

From purgatives and powders to fulminate and factories: Archives and sources regarding the Society of Apothecaries' drug supply to India, c.1703-1882

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Abstract

This paper discusses some of the archives and sources relating to the Society of Apothecaries' drug supply to India. Focussing on material available in the archive located at Apothecaries' Hall in London and supplemented by items from the India Office Records at the British Library, it examines the origins of supply to the East India Company in the early eighteenth century, through to the award of a monopoly in 1766 and changes to the India Office's purchasing policy in the 1870s. Using these sources, the relationship of the livery company with both the East India Company and the India Office is explored.

Introduction

On 18 October 1704 the Master and Wardens of the City of London Livery Company, the Society of Apothecaries, attended the East India Company Court of Managers at Skinners' Hall. In the previous year medicines manufactured by the Society had been supplied to the Company, and the bill was now presented for payment. The Master and Wardens insisted that the Society could not take less than £500 for the drugs supplied.¹ Accordingly, a warrant for the Apothecary's Company for £500 was sent to Peter Gelsthorp (c.1636-1719), the then Master (Figure 1). Gelsthorp, described in Munk's Roll as 'a respectable apothecary', was a wealthy man with substantial property holdings in Hatton Garden, who played a key role in the expansion of the Society's drug trade in the early eighteenth century.²

The Society's corporate role in drug production commenced when a laboratory for manufacturing chemical medicines began operating at Apothecaries' Hall in 1672. The broader context of this development and the Society's motivations are discussed elsewhere.³ By drawing on the experience and contacts of members who had already supplied the armed forces, and utilizing connections with both the monarchy and the government, the Apothecaries obtained a monopoly of drug supply to the Navy in 1703. This led to the formation of a joint stock company known as the Navy Stock 'to provide the Royal Navy with medicines and to form a relevant committee to buy drugs and inspect their preparation'.⁴



Figure 1. Portrait of Peter Gelsthorp Snr (c.1636-1719) by an unknown artist. Presented to the Society in 1717 by Francis Dandridge. (Source: Worshipful Society of Apothecaries, London)

Only members of the Society could purchase shares, and they received dividends from the profits generated. Chemical medicines were obtained from the existing chemical laboratory, and galenical medicines were prepared by an operator appointed for the purpose. By building on similar networks to those that helped secure the naval monopoly, the Society soon started supplying drugs to the East India Company. As the manufacturing operation located at and around Apothecaries' Hall grew, drugs were produced in bulk quantities and supplied throughout Britain and its Empire. Its customers included numerous hospitals and institutions, medical practitioners, the First Fleet transporting convicts to Australia, and the Hudson's Bay Company. In its productive heyday during the late eighteenth and early nineteenth centuries, the Society of Apothecaries had an unrivalled capacity to process and manufacture huge quantities of drugs for a worldwide market (Figure 2).⁵



Figure 2. South-west view of Apothecaries' Hall in the 1780s, showing the newly re-built front of the premises. Engraving by John Carter. (Source: London Metropolitan Archives, City of London, COLLAGE: the London Picture Archive, Apothecaries' Hall, ref: 527).

Whilst the reach of the Society's drug supply was global, this article will explore some of the archives and sources which survive about its role supplying drugs (and more) to India, and the livery company's relationships with the East India Company and later with the India Office. It will focus on items available in the archive at Apothecaries' Hall, the Society's livery hall in Blackfriars, London. It is not a broader discussion of sources regarding drug supply to India, nor will the material be placed in the wider context of the circulation of medicines and the global trade in drugs at this time.⁶

The Society of Apothecaries and the East India Company

Sources regarding the start of the Society's drug supply to the East India Company are scarce and come primarily from the East India Company Court of Directors Minutes located at the British Library. A 'bill for medicines furnished last year' was presented in October 1704 and in December 1705 arrangements for drug purchases were referred by the East India Company's Court of Managers to its Committee of Shipping.⁷ The following month, the East India Company is referenced in the minutes of the Society's governing body, the Court of Assistants, regarding the inspection of drugs supplied. The Master of the Society, William Rous, reported to the Court that

the East India Company had sent them directions to view severall Chests for their Service with one Mr Chamberlayne and one Mr Meazy and desired that

some might be added to their Assistance and accordingly Mr Sykes, Mr Deputy Gardnier, Mr Gellsthorpe and Major Gower were appointed.⁸

