William Lawrence was a leading English ophthalmic surgeon in the middle of the 19th century. This article briefly discusses his life, career, and well-known textbook (*Treatise on Diseases of the Eye*). His book and 3 others were the best-known English texts on diseases of the eye of the 1830s and 1840s. The 3 others were William Mackenzie’s *Practical Treatise on Diseases of the Eye*, Richard Middlemore’s *Treatise on the Diseases of the Eye and Its Appendages*, and Thomas Wharton Jones’ *Manual of the Principles and Practice of Ophthalmic Medicine and Surgery*.

William Lawrence (1783-1867) (*Figure 1*) was a general surgeon who took a special interest in diseases of the eye and became famous in London, England, as an ophthalmic surgeon in the middle of the 19th century. His father, a successful surgeon in Cirencester, England, sent him, at 9 years of age, to Elmore Court, a grammar school near Gloucester, England, for a solid classical primary education. In 1799, at the age of 16, he began his medical career as an apprentice to John Abernethy (1764-1831) (*Figure 2*), who was a well-known surgeon and a founder of the medical school at London’s very old St Bartholomew’s Hospital (Barts).

Lawrence lived for 3 years in Abernethy’s establishment with several other apprentices. Then, Abernethy found him a paying job as a lecturer in anatomy at Barts so that, at 19 years old (1802), he could support himself while finishing his medical training. He apparently became a good teacher and demonstrator of anatomy, even though he was, at first, younger than some of his students.

In 1805, at 22 years of age, he took his medical examinations and became a member of the Royal College of Surgeons (RCS) and then an assistant surgeon. At the age of 24 years (1807), he translated, from German into English, a book on comparative anatomy by Johann Friedrich Blumenbach, a famous professor of physiology and physical anthropology from Gottingen, Germany. Also, during these years, Lawrence wrote a much admired book on the treatment of hernias that was reprinted 5 times. The fourth edition of *A Treatise on Ruptures* (1838) was a substantial work of 636 pages.

By the time he was 30 years old (1813), Lawrence had been elected an adjunct surgeon at Barts and became a fellow of the Royal Society (*Figure 3*), and at 42 years of age, after 26 years at Barts, he was named a surgeon. This promotion was considered to be a speedy climb up the rungs of academic surgery at the time. When his former mentor Abernethy eventually resigned his leadership position in 1827, Lawrence applied for and gained Abernethy’s administrative job as the principal surgeon of Barts. The students’ nickname for this position was dictator of Barts because no one on the premises outranked the principal surgeon. Lawrence held this position until well after the usual retirement age and continued to teach and treat patients. It is notable that, when he was 75 years old, the official mandatory retirement age at Barts was, rather pointedly, set at 65 years, and Lawrence voted for this rule. When asked why, in that case, he had not yet retired, he said, with a smile, that he had decided that the rule did not apply to him but only to future principal surgeons.

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An elderly and then famous Lawrence attended to Queen Victoria’s eye problems, and the queen made him one of her serjeant surgeons. Then, just before his death in 1867 at the age of 84, she gave him a baronetcy—a title that he could pass on to his oldest son, Trevor. When Sir William died, he had a right hemiparesis from a recent stroke but was still clinging to his position as boss of Barts.

During much of his life, William Lawrence seemed to have cultivated a sharp, sarcastic wit. He was quick to express his opinion and was quite ready to say (very clearly) what he thought of anyone with an opposing opinion, but his published opinions tended to be smooth, polite, and reasonable. His mentor Abernethy was the opposite; he was inclined to give anyone with an opposing view a vigorous, condemnatory tongue-lashing.

In 1814, at the age of 50, Abernethy accepted an added position as professor of anatomy and surgery at the RCS. It was customary for a new RCS professor to give 1 or 2 introductory lectures to the college. The publication of these lectures was considered optional. Abernethy gave 2 such lectures in 1814 and 1815. They were in praise of the concepts of “vitalism” that he had been taught by John Hunter. Vitalism had been popular in England in the late 18th century, but Lawrence considered it to be hopelessly old-fashioned. It was a worldview in which life, body, and mind (read soul) were 3 entirely separate God-given entities; to Abernethy, the immortal soul was not something that grew in the body, it was a divine gift, added to the body. The Oxford English Dictionary offers the following clarifying statement: “The mind was thought of as the system of cognitive and emotional phenomena and powers that constituted the subjective being in a person. This was the spiritual part of a person, and thus the ‘soul’ as distinguished from the body.”

