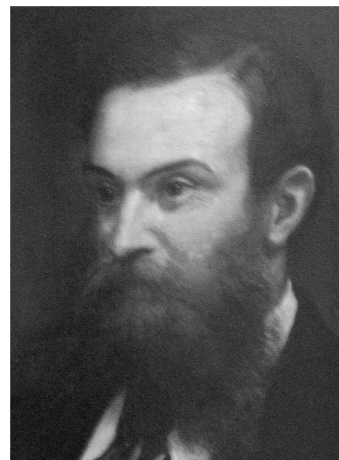


Professor John Attfield, 1835 – 1911¹

by John Attfield

“On March 18, 1911, there passed away one of the strongest men of the Victorian Era, who had given the greatest part of his life in improving the profession of pharmacy by his chemical knowledge, and his devotion to the best interests of the sciences which he loved, and of which he was generally acclaimed a master.”



These opening remarks in an obituary notice by the American pharmacist Joseph P Remington² demonstrate the high professional regard held for the person who was without doubt the most eminent Attfield of the 19th century. Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain for 34 years from 1862 to 1896, elected as a Fellow of the Royal Society in 1880, he also edited various editions of the British Pharmacopoeia and was the author of a standard chemistry textbook that went through nineteen editions between 1867 and 1906. His reputation extended beyond England to the USA, where he maintained especially close ties to the pharmacists of Chicago.³

Birth and education

John Attfield was born on August 28, 1835, at the family home at Whetstone in Middlesex and baptised on November 22 at St James the Great, Friern Barnet. He was one of eight children – three of whom died in infancy or childhood – of **John Attfield** (1796 – 1873) an auctioneer and surveyor, whose father Richard (1757 – 1825) had been the parish clerk at Friern Barnet. John Attfield married **Ann Lines** (1800 – 1862), the daughter of Francis Lines also of Friern Barnet, in the church of St James the Great on August 16, 1820.

After attending Queen Elizabeth’s School, Barnet, run by the Reverend Alexander Stuart, John Attfield took up the study of chemistry, serving an apprenticeship with William Frederick Smith, operative chemist and wholesale perfumer, of St Mary Newington, Lambeth, from 1849 until 1854. This is where John Attfield was recorded by the 1851 census enumerator. During the final year of his apprenticeship in 1854, he attended the School of Pharmacy of the Pharmaceutical Society of Great Britain at Bloomsbury where he passed the minor examination with honours and won first prize in every subject (chemistry, pharmacy, material medica, and botany).⁴

In September of that year – still aged under 21 – he became junior assistant to Dr John Stenhouse, who was later succeeded by Dr (later Sir) Edward Frankland, at St Bartholomew’s Hospital. Attfield’s cooperation with Frankland continued for many years afterwards. He was elected as an Associate of the Chemical Society in 1856.⁵ Attfield’s first original scientific paper, “On the solubility of mercurial precipitates in alkaline salts”, was read to the Chemical Discussion Association of the Pharmaceutical Society in 1859.

Among other works he also contributed some 200 articles to “Brand’s Dictionary of Art, Science and Literature” and the “English Cyclopaedia”, mainly dealing with pharmaceutical chemistry.⁶ In 1862 he was elected as a Fellow of the Chemical Society, which he served as a Council Member from 1874 to 1878. In 1863 he was one of the founders of the British Pharmaceutical Conference, as well as its Honorary Secretary and editor of its “Yearbook of Pharmacy”, positions which he held until 1880. He served as President of the Conference in 1882 and 1883.

In the 1861 census John Attfield was again recorded as living with his parents at Whetstone. In 1862 he was appointed director of the laboratories of the School of Pharmacy of the Pharmaceutical Society, where he afterwards succeeded Theophilus Redwood as Professor of Practical Chemistry, a post which he then held for 34 years until his retirement in 1896. Attfield also studied at Tübingen University in Germany where he obtained the degrees of Master of Arts and Doctor of Philosophy in 1862. At that time the study of chemistry was heavily influenced by German science; Attfield’s mentor John Stenhouse had studied in Germany under Justus Liebig,⁷ while Edward Frankland had studied at Marburg under Professor Bunsen, the inventor of the Bunsen burner.⁸ Attfield’s doctorate paper, “On the spectrum of carbon”, was read before the Royal Society on June 19, 1862.

