artículo es presentar una breve reseña de las aportaciones en el campo de la medicina realizadas por Henry W. Gray y Henry V. Carter.

Palabras clave: Henry Williamson Gray; Henry Vandyke Carter; Anatomistas, Anatomía humana; Anatomía de Gray

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INTRODUCTION

The complex and extensive field of Medicine acknowledges and relies on the pivotal role of the study of gross Human Anatomy. This permeates throughout all medical school systems. By learning gross Anatomy, medical students get an initial grasp of the structure of the human body which is the basis for understanding pathologic and clinical problems.^{1,2} Henry W. Gray (1827-1861) and Henry V. Carter (1831-1897), both physicians and surgeons from the Saint George Hospital in London, England, worked together in anatomical dissections to get the most accurate representation possible in accordance with Gray's written descriptions. The excellence of Carter's illustrations contributed significantly to the success of their main contribution to the field of learning and teaching of Human Anatomy in the English language, the exceptional textbook of *Anatomy, Descriptive and Surgical*.^{3,4} This book by Henry W. Gray and Henry V. Carter stands out as an authoritative reference in the field of Human Anatomy, and it has influenced and instructed many medical students around the world. The purpose of this paper is to present a brief review of Henry W. Gray's and Henry V. Carter's contributions in the medical field.

Henry Williamson Gray (1827 -1861)

Henry Williamson Gray was born in Belgravia, London, England in 1827. He was one of four children of Ann and Thomas Gray, a private messenger to George IV and William IV. The family had no apparent financial problems. On May 6, 1845, at the age of 17, he enrolled as a student at Saint George's Hospital. Henry W. Gray learned human Anatomy by making dissections by himself giving him an in-depth understanding of human anatomy.¹ While still a medical student, Gray secured the prize of Royal College of Surgeons in 1848 for an essay entitled "*The Origin, Connexion, and Distribution of the Nerves of the Human Eye and Its Appendages, Illustrated by Comparative Dissections of the Eye in the Other Vertebrate Animals*". Part of this essay was incorporated into his later paper on the development of the retina.² After completing his medical studies, Henry W. Gray remained at Saint George's Hospital. He was also the curator of the museum at Saint George's Hospital. He became a Fellow of the Royal College in 1850 after he presented his paper entitled "*On the development of the optic and auditory nerves*". That same year, he was appointed as house surgeon at Saint George's Hospital. In 1852, Gray held the position of demonstrator of Anatomy. He also published the papers "*On the Development of the Retina and Optic Nerve, and the Membranous Labyrinth and Auditory Nerve*" and "*On the Development of the Ductless Glands in the Chick*". Later, in 1853, Gray was designated lecturer in Anatomy.³ With the support of a grant from the Royal Society, he continued his research on

the spleen. These studies turned into a thesis entitled "*The Structure and Use of the Spleen*", which was awarded the prestigious Astley Cooper Prize. Henry Gray wrote other remarkable papers such as "*An Account of a Dissection of an Ovarian Cyst*" (1853), "*On Myeloid and Myelo-cystic Tumors of Bone, Their Structure, Pathology and Mode of Diagnosis*" (1856) and "*Injured of the Neck*" (1861).

However, his most outstanding work was the textbook "*Anatomy, Descriptive and Surgical*", published in 1858, consisting of 750 pages and containing 363 figures. The organization of the information and the close relationship between the text and the illustrations were Gray's work and demonstrated his clear understanding of the fundamentals of this field of study.^{2,4} It was written with an audience of medical students and physicians in mind, especially surgeons. This textbook quickly became the standard reference document, a position which it still retains. *Anatomy, Descriptive and Surgical* was complemented by Henry Vandyke Carter, a skilled draughtsman, physician and formerly demonstrator of Anatomy at Saint George's Hospital, who assisted Gray with anatomical dissections to get the most accurate representation possible. Gray and Carter dissected unclaimed bodies during eighteen months from the mortuaries under the Anatomy Act of 1832 to explore human anatomy. Moreover, Carter's illustrations contributed greatly to the success of this textbook.⁵⁻⁸ On May 31, 1860, Henry Gray was elected as Fellow of the Royal College in recognition of his contributions in the field of anatomical studies.⁹⁻¹¹ Henry Gray did not get married. He was working on the second edition of the textbook *Anatomy, Descriptive and Surgical* when he caught smallpox from his nephew and although he had been vaccinated. Henry W. Gray died on June 13, 1861 in London at the age of 34 years.^{2,7}

Henry Vandyke Carter (1831-1897)