In 1815, Lawrence, at the age of 32, was also offered an RCS professorship, and he too gave some introductory lectures (in 1816 and 1817), which were quickly published. His lectures were influenced by his reading of the histology of Xavier Bichat and the comparative anatomy of Georges Cuvier and J. F. Blumenbach. When these 2 lectures at the RCS appeared in print, they caused quite a fuss. Abernethy, whose conservative position went down well with most of the English medical community and with the Church of England, was outraged at Lawrence’s scandalous ideas and arranged to publish his own RCS lectures.

Unlike Abernethy, Lawrence found that he rather favored the French idea that physics and chemistry should be applied to understanding the human body and its functions. He pointed out that if the brain itself were malformed or injured, it usually did not work very well, and the patient might have little or no mental activity; thus, the mind (call it the soul if you must) is a product of the brain, and it must therefore be part of the body. The British, having been recently at war with France (1793-1814), considered these ideas altogether too French and objected to them because they seemed to leave no place for the immortal soul, so cries of “materialist!” and “atheist!” were heard. However, the objections offered by Abernethy and many others on this subject just stimulated the strong-willed Lawrence to wade further into the argument. He set about summarizing and defending his position and came out with a book called Lectures on Physiology, Zoology, and the Natural History of Man, and, of course, he did it in his usual forthright way, letting the chips fall where they may.

Eighteenth-century scientists knew there were animal bones in some geologic strata that suggested there had been animals on the earth much longer ago than anyone had imagined. Lawrence blithely stated in his new book that the biblical story of creation found in Genesis seemed simply to be derived from ancient Hebrew traditions, and therefore the whole matter of the origins of mankind was clearly open for discussion. Naturally, there were many who disagreed.

Bringing religious belief into this discussion was perhaps a tactical er-
ror. The matter was soon brought before the old-fashioned Chancery Court (Figure 4). Apparently, many in the court suggested that Lawrence, by saying that the Genesis story was wrong, was “contradicting the word of God.” Therefore, he was surely guilty of blasphemy and, given the close connection between the Crown and the Church of England, perhaps also of sedition. The lord chancellor, using his court in its most ancient role as a court of conscience, agreed.

It soon became obvious to Lawrence that this rumpus was going to affect his career as a surgeon. After all, who would want an established blasphemer to remove his cataract—a procedure that, in those days, required 4 assistants to hold the patient down and keep the head immobile? Would God still guide and steady the hand of such a sinful surgeon?

So, Lawrence bowed to the Chancery Court and withdrew his book, and he simply stopped talking about it. The publisher was fined by the court for copyrighting such blasphemous rubbish, and Lawrence was obliged by the court to buy and destroy all the remaining copies.

As can well be imagined, the book became notorious, and in the absence of a copyright, the book was reprinted several times and widely circulated by others. There is evidence that both Charles Darwin and Alfred Russell Wallace had copies of Lawrence’s book. 7

With this skirmish, Lawrence had made a small mark in the early beginnings of the idea of human evolution; he argued that diversity in any breed could easily result from inheritance (just look at the variations that occur in a single litter of dogs or cats) and that Jean-Baptiste Lamarck (1744-1829) had been wrong in suggesting that acquired characteristics could be passed along to the next generation. It seems likely that the fuss generated by this small English controversy might have contributed to the delay of publication of Darwin’s Origin of Species.

Lawrence was sometimes a difficult and cantankerous man, but he was also a brilliant lecturer who cultivated his speaking skills and was proud of his ability to deliver ideas to his audience. By 1822, the controversy that had been engendered by his 1818 book on The Natural History of Man was calming down, and at the age of 39, Lawrence was asked to prepare a series of lectures on the eye and its diseases. These lectures were given in 1824 and 1825 at the London Infirmary for Diseases of the Eye at Moorfields. He gave 3 lectures a week in this series (starting at 7 PM, after dinner, every Tuesday, Thursday, and Saturday). Sir James Paget attended Lawrence’s lectures and described Lawrence’s style:

He used to come to the hospital in the omnibus, and, after a few minutes in the Museum, would, as the clock struck, enter the theater, then always full. He came with a strange vague outlook as if with uncertain sight; the expression of his eyes was always inferior to that of his other features. These were impressive, beautiful, grand—and significant of vast mental power, well trained and well sustained. He came in quietly, and after sitting for about half a minute, as if gathering his thoughts, began, in a clear, rather high note, speaking quite deliberately in faultless words as if telling judiciously that which he was just now thinking. There was no hurry, no delay, no repetition, no revision: every word had been learned by heart, and yet there was not the least sign that one word was being remembered. 8

Because the audience knew that the lectures would appear in The Lancet, they did not have to scribble any notes, so they were able to give the speaker their full attention. The hall was always packed, and Lawrence had clearly worked hard to put together his personal notes on various patients he had seen. Lawrence’s lectures eventually appeared in The Lancet, one lecture at a time, in volume 9 (1825) and volume 10 (1826).