Such a role was not new: shortly after the Society's foundation in 1617, its Master and Wardens were amongst those asked in 1623 to judge the quality of drugs in surgeons' chests for the East India Company.⁹

Whilst the Navy Stock's low profitability in its early years suggests that orders at this point were not regular, sources outside of the Society indicate that on occasions significant amounts were spent by the East India Company on drugs from Apothecaries' Hall. The author of the polemic *The Apothecary Display'd* suggested that the East India Company 'dealt once for several Thousand pounds a Year with these Emulsioners, this bunch of Pulp-Pated Pill Gilders'.¹⁰ However, when this pamphlet was published in 1748 the author remarked that the East India Company purchased drugs and medicines from Bevan and Company of Lombard Street (the firm that later became Allen and Hanburys) and Johnson in Fenchurch Street, at prices more than forty percent cheaper than those charged by the Society of Apothecaries.

The cost of the Society's drugs compared to other suppliers was a cause of complaint for some customers. In 1717 the Directors of the Greenwich Hospital protested about the sixty percent profit made on drugs purchased from Apothecaries' Hall. When the Society refused to reduce its profits, the Directors used another supplier.¹¹ However, customers such as the Navy were happy to pay a premium for medicines of guaranteed

quality, supplied under institutional auspices and with external supervision.

In 1766 the Society secured a monopoly of drug supply to the East India Company, under similar terms to the monopoly held with the Navy. The Company's headquarters were located at East India House in Leadenhall Street in the City of London (Figure 3). At the East India Company Court of Directors on 29 October 1766 it was:

Resolved that for the reasons therein given, the Company of Apothecaries do provide in future all the medicines and drugs which may be wanted for several presidencies, notwithstanding their Prices exceed those of other Persons, as there is a certainty of being supplied with them by the best of Medicines and Drugs, every article coming under the Inspection of a Deputation from the College of Physicians and the Surgeons Company which is not the case with Private Persons, and that for the present season the Apothecaries Company charge the Prices mentioned in their Proposals.¹²



Figure 3. *East India House c.1800 by Thomas Malton the Younger. (Source: Wikimedia Commons. Courtesy of the Paul Mellon Collection, Yale Center for British Art, Yale University, New Haven, Connecticut).*

Combined with income generated from the medicines supplied to the Navy and public institutions, 'the great quantities exported to India, by order of the East India Company'¹³ led to a dramatic increase in the profitability of the Navy Stock in the second half of the eighteenth century. Comparative turnover data from the first decade of the nineteenth century is recorded in the Court of Assistant Minutes. At this point providing drug supplies for the East India Company's substantial army – plus ships, hospitals and trading posts – generated more income for the Society's trade than supplying the Navy. For the decade up to 1810, the East India Company spent an average of £20,160 per annum on

supplies. This compares with an average of £18,072 per annum spent by the Navy.¹⁴

With the end of the Napoleonic Wars and the temporary loss of naval business in 1823, supplying the East India Company became even more significant for the Society's trade. During the 1810s and 1820s income from the East India Company was in the region of £20,000 to £30,000 per annum. Although this dropped slightly in the 1830s and 1840s, the East India Company was still the Society's most valuable customer. It was only at the height of the Crimean War in 1855 that the Army Medical Department's annual expenditure exceeded that of the East India Company.¹⁵

Soon after, increased military requirements at the time of the Indian Rebellion led to orders worth around £40,000 in 1857 and 1858, and over £50,000 in 1859.¹⁶ A combination of unusual, but profitable, fluctuations in the drug market; accumulated and advance orders from India; and the large amount of business from the Indian Rebellion without a proportionate increase of expenditure, led to 'extraordinary dividends' paid to stock holders.¹⁷