Henry Vandyke Carter was born on 22nd May 1831, in Hull, a city at east Yorkshire, England. He was the eldest son of Henry Barlow Carter, a well-known painting artist. After attending Hull Grammar School, in 1847, he came to London to study Medicine at St. George's Hospital and earned his Bachelor of Medicine degree.^{8,9} Carter became a member of the Royal College of Surgeons in 1852. At the Saint George's Hospital, he became associated with Henry W. Gray who was 4 years older than him. Carter worked for Gray as an illustrator of the aforementioned publication entitled "*The Structure and Use of the Spleen*".¹² In June 1853 he obtained a studentship in Human and Comparative Anatomy at the Royal College of Surgeons. Besides working on anatomical dissections, Henry Vandyke Carter drew the illustrations in 1856-1857 for the textbook on human anatomy written by Henry Williamson

Gray. Carter's great innovation was to place the names of the anatomical structures directly on the images themselves, something that medical students found very helpful (Figure 1).^{9,13} The excellence of Henry Carter's illustrations contributed significantly to the success of the *Anatomy, Descriptive and Surgical*. Henry Carter's drawings were mostly notable for their size, concise detail and boldness making the quality of Gray's textbook, something very different to contemporary textbooks. Regrettably, Carter never received any credit or royalties for his painstaking work.

Carter joined the Bombay Medical Service as Assistant Surgeon in 1858. After six months in Central India, he was appointed professor of Anatomy and Physiology at the Grant Medical College in Bombay (now Mumbai). His interest in Leprosy and in other tropical diseases quickly grew. He systematically and painstakingly set about recording his observations on the clinical and anatomical features of the diseases as he saw them under Indian conditions. In 1860, Carter recognized mycetoma as a mycotic disease. Subsequently, Henry Vandyke Carter served as a Civil Surgeon in Satara from 1863 to 1872.^{13,14} In 1873, Carter visited Norway for the purpose of studying Leprosy and the arrangements made in this country for the segregation and treatment of patients. He also visited Italy, Greece, Algeria and Asia Minor to investigate Leprosy. Upon his return to India in 1875, he was appointed to Kathiawar (now in Gujarat) to investigate Leprosy. After a period in England, Carter returned to India as principal at the Grant Medical College and as first physician at the Jamsetjee Jhejeebhoy Hospital in 1877. He was also president of the Medical and Physical Society and Dean of the Medical Faculty of the University of Bombay (now Mumbai). Carter investigated the cause of the fever among famine-stricken Indians in the 1870s. He identified *Spirillum minus* as the spirochetal organism that causes relapsing fever.¹¹

Carter wrote notable papers, including "The microscopic structure and mode of formation of urinary calculi" (1873), "On mycetoma or the fungus disease of India" (1874), "Report on leprosy and leper asylums of Norway" (1874), "On leprosy and elephantiasis" (1874).^{9,12} Henry V. Carter was rewarded for his achievements with the Stewart Prize of the British Medical Association, which he received in London in 1882. He retired in 1888 from the Indian Medical Service and returned to England. As his parting gift to Mumbai, he donated a massive sum of 10,000 rupees in for the establishment of a lectureship in Physiology.

Henry Carter married Mary Ellen Robison in 1890 and had two children. He was appointed Honorary Deputy Surgeon-General and Honorary Surgeon to the Queen in 1890. Carter

died of tuberculosis at Scarborough, England, on 4 May, 1897 at the age of 66.^{13,14}

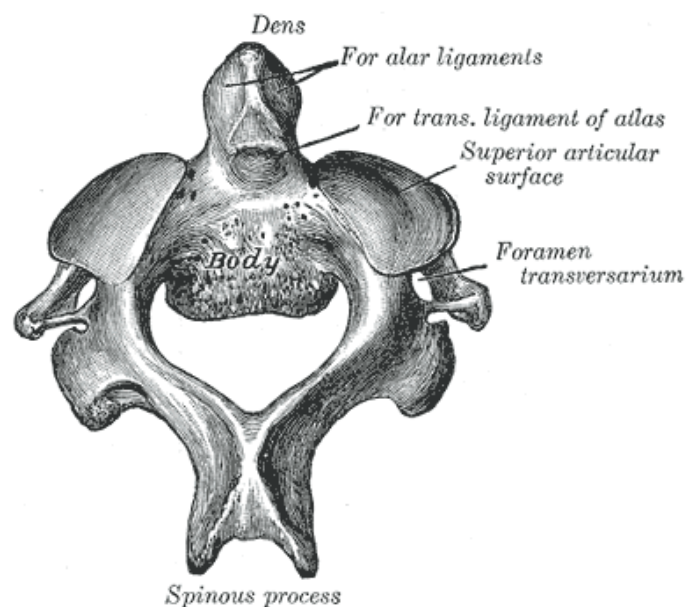


Figure 1. Second cervical vertebra, or epistropheus, from above view. (Henry Vandyke Carter's illustration). Gray's Anatomy. Anatomy Descriptive and Surgical 1918 Edition. <http://www.bartleby.com/107/illus87.html>