An enterprising French physician named Charles Billard translated these published lectures into French, and they were republished in Paris, France, by J.B. Ballière in 1830. 9 In Billard’s book there is a translation of Lawrence’s 1827 letter that gave his express permission to Billard to publish this French version of his lectures. Lawrence finished his other project, on syphilis and the eye, 10 and then went back to work on his big textbook on eye diseases. He reorganized some of the lecture material and added approximately 300 pages of text, and his book was published in London in 1833. 11

THE ENGLISH OPHTHALMOLOGY BOOKS OF THE DAY

Lawrence’s 1833 text was one of a handful of books available to English students of ophthalmology from the 1830s and 1840s. The textbooks of the day were substantial...
works, often based on a series of lectures that had been delivered without the help of any models or demonstrations. When the lectures were published as a book, the pages were filled with small type and without any illustrations of any kind. Lawrence's text was one of only 4 major English ophthalmology texts of this period. These 4, in the order of their publication, were by William Mackenzie, William Lawrence, Richard Middlemore, and Thomas Wharton Jones.

William Mackenzie (1791-1868) (Figure 5) was born and grew up in Glasgow, Scotland, and went on to study in Europe. He learned his ophthalmology from Georg Joseph Beer in Vienna, Austria. This might have seemed odd to an Englishman at the time, but Beer had already published more new information on the eye and its diseases than anyone in England. Furthermore, in Vienna, a Scotsman would just be another foreigner trying to learn some German, whereas in London his Scots version of spoken English would be constantly ridiculed. In 1819, Mackenzie returned to Glasgow as an ophthalmic surgeon. In 1824, he and George Cunningham Monteath (also from Edinburgh trained) founded the Glasgow Eye Infirmary, and in 1826-1827, Mackenzie gave a popular series of lectures in Glasgow on the eye and its diseases, just as Lawrence had done in London 4 years earlier. The young Wharton Jones had moved from Edinburgh to Glasgow in 1829 and apparently took an interest in learning ophthalmology from Mackenzie and others.

In 1830, Mackenzie's lectures were published in London as a textbook called A Practical Treatise on Diseases of the Eye.11 Then, in 1833, just as Lawrence's book was about to appear in London, Mackenzie's excellent text was reprinted in Boston by the Massachusetts Medical Society "strictly for the use of its fellows."13 It appeared in their journal (The Library of Practical Medicine) as a substantial hardcover item of 719 pages. The second edition of Mackenzie's textbook appeared in London in 1835. In both the third (1840) and fourth (1854) editions, Mackenzie was assisted by Wharton Jones.

Lawrence's lectures of 1823-1824 were published in The Lancet in 1825-1826 (Figure 6). The French translation of the lectures was published in 1830. Lawrence finished his book on ocular syphilis in 183010 and then undertook the big job of expanding his Lancet-published lectures into a major text. This textbook of 800 pages called A Treatise on the Diseases of the Eye did not appear until 1833.11 As was common at the time, there was not a single illustration of any kind in the entire work.

An edition of Lawrence's text for American readers was undertaken by Duff Green, a printer with a shop in Washington who usually printed fliers and pamphlets. In those days, it must have been complicated and time-consuming to arrange transatlantic copyright agreements, so Green followed the path laid out by the Massachusetts Medical Society's publication of Mackenzie's text. He founded a serial publication that he advertised as "a medical newspaper" and named it The Register & Library of Medical and Chirurgical Science. Granville Sharp Pattison, a professor of anatomy at Jefferson Medical College, Philadelphia, Pennsylvania, was named as the editor. Thus, Lawrence's 1833 text became available to Americans in 1834 as a journal article of 582 pages, half in the May issue and the rest in the June issue of Green's new medical newspaper.14 The stereotyped text is clear and legible, but it leaps from the May issue to the June issue in midsentence. Green was no bookbinder; he seems to have expected the new owner to arrange to have the 2 issues bound carefully into a single volume at the owner's expense. In their published state, both volumes are sewn with a tight gutter, and their disposable, blue paper covers are printed and pasted in place without care or grace. Later, in 1843, an American edition of Lawrence's text15 was published in Philadelphia by Lea and Blanchard. This time, the text had been carefully and thoughtfully edited by Isaac Hays, a respected ophthalmologist at Wills Eye Hospital in Philadelphia. Hays added helpful parenthetical comments and updates, and he generated 67 much-needed illustrations. Hays was good at this sort of thing; he was the editor of the American Journal of Medical Sciences for 52 years.