Customer expenditure on drugs is recorded in the United Stock account books. The United Stock (a joint stock company in which only members of the Society could purchase shares and be paid dividends from its profits) had been formed in 1822 from the unification of the previous two stock companies, the Navy Stock and the Laboratory Stock. These account books are the main source of information on the Society of Apothecaries' nineteenth-century customer base and the income generated from drug sales. Annual income from the East India Company is recorded from 1816 (the account books also contain data from the last years of the Navy Stock) with the India Office listed as a customer from 1860 until the volume ends in 1878.¹⁸

Orders from India

An insight into the drugs dispatched to India by the Society of Apothecaries can be gained from a surviving order book covering the years 1827 to 1828 (Figure 4).¹⁹ In the order book every item that the East India Company could purchase was listed, although it did not order every item mentioned. In total 641 separate items could be ordered. The volume is divided into three sections: drugs, galenicals and chemicals. The quantity of each item sent to different destinations is then specified. The locations listed are the three Indian Presidencies: Bengal, Bombay and Madras (the administrative divisions of British governance in India), followed by other places then under Company control: Canton, Fort

Marlborough, St Helena, and Prince of Wales Island. Unsurprisingly, the majority of medical supplies were sent to the main centres of Bengal, Bombay and Madras.

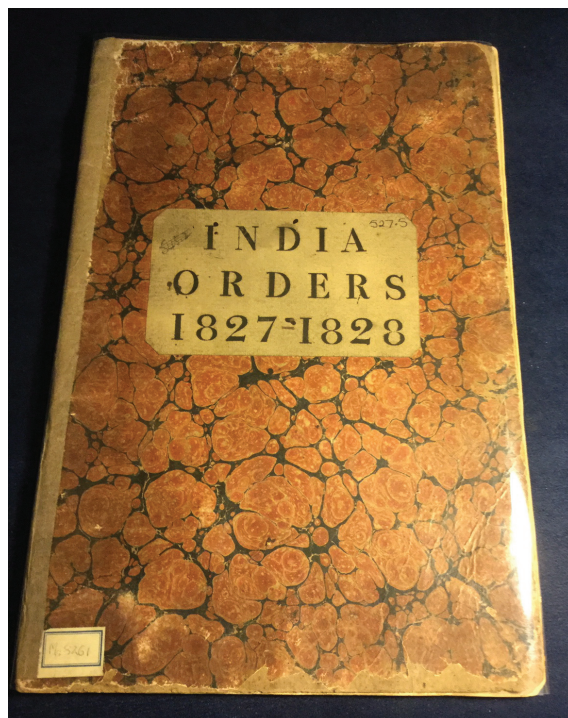


Figure 4. Front Cover of *India Orders, 1827-1828*. (Source: Apothecaries' Hall Archive, MS 8261, B5/1/3. Author's photograph, courtesy of Worshipful Society of Apothecaries, London)

The first section 'drugs' contains a list of 272 pharmaceutical preparations. This includes a variety of substances of plant origin, such as balsams, barks, powders and seeds and encompasses drugs such as powdered cinchona bark and oil of terebinth. This category also includes numerous chemical substances used in medicine, for example sodium, magnesium and zinc sulphates, lead super-acetate and potassium super-tartrate. The second section contains 124 'galenicals' which include a range of compound pills, plasters, powders and ointments, items which required the pharmacist's skills to compound from raw materials. In this category one can find orders for aloe, squill and iron pills, chalk and opium powder, and lead, resin and mercury plasters.