Gray's Anatomy enduring relevance

Henry W. Gray and Henry V. Carter were two very different men of medicine whose unlikely collaboration created a masterpiece: their *Anatomy, Descriptive and Surgical* published in 1858 (Figure 2). They worked together in anatomical dissections. While Carter created the illustrations, Gray provided the texts of what is now regarded as one of the most influential human anatomy textbooks.^{2,3}

The publishers of the first edition wanted to ascribe joint authorship of the book to Henry Carter as his illustrations were just about as noteworthy, but Henry Gray sent back the proofs of the title page and demanded that the font size for Carter's name be reduced and his medical titles removed. In most modern editions of the textbook, Carter's name doesn't even appear. Nevertheless, the 363 original and wonderful drawings made by Carter have appeared in every subsequent edition up to the present day. Colored pictures were introduced in the eleventh edition in 1897, by its editor Pickering Pick.^{5,14} Henry Williamson Gray's sudden death in 1861 prevented him from enjoying the fame that eventually resulted the *Anatomy, Descriptive and Surgical*. Henry Vandyke Carter had a successful career as a researcher on Leprosy and other tropical diseases in India. Carter died at the age of 66 in England. The book has gone through 42 editions to date. The first edition was published in 1858, and since then it has been revised and updated multiple times. It

was retitled *Gray's Anatomy* in 1938 and it has never been out of print in more than 160 years. It has been reprinted and revised by several teams of anatomists to keep it relevant. It has been carefully studied by generation after generation of medical students; and has sold millions of copies. It is a practical textbook that remains useful long after students enter their professional practice. *Gray's Anatomy's* main relevant point is its emphasis on surgical anatomy.¹¹

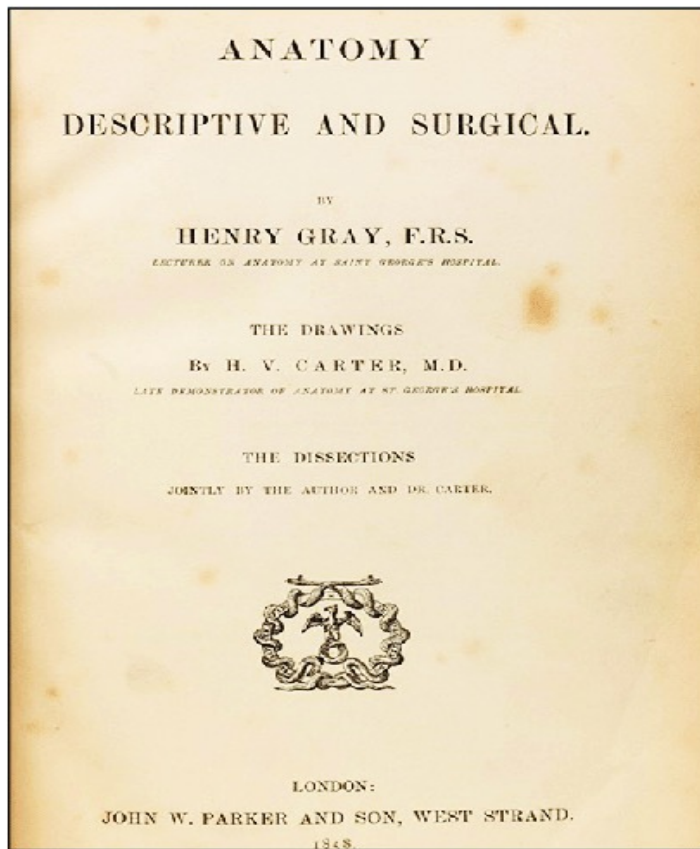


Figure 2. The cover page of the first edition of Henry Gray's Anatomy: Descriptive and Surgical, which was published in 1858.

Source: <https://i0.wp.com/www.raptisrarebooks.com/images/75828/anatomy-descriptive-and-surgical-grays-anatomy-first-edition-rare.jpg?fit=477%2C800&ssl=1>

Furthermore, this useful and outstanding book is employed worldwide and has been translated into 34 languages. Since more than one hundred years Gray's Anatomy is one of the most influential human anatomy textbooks. A few years ago publisher Elsevier has developed publications such as Gray's Anatomy for Students, Gray's Atlas of Anatomy, Gray's Anatomy (A Fact Filled coloring book) and Gray's Anatomy Review have recently been published to expand human anatomy teaching/learning field.^{7,11}

CONCLUSIONS

Henry W. Gray and Henry V. Carter became united and separated by the remarkable picture book *Anatomy Descriptive and Surgical*. Henry Gray also did other outstanding anatomical works, but he died young and suddenly of a measles infection. On the other hand Henry Carter had a long life researching and making illustrations on Leprosy and other tropical diseases in India. *Gray's Anatomy* has been widely used in English-speaking countries where it is the corner stone in the field of Human Anatomy in teaching/learning for undergraduate medical students, residents and physicians in all medical specialties.

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Disclosure

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The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript or for the creation of images, graphics, tables, or their corresponding captions.

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- AAL: Formulation of the methodological framework and data curation.

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