XI. *On the Spectrum of Carbon.* By JOHN ATTFIELD, Esq., F.C.S., Director of the Laboratory of the Pharmaceutical Society; lately Demonstrator of Chemistry at St. Bartholomew’s Hospital. Communicated by Dr. FRANKLAND, F.R.S.

Received June 19,—Read June 19, 1862.

It is well known that a mixture of coal-gas and air burns with a flame of slight luminosity. When such a flame is prismatically examined under favourable circumstances, as by the ordinary spectroscope, the light it emits is found to consist of four groups of rays of different refrangibility. These rays appear in the field of the instrument as faint yellow, light green, bright blue, and rich violet bands of light.

In 1856 SWAN* found that the spectrum thus obtained was common to all hydrocarbon flames. He showed that they were best seen in an olefiant gas-flame fed with air by a blowpipe jet, measured and recorded their distances from each other, searched for, but did not find, corresponding dark bands in the solar spectrum, and gave no theory in explanation of their origin.

On recently reading SWAN’s paper by the light that Professors BUNSEN and KIRCHHOFF have thrown on the subject, I came to the conclusion that these bands must be due to

The opening paragraphs of John Attfield’s doctorate paper, read to the Royal Society in 1862

Marriage and children

On August 3, 1865, John Attfield – then living back in his parents’ home at Whetstone – married **Martha Harvey** at the Wesleyan Chapel in her home town of Manningtree, Essex. Martha was born on December 3, 1841, and died at Watford on March 1, 1917. She was the daughter of Samuel Harvey (c.1804 – 1882), a grocer and draper at nearby Mistley, and his wife Susannah, formerly Smith (c.1815 – 1895). John and Martha had three children:

1. **Donald Harvey Attfield**, born on June 9, 1866, at Islington and died on March 23, 1908, at San Remo, Italy. He married Elsa Anna Iole Herkomer, daughter of the artist Sir Hubert Herkomer,⁹ on June 14, 1899, at Bushey parish church, Hertfordshire. She was born on April 14, 1876 at Bushey and died on June 25, 1938, at Boulogne in France, having re-married after Donald’s death.¹⁰ They had no children. Donald, who died relatively young, qualified as a physician at Peterhouse College, Cambridge, before being appointed as Medical Officer of Health for Watford and later as Director and Principal Medical Officer of the Egyptian Government’s Suez Quarantine Office (for which service he was awarded the Imperial Ottoman Order of the Osmanieh, Fourth Class).¹¹
2. **Gertrude Attfield**, born on May 25, 1867, at Islington and died on September 30,

1937, at Mistley, Essex, being buried at Mistley Cemetery on October 4, 1937. She married Charles Norman Brooks, son of William Brooks and Mary Death, on June 4, 1903, at St. Andrew's Church, Watford, Hertfordshire. He was born on February 9, 1856, at Mistley and died there in 1925. Their son Charles Attfield Brooks (1905 – 1988) served as second-in-command of the Essex Regiment (Territorial Army) as well as holding a variety of other official posts in Essex where he was a prominent figure. He retired as Chairman of the family business, Brooks of Mistley, in 1971. He wrote a number of books and was an authority on the artist John Constable.

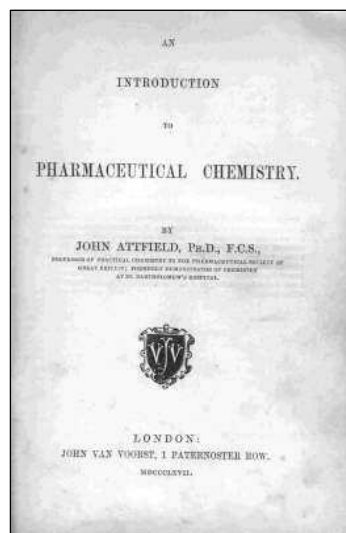
3. **May Maud Attfield**, born on October 6, 1870, at Islington and died on June 11, 1956, at Ipswich, at the age of 85 years following an accidental fall in her bedroom. She married Edward Willshin Arnold, son of Edward Dickinson Arnold and Anna Willshin, on July 5, 1917, at St Andrew's Church, Watford. An electrical engineer by profession, he was born at Redbourn, Hertfordshire in 1871.