Finally, there are 245 'chemicals', a category which covered acids and ammonia, magnesium and potassium carbonates, plant-based extracts and spirits, quinine sulphate, iron and mercury preparations and antimony tartrate. Such a categorization – although almost obsolete by the 1820s – referred to the mode of preparation,

not the ingredients. 'Chemical' preparations were manufactured by chemical processes such as distillation and digestion, and included substances which would be classified as 'herbal' or 'natural' medicines today.²⁰

The quantities ordered reflect both the size of the Society's manufacturing operation and the extent of the East India Company's drug requirements. The largest order was for the purgative magnesium sulphate (Epsom salts), of which a total of 36,932 lbs was dispatched, (with 25,412 lbs going to Bengal), highlighting the digestive issues faced by the British in India! The laxative sodium sulphate (Glauber's salt) was also required in vast quantities, with 21,221 lbs sent. Substantial amounts of medicinal grade olive oil (8,372 lbs), potassium super-tartrate (5,951 lbs) and oil of terebinth (4,476 lbs) were ordered. 830 lbs of cinchona *lancifolia* bark was dispatched to Bengal, but the bark was mostly required in its powdered form, with a total of 2,985 lbs sent to Bengal, Bombay and Canton.²¹

Other items which feature prominently in the orders are magnesium carbonate, powdered antimony and various mercury preparations, particularly calomel. Jalap, rhubarb, lead super-acetate and sarsaparilla root were also purchased in significant quantities. Some of the raw materials used to manufacture the drugs supplied, such as galls, sassafras and scammony, were imported from areas under the Company's control to London, processed at Apothecaries' Hall, and then sold to the East India Company for re-export to South Asia.²² In comparison to drugs and chemicals, fewer and smaller orders were placed for galenicals, possibly because some were sourced locally.²³ Only seven items in the galenical section were ordered in quantities of over 1,000 lbs, mostly prepared medicinal plasters and waxes.

Drugs were not the only items supplied by the Society. Invoices for stores, dating from 1833 and located at the British Library, include refitting medicine chests for East India Company ships; these were the *Buckinghamshire*, *Thomas Grenville*, *Waterloo* and the *Scaleby Castle*.²⁴ The Society provided medical sundries purchased from external suppliers such as bed pans, corks, syringes and sponges. A set of scales and weights was obtained for the *Buckinghamshire*, whilst the repair of splints and trusses was also arranged.

Other services provided by the Society of Apothecaries to the East India Company

The Society of Apothecaries' pharmaceutical trade was characterised by a strong tradition of public service. This dated back to its founding charter of 1617 which had given the livery company responsibility to regulate the quality of drugs in London. The institution consid-

ered that it had a public duty to act as a source of high-quality drugs for the ‘corporate bodies, merchants, medical institutions and private persons, whether medical persons or others who have for so long a period honoured them with their confidence’.²⁵

‘Superior excellence in the condition of the various materials employed in the preparation of medicines’²⁶ was stressed to be of the greatest importance in production. The strength of the Society’s reputation for quality absolved customers from checking and, from having the infrastructure to check, the drugs themselves. The Society also supplied bulk quantities packaged in small amounts, so drugs were ready for immediate use on arrival. These factors were particularly significant in military and colonial supply. For many years, the East India Company, along with other government and institutional customers, was prepared to pay a premium for drugs supplied under such terms.

In the nineteenth century the Society’s comprehensive level of service extended to the provision of analytical services for customers. From 1813 onwards, the Society’s Superintending Chemical Operator and Professor of Chemistry, William Brande (1788-1866) FRS (who was also professor of chemistry at the Royal Institution) (Figure 5) analysed impurities in all of the saltpetre (potassium nitrate) brought into the country by the East India Company.²⁷ In this case, the analytical work brought Brande a significant income. It also provided a valuable service for the East India Company and helped cement the relationship between the two organisations. However, the Society’s commitment to meeting all of its customers’ needs did not always have a positive outcome. On one occasion the desire to fulfil all of the East India Company’s chemical requirements was to have tragic consequences.

The mercury fulminate incident, 1842

The explosive mercury fulminate [$\text{Hg}(\text{CNO})_2$] was used by the East India Company’s army to prime small copper caps, having replaced flints as a means to ignite black powder charges in muzzle-loading firearms. Supplies of this detonating powder were usually obtained from the Channel Island of Guernsey, where production took place due to the low price of alcohol.²⁸ However, in 1842 there were problems sourcing sufficient quantities of the explosive in time to make the shipment to India.