Richard Middlemore (Figure 7), from Birmingham, England, also studied medicine at Barts under Abernethy...
and Lawrence. When Middlemore was fully qualified, he returned to Birmingham and specialized in surgery of the eye. He was a quiet, shy, self-effacing man. He was, in his personality, quite different from Lawrence, but he maintained a friendship with his teacher for many years. In 1831, he won the Jacksonian prize for an essay on diseases of the eye, which encouraged him to enlarge his essay into a book. He put considerable time and effort into the text. It was called *Treatise on the Diseases of the Eye and Its Appendages*, and it finally reached 1644 pages and appeared in 2 substantial volumes in 1835, again, without a single figure or diagram. It was a daunting treatise, guaranteed to intimidate any reviewer. Julius Hirschberg said of Middlemore’s opus, “This is the most voluminous textbook of ophthalmology to appear in England during the first half of the 19th century. It deserves close scrutiny.”

Thomas Wharton Jones (1808-1891) (*Figure 8*) earned his medical degree in Edinburgh, and he was working in the late 1820s as an assistant to the anatomist Robert Knox at the time that they were receiving bodies for anatomical studies through the murderous, body-snatching efforts of Brendan Burke and William Hare. This whole scandalous affair caused such a public sensation that, in 1829 after the trial, Wharton Jones moved to Glasgow to get away from it all.

Wharton Jones learned his ophthalmology in Glasgow, where he was influenced by Mackenzie, who had given an important series of lectures on ophthalmology in 1828-1829. After 5 or 6 years in Glasgow and 2 years in Ireland, Wharton Jones went to London to practice ophthalmology. After some years he was adding to his income by giving ophthalmology lectures to medical students, and in 1847, he turned his lectures into a small textbook. Jones’ manual was useful to the students and went through several editions. Wharton Jones had an unusually elevated notion of the formality of the lecture setting, and he dressed accordingly: he was a short man with a tall silk hat and long, old-fashioned dress coat that reached his ankles. He was not an inspiring speaker. He read his lectures, word for word, in a heavy Scots accent without looking up at his audience. The students called him mummy Jones, and they often stayed away so that they could read his textbook without the distraction of the Scots accent. In that same year (1847), he famously missed an opportunity to discover the ophthalmoscope. Charles Babbage, the inventor of a mechanical computer that calculated logarithmic tables, showed Wharton Jones a rudimentary instrument of his own making that produced a red glow in the pupil of any patient’s eye when a light was directed into the eye with a mirror, and the observer looked along the light beam into the patient’s eye by peering through a hole scratched in the silverying on the back of the mirror. Wharton Jones told Babbage that the device had no practical use, so Babbage cast it aside. Wharton Jones did not realize that by holding up an appropriate lens he might have brought the retina into sharp focus and become the inventor of the ophthalmoscope. In 1855, Wharton Jones acknowledged his mistake and came out with a second edition of his manual that included a colored fundus drawing. This was the first fundus image to appear in an English textbook.

**CONCLUSION**

Lawrence’s book, together with those of Mackenzie, Middlemore, and Wharton Jones, turned out to be the primary textbooks for a generation of English-speaking ophthalmologists in the last 2 decades of the first half of the 19th century (1830-1850) (*Figure 9*). These books set the stage for the changes coming at midcentury that would have even more profound effects on the practice of ophthalmology. These changes were as follows. In 1848 and 1849, William Bowman...
published his lectures on the anatomy of the eye. This new knowledge gradually allowed eye surgeons to risk new procedures. In the 1850s, Professor Hermann Helmholz’s new ophthalmoscope gradually became a standard office tool that was used every day. In 1864, Franciscus Cornelis Donders demonstrated his crystal clear understanding of the optics of refraction in his book titled *On the Anomalies of Accommodation and Refraction of the Eye.* These major changes in the practice of ophthalmology (together with a decrease in the cost of printing images) quickly made this older generation of squat, figure-free textbooks seem old-fashioned and badly out of date.

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