The first Attfield family home after their marriage was at 18 Beacon Hill, Camden Road, Islington, where the couple's three children were born and where they are recorded in the 1871 census, but John Attfield later purchased a house at "Ashlands", Langley Road, Watford, Hertfordshire, where the family remained for the rest of his life and where Attfield also conducted much of his business and scientific work.

Textbook on pharmaceutical chemistry

By the 1860s, John Attfield was already at the height of his professional career and reputation. 1867 saw the publication of the first edition of Attfield's "Introduction to Pharmaceutical Chemistry",¹² subsequently re-titled "Chemistry, General Medical and Pharmaceutical including the Chemistry of the U.S. Pharmacopoeia". The work was originally based on teaching notes that Attfield had prepared for his students at St Bartholomew's Hospital. It became a standard textbook that went through nineteen editions, the last of which appeared in 1906, known throughout the professional world simply as "Attfield" and regarded as the pharmacist's bible for more than a century.

Although the early additions were not always met with universal acclaim by academic reviewers,¹³ the textbook was highly regarded by students for its practical emphasis, clarity of detail, lucid style and ordered arrangement, as well as the author's prompt inclusion of new chemical knowledge in revised editions.¹⁴ In 1883 Attfield was awarded a gold medal for his textbook at the International Pharmacy Exhibition at Vienna, and in 1896 he received the highest award – a diploma of honour – at the International Pharmacy Exhibition at Prague for the manual's 15th edition.¹⁵ The first of nine US editions was published in 1871.¹⁶



Title page of the first edition of Attfield's "Introduction to Pharmaceutical Chemistry", 1867

In addition to its innovative organisational structure, the textbook also contained a number of other important novelties. Apparatus required for experiments was listed along with prices – a reflection of the paucity of existing laboratory facilities as well as the book’s practical orientation. Attfeld was the first author to use the modern term “metric ton” in a scientific publication.¹⁷ He also pioneered the use of modern scientific nomenclature – e.g. “potassium, sodium, ammonium, barium, calcium, magnesium and aluminium instead of potash, soda, ammonia, barytra, lime, magnesia and alumina” – which has since gained universal acceptance.¹⁸

The Chicago Fire

In 1871 a disastrous fire in Chicago, on October 8 and 9, destroyed the Chicago College of Pharmacy and its library which had been described as “the most complete in chemistry and pharmacy to be found in the West.” A major British relief campaign was organised in response to an appeal launched by Chicago’s Professor Albert Ebert, with whom John



Attfeld Hall, Chicago College of Pharmacy

Attfeld had a long-standing professional association;¹⁹ a committee was appointed and an appeal issued for “funds, books, apparatus, etc”. Professor Attfeld and H. B. Brady, Esq.²⁰ were named as the leaders of the effort which called for books, museum and lecture specimens, and apparatus to be sent to John Attfeld for forwarding to the college and library as a contribution to its rebuilding. Attfeld was “the London analyst to the fire insurance offices” and had written a pamphlet about fires, so he was doubly appropriate as the organiser of the British relief efforts after the fire.²¹

The appeal gained wide attention and contributions flowed in from all over Europe. The generous response was a major factor in the reopening of the Chicago College of Pharmacy just one year after its complete destruction. Attfeld Hall, at the rebuilt college, was named as a mark of gratitude for Professor Attfeld’s contribution to the relief work. A portrait of Professor Attfeld in oils was also commissioned, a copy of which is now in the possession of the Royal Pharmaceutical Society of Great Britain.²²

Fellow of the Royal Society

In 1876 John Attfeld was proposed as a Fellow of the Royal Society, finally being admitted to this honour by election in 1880. The citation read:

“Author of a paper ‘On the Spectrum of Carbon’ printed in the Philosophical Transactions, of numerous papers on the applications of Chemistry to Pharmacy printed in the Transactions of the Pharmaceutical Society, and of a manual of ‘Chemistry: General, Medical & Pharmaceutical’ which has reached its 6th edition; Eminent as a chemist; Distinguished for his acquaintance with the applications of Chemistry to Pharmacy.