According to the trade’s clerk and accountant, Frederick Leffler, on the afternoon of Thursday 4 June 1842 Colonel Bonham – from the East India Company’s military store office – visited Apothecaries’ Hall to discuss when the six pounds of mercury fulminate was required. At this point, Henry Hennell FRS (c.1797-



Figure 5. Portrait of William Thomas Brande (1788-1866) by Henry Weigall, 1858. (Source: Worshipful Society of Apothecaries, London)

1842), the Society’s Chemical Operator, was still waiting for supplies to arrive from Guernsey. However, if none were forthcoming by the Friday morning, Hennell promised Colonel Bonham that he would prepare the explosive himself so that the deadline of noon on Saturday was met. Hennell’s promise was made despite earlier advice to the contrary from his colleague William Brande. Leffler summarized the situation as follows.

It was tantamount to compulsory because he (Hennell) was so devoted to the interests of the Company (the Society of Apothecaries) that his own life was a secondary object. It was not within the ordinary scope. The Company were under contract to the East India Company therefore ‘oblige’ is not the word.²⁹

When only three pounds of mercury fulminate could be purchased, Hennell decided to undertake manufacture himself. By working in relatively small quantities

and in the open air in the front courtyard at Apothecaries' Hall (Figure 6), Hennell believed that he was taking sufficient precautions. However, mercury fulminate is highly sensitive to friction, heat and shock and although production had progressed satisfactorily on the Friday, on the Saturday morning an explosion occurred. Hennell was in the process of mixing two separate portions of the moist powder in a china bowl with an ivory knife when the whole quantity, amounting to above 6 lbs, exploded and he was killed instantly.³⁰



Figure 6. Apothecaries' Hall, Front Courtyard, location of Henry Hennell's fatal attempt at manufacturing mercury fulminate. Engraving by J. Hinchcliff, after Thomas Hosmer Shepherd, 1831. (Source: Wellcome Images, Wellcome Library, London)

The inquest made for grisly reading, as the top part of Hennell's body had been blown apart and the right arm and left fingers separated from his body.³¹ The blast was felt throughout the neighbourhood, and one thousand panes of glass were destroyed.³² A scrapbook containing newspaper cuttings relevant to the Society and housed in the Apothecaries' Hall Archive highlights the impact of the tragedy. Hennell and the Society were criticised for having allowed the manufacture to take place, and the coroner insisted that the Society must never again permit production of mercury fulminate on its premises.³³

Changing times

The Society's longstanding service to the East India Company would not survive the administrative and political changes to Britain's relationship with India which lay ahead. The Indian Rebellion of 1857 led to the end of Company rule in India the following year. In the early years of the newly formed India Office the residual influence of the East India Company was significant, but there was a shift towards reorganisation and reform.³⁴ As gradual administrative changes occurred, new methods of purchasing and inspection were intro-

duced and inefficiency and over-expenditure began to be acted upon. This led to a change in attitude regarding the use of other suppliers and in time the end of the Society's monopoly.

Evidence from the bimonthly returns by the Director General of Stores located in the India Office Records at the British Library provides a valuable insight into the Society's supply to India after the Company's demise.³⁵ In April 1869 virtually all of the drug requirements for the three presidencies of Bengal, Bombay and Madras, ranging from bulk quantities of magnesium sulphate and cod liver oil to a few ounces of brucine, were purchased from the Society of Apothecaries.³⁶

Chemicals were also supplied for non-medicinal usage. In 1869 five hundredweight of borax was sent to the Kurrachee Harbour Works and bismuth provided for the Bengal Mint.³⁷ The timescale for ordering from India was lengthy. A typical example is the order placed by the Bombay Presidency in December 1868. It was not received in the India Office Store Department until July 1869. A contract for supply was finally made with the Society of Apothecaries on 8 September 1869, leading to an estimated date of despatch a year after the original indent was made.³⁸ In such circumstances it was simpler to order the majority of medical and chemical requirements from one supplier. In 1869 the most important drug not to be ordered via Apothecaries' Hall was quinine sulphate. Howards and Sons of Stratford, a firm renowned for its quinine production, had taken over supply in 1866.³⁹