*Proposers from personal knowledge: William Odling; John Stenhouse; W J Russell; Henry B Brady; F A Abel; John Eliot Howard; Alfred Smee; George W Callender; J H Gladstone; N S Maskelyne; Henry Woodward; E Frankland; Fredk Guthrie”.*²³

As well as being honoured by the Royal Society, Attfield was also elected as a Fellow of the Institute of Chemistry in 1877. In addition he was, among other things, a Corresponding Member of the Society of Pharmacy of Paris, Honorary Member of the Society of Pharmacy of Victoria, of the Australian Pharmaceutical Association, of four Colleges of Pharmacy in the USA and of one in Canada.²⁴

The British Pharmacopoeia

One of Professor Attfield’s most enduring contributions to science was his work on the revision and development of the British Pharmacopoeia, published under the responsibility of the General Medical Council. In 1864 a series of critical lectures by Attfield together with professors Theophilus Redwood and Robert Bentley, as well as other pharmacologists, led to the suppression of the current version of the Pharmacopoeia and the decision to prepare a new edition, with the collaboration of pharmacists and with Redwood as editor. Attfield’s lecture had been on “The relationship of the BP to pharmacology”.²⁵



Professor Attfield (centre) with his collaborators on the British Pharmacopoeia, Professor Robert Bentley (left) and Professor Theophilus Redwood

Attfield’s subsequent work for the Pharmacopoeia – he was appointed co-editor along with Redwood and Bentley in 1882, and also edited an influential Addendum published in 1890 as well as being sole editor of the Pharmacopoeia’s 1898 edition – helped significantly in establishing the acceptance of the sign BP as a guarantee of drug purity. Attfield received the thanks of the General Medical Council “for all that he had done to make the Pharmacopoeia complete and accurate”.²⁶

His role was not without controversy however. The establishment of a working relationship between physicians and pharmacists demanded sustained hard work and tactful handling. The Pharmaceutical Society as a body was fighting for its contribution to the Pharmacopoeia to be officially recognised, and when it became known that Professor Attfield and his two colleagues had privately accepted the GMC’s invitation to edit the new edition (for the sum of £800) a storm broke out within the Society. The professors explained that they had not been at liberty to disclose the arrangements and that it was the GMC’s responsibility to inform the Pharmaceutical Society officially, but this was never done and a sense of bitterness lingered.²⁷

Ultimately however, John Attfield’s contribution to the British Pharmacopoeia achieved positive and lasting recognition from both the pharmaceutical and medical professions. According to The Times, “it was largely through Mr Attfield’s efforts as editor of the Ad-

dendum to the Pharmacopoeia (published in 1890) that the collaboration of medical men and pharmacists in the production of the Pharmacopoeia was first openly effected".²⁸

Contribution to education

Apart from his work on the British Pharmacopoeia, Attfield's principal professional contribution was undoubtedly in the field of education. His published works – he contributed a total of nearly eighty papers to academic literature from the 1850s until the 1890s – were principally on practical and scientific chemistry, whereby he always sought to emphasise the role of chemistry at the service of pharmacy and medicine.²⁹ He took a broad approach to education, seeing scientific study as an essential contribution to a broad culture, teaching the student "to observe accurately, reflect accurately and describe accurately on all and any matters in general life".³⁰ He was a strong advocate of systematic study curricula and an opponent of what he regarded as the pernicious practice of examination cramming.

His influence as a teacher was profound. During his 34 years at the School of Pharmacy, a total of 2,367 students came under his teaching.³¹ He was a kind and sympathetic teacher, and the esteem in which he was held by his students is shown by the following address presented to him by former pupils in July 1897 together with a silver tray and tea and coffee service:

*"During the whole of this long tenure of his important office Prof. Attfield not only won and retained the respect of successive generations of students by the lucidity, accuracy and thoroughness of his teaching, but he also endeared himself to them by his unfailing tact, kindness and urbanity".*³²

As a teacher, Professor Attfield was also a moderniser, as is shown by his support for the campaign to admit women to membership of the Pharmaceutical Society of Great Britain. In 1873 the Society's annual general meeting had voted to refuse membership to women, despite the fact that women such as Isabella Clarke were already running their own pharmacy practices. In 1874 Attfield's request that women should be allowed to attend practical classes was refused on the grounds that they were "too delicate to be required to stand at a chemical bench for two hours", although in the same year a request by another professor that ladies should be allowed to sit while looking at specimens was turned down on the grounds that they should be treated the same as men!³³ Women were finally granted membership rights in 1879.

Consulting and public work

In addition to his work as a teacher, John Attfield also ran a large practice as a consulting and analytical chemist. He worked as a consultant to companies such as British Xylonite, and conducted chemical and physical analyses on behalf of local authorities, manufacturers, etc. Despite his wide professional recognition, he was probably best known to the general public for his Pears' Soap endorsements which appeared in newspaper and magazine advertisements for many years.

Here too, as with his work on the British Pharmacopoeia, Attfield's practice of combining academic work with private business was not uncontroversial and his commercial activities



One of Professor Attfield's well-known Pears' Soap endorsements

sometimes caused raised eyebrows among his professional colleagues. In 1893 Sir Isambard Owen wrote to the Royal College of Surgeons enclosing a circular letter sent out by John Attfield soliciting expert scientific evidence in defence of Van Houtens' cocoa in a legal action and proffering payment. Owen requested the opinion of the College on the propriety of such a letter, also threatening to raise the matter with the Royal Society.³⁴

Perhaps regrettably by hindsight, John Attfield directed in his will that "my one hundred and seven 500 page letter books (possibly more at my decease) and all other manuscripts and documents relating to my professional practice as a Consulting Chemist or Analytical Chemist be destroyed by my executors unread".³⁵ One wonders, nearly a hundred years later, how much interesting and valuable data – perhaps also including family information – may thus have gone up in smoke.

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Attfield brought to his scientific work a strong sense of public service – "to the use and benefit of mankind"³⁶ – and he therefore also played an active part in the popularisation of science, a task for which he believed chemistry and pharmacy to be well suited. This activity is demonstrated among other things by his frequent contributions to the popular press on topics relating to science, for example on fire prevention in the wake of the Chicago Fire of 1871, as well as on food and drug purity, sewerage and other matters concerning public health.

Retirement and death

Professor John Attfield retired from public life in 1896. On the occasion of his retirement from the Chair of Practical Chemistry in the School of the Pharmaceutical Society of Great Britain, Professor Attfield was presented with a testimonial consisting of an autograph album and silver plate. The album contained the signatures of no fewer than 1,240 eminent scientific figures from Britain and abroad. It was presented back to the Pharmaceutical Society along with a portrait and copies of all nineteen editions of Professor Attfield's chemistry textbook by his grandson, Charles Attfield Brooks, in 1958.³⁷ In further recognition of his work, Attfield was made an honorary member of the Pharmaceutical Society of Great Britain in 1896.³⁸

John Attfield's interests outside the professional field were wide-ranging. He took a keen interest in educational, philanthropic, social and recreational movements, and was a leading light in the Hertfordshire Natural History Society and the Watford Fieldpath Association.³⁹ His interest in genealogy led to his compilation of the first – and extremely accurate given the limited resources then available – Attfield lineage which was subsequently continued in the 1950s by Colin Attfield and put online by the present author.⁴⁰

He was a frequent correspondent to The Times, not only on professional and scientific questions but also on wider subjects. On January 1, 1900, for example, he entered into the so-called “Century Debate” in spirited fashion:

“Sir – Words, words, words. The 1900th year AD commences on the day this letter will, I hope, appear in The Times. The dictionaries tell us that the word century simply means hundred. Until 1900 years have elapsed the 19th century of years cannot end. And until the 19th century of years has ended the 20th century of years cannot commence. Therefore the 20th century of years cannot commence until a year hence. And, therefore, the year AD 1900 is not the commencement of the 20th century; 1901, so designated, is the first year of the 20th century. I am in my 65th year, but not until my year 65, so designated, is ended shall I be 65. Chevreul lived over a century. But he was not a century old until he had completed his 100th year. He did not commence his second century until he commenced his 101st year. So we shall not commence our 20th century until we commence our 1901st year – a year hence. At all events, that is how the matter strikes John Attfield, Watford”.⁴¹

In the last years of his life, John Attfield suffered from quite severe physical disabilities and withdrew to enjoy his home, garden and books. He died of acute bronchitis and heart failure at his family home at “Ashlands”, Watford, on March 18, 1911,⁴² and was buried at Golders Green Cemetery on March 21.

In his will dated April 22, 1908⁴³ (written just one month after the premature death of his son Donald), John Attfield made provision for his widow Martha to remain in occupation at “Ashlands” – she died there in 1917 – and provided for a residuary trust fund to be divided between his daughters Gertrude and May Maud as well as Donald’s widow Elsa. A codicil dated July 7, 1908, stated that John Attfield had entered into an agreement with Sir Hubert Herkomer for mutual covenants for the benefit of Elsa during her widowhood; the codicil provided for these payments to continue after his decease.

Probate was granted on April 28, 1911, to the executors Martha Attfield (widow), Charles Norman Brooks (son-in-law) and the Reverend James Herbert Harvey (nephew). The gross value of the estate was £41,275 and the net value of the personal estate was £22,163.

John Attfield
Buchholz, Germany
December 2006

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Footnotes

¹ The images of Professor John Attfield on p.1 and p.5 are reproduced with grateful thanks to the Museum of the Royal Pharmaceutical Society. I also acknowledge the help of the Museum staff and of Harry Dutton in locating material for this article.

² J. Am. Pharm. Ass., 1912, I, 490, cited in John K Crellin, "John Attfield 1835 – 1911, his influence on education", *The Chemist and Druggist*, July 29, 1961, pp.115-117.

³ Marsha B Mrtek, "The professional legacy of John Attfield", *Pharmacy in History*, Vol 29 (1987) No.2, p.55 (paper presented at the 1986 Annual Meeting of the American Institute of the History of Pharmacy).

⁴ Obituary to Professor John Attfield, FRS, in *Proc Royal Soc Series A 1911-1912*, vol. 86, pp.xliv-xlvi. See also John Heathfield, "Finchley and Whetstone Past", Historical Publications Ltd, London, 2001 (ISBN 0 948667 75 3), pp.122-123, and Mrtek, op. cit, p.55. Attfield was disqualified from taking the major examination on account of his age, being only 19.

⁵ Proceedings of the Chemical Society, May 19, 1856.

⁶ Obituary, Royal Society, loc. cit. and Mrtek, op. cit, p.55.

⁷ John Andraos, "Scientific Genealogies of Physical and Mechanistic Organic Chemists", *Canadian Journal of Chemistry*, 2005, vol. 83, no. 9, pp. 1400-1414, <http://careerchem.com/CV/cjc2005a-Trees.pdf>

⁸ Article on Edward Frankland in Wikipedia, http://de.wikipedia.org/wiki/Edward_Frankland

⁹ Sir Hubert Herkomer, RA (1849 – 1914), was a remarkable German-born Victorian artist with extremely wide-ranging interests. His major paintings included "Hard Times", "On Strike" and "The Last Muster". His neo-gothic house called "Lululaund" at Bushey – not far from the Attfields' home at Watford – was a striking local landmark until it was largely demolished in 1939. Herkomer set up an art school at Bushey in 1883, and started making cinema films in 1912. He took an early interest in motor sport and in 1905 he initiated the Herkomer-Konkurrenz in Bavaria, the world's first touring car rally. Two galleries at the Bushey Museum are devoted to Herkomer's work. A major biography by Lee MacCormick Edwards, "Herkomer, A Victorian Artist", was published by Ashgate Publishing, Aldershot, Hants & Brookfield, Vermont, in 1999 (ISBN 1 84014 686 9).

¹⁰ Some personal recollections of Elsa Herkomer in later life are to be found in the delightful "Sow the Wind: A Memoir" by Peggy Larken, Writersworld, Chipping Norton, 2004 (ISBN 1 904181 25 2).

¹¹ London Gazette, June 7, 1904, p.3, and J A Venn, "Alumni Cantabrigienses", Cambridge University Press, London, 1922-1854.

¹² John Attfield, "Introduction to Pharmaceutical Chemistry", John Van Voorst, London, 1867 (first edition).

¹³ See for example a highly critical review in *Nature* by "T.E.T." highlighting various errors and shortcomings, *Nature*, January 27, 1870, pp.328-329, <http://digicoll.library.wisc.edu/cgi-bin/HistSciTech/HistSciTech-idx?type=turn&entity=HistSciTech001200520002&isize=text> Sir William Tilden, who held the post of demonstrator at the School of Pharmacy under Professor Attfield for nine years, also stated many years later that "it was not a good book from the scientific point of view"; see article "The Society's House and School", *The Pharmaceutical Journal*, March 18, 1961, p.226.

¹⁴ The textbook is discussed in detail in John K Crellin, op. cit.

¹⁵ "The Society's House and School", op. cit.

¹⁶ John Attfield, "Chemistry, General Medical and Pharmaceutical including the Chemistry of the U.S. Pharmacopoeia", Henry C Lea, Philadelphia, 1871.

¹⁷ In the 1871 edition of his textbook "Chemistry, general medical and pharmaceutical"; see Jeff Miller, "Earliest known use of some of the words of mathematics", <http://members.aol.com/jeff570/mathword.html>

¹⁸ John K Crellin, *op. cit.*, and Preface to John Attfield, "Introduction to Pharmaceutical Chemistry", 1867.

¹⁹ Mrtek, *op. cit.*, p.56.

²⁰ Henry B Brady also collaborated with Professor Attfield by providing the drawings from which the illustrations in the first edition of Attfield's chemistry textbook were engraved.

²¹ "Chicago College of Pharmacy", published in *Libraries & Culture*, vol. 35, no. 2 (Spring 2000): 354-357, http://sentra.ischool.utexas.edu/~lcr/archive/bookplates/35_2_pharmacy.htm

²² Mrtek, *op. cit.*, pp.57-58. The photo of Attfield Hall is taken, with acknowledgement of copyright, from the web site of the College of Pharmacy at the University of Illinois at Chicago (<http://www.uic.edu/pharmacy/history/history1.html>)

²³ The Royal Society, Certificate of a Candidate for Election, John Attfield, Ph.D, FCS, February 19, 1876, Repository GB 117, Ref No EC/1880/04.

²⁴ *Ibid.*

²⁵ "A Great Servant of Pharmacy: Presentation of mementoes of Professor John Attfield", *The Pharmaceutical Journal*, November 8, 1958, pp.363-364.

²⁶ Obituary, Royal Society, *loc. cit.*

²⁷ S W F Holloway, "Producing experts, constructing expertise: the School of Pharmacy of the Pharmaceutical Society of Great Britain, 1842-1896", in Vivian Nutton and Roy Porter, editors, "The History of Medical Education in Britain", *Clio Medica/The Wellcome Series in the History of Medicine*, 30, published by Rodopi, Amsterdam & Atlanta, 1995, p.123.

²⁸ Obituary to John Attfield, *The Times*, March 22, 1911.

²⁹ "He unceasingly applied the resources of the great science of chemistry to the demands of the great art of healing." Obituary to Professor John Attfield, Royal Society, *loc. cit.*

³⁰ Obituary, Royal Society, *loc. cit.*

³¹ John K Crellin, *op. cit.*

³² Quoted in obituary, Royal Society, *loc. cit.*

³³ Marilyn Creese, "How women pharmacists struggled for recognition before 1905", *The Pharmaceutical Journal*, 274, June 11, 2005, p.731. See also the report of the 2000 conference of the British Society for the History of Pharmacy, *The Pharmaceutical Journal*, 264, May 27, 2000, p.822-823.

³⁴ Royal College of Physicians of London, RCP/LEGAC/2412/280 (January 26, 1893) and 2412/281 (January 27, 1893).

³⁵ Will of John Attfield, Principal Probate Registry, probate dated April 28, 1911.

³⁶ Lord Bacon's dictum, cited by John Attfield as a foreword to his chemistry textbook.

³⁷ “A Great Servant of Pharmacy”, op. cit.

³⁸ Mrtek, op. cit, p.58.

³⁹ Obituary, Royal Society, loc. cit.

⁴⁰ See www.familytree.john-attfield.com

⁴¹ The Times, Monday January 1, 1900.

⁴² General Register Office, Death Certificate, Watford District, March Qtr 1911, Vol 3a, p.479

⁴³ Will of John Attfield, loc. cit.