At the request of the India Office's Director General of Stores, Gerald C. Talbot (1819-1885), a three-man committee was appointed in 1875 to investigate the supply of drugs to India.⁴⁰ Whilst the quality of the Society's drugs was praised, there were allegations of over-charging which the United Stock's Treasurer, the literary scholar Henry Morley (1822-1894), attempted to answer. Whilst Talbot felt Morley's explanations were to some extent satisfactory, he continued 'I am quite prepared to admit that the charges of the Society are high and I have for some time felt that the monopoly which they enjoy should be terminated'.⁴¹ From then on, a far greater range of suppliers was used by the India Office. In 1874 drugs worth £40,000 had been ordered from the Society, but in 1877 the value of drugs supplied was only £3,500.⁴²

The bi-monthly returns for April and June 1877 clearly illustrate the loss of business. Laboratory chemicals now came from Townson and Mercer of Bishopsgate Street and most medical sundries were no longer purchased from the Society. The majority of drugs came from Barron, Harvey and Co. of Giltspur Street (whole-

sale druggists which later became part of British Drug Houses) or Howards and Sons, with only the occasional item ordered from the Society of Apothecaries.⁴³

In 1879 a new post was created which enabled the India Office to examine the quality of drugs by inspection and obtain supplies through competitive tendering. Francis MacNamara (1831-1899), a former Professor of Chemistry at the Calcutta Medical School, former Chemical Examiner to the Indian Government and a member of the 1875 three-man committee, was appointed to the post of Examiner of Medical Stores.⁴⁴

In May 1879 the report of an internal sub-committee investigating the Society's trading activities noted that orders from the India Office had ceased.⁴⁵ In addition to the financial impact, the end of this trading relationship led the Society and its members to question the viability of drug production at Apothecaries' Hall. Naval business, regained in 1834, had been lost again in 1870. This and Indian supply had been the *raison d'être* of the Society's trade for around one hundred and seventy years. Many members argued that if these two customers purchased drugs elsewhere, the Society's role as a drug supplier had a limited future.

Meanwhile, greater customer awareness of expenditure, the introduction of competitive tendering, and the use of inspection to ensure drug quality, marked a distinct departure from the way that the Society carried out its trading operation. Although business with the British Army and the Crown Agents for the Colonies continued, this was inadequate to sustain the trade. Numerous operational problems also arose during the 1870s and, after a troublesome decade, the United Stock was dissolved in 1880.

Conclusion: A new beginning and a continued relationship

Following extensive discussions, the Society of Apothecaries decided that its drug production role should continue, but in a new format. The Society would have complete responsibility for the trade, and the institution, not its members, would receive any profits generated. Following the reorganisation, attempts were made by the newly appointed Trade Superintendent to regain business. The continued dealings between the India Office and the Society provide a further insight into the depth of the relationship between the two institutions and how the tradition of supply to India could not easily be cast aside.

In 1881 the India Office's Examiner of Medical Stores, Francis MacNamara, was approached about purchasing drugs from the Society once again. In his response, he praised the Society's supplies as 'exceptional' and commented that the same quality could not be

obtained elsewhere in the marketplace.⁴⁶ He went on to state how he 'personally wished to do business with us from his own knowledge of his being able to depend upon our examination of the drugs and thus really to save his care in the matter'.⁴⁷ However, the India Office's policy was to invite tenders for drug supply, choose the most reasonable price offered and check quality through inspection.⁴⁸ The Society could not compete on these terms. It attempted to regain some of the India Office business by responding to a tender with 'as low a figure as would be consistent with a small profit only'.⁴⁹

Although some orders were initially obtained,⁵⁰ by the end of 1882 the Society received no more. Changes in the methods of ordering from the India Office meant that the Society's expensive but specialised services to guarantee quality were no longer required. By the end of the nineteenth century, Indian drug orders consisted of four large annual indents, one from each Presidency. These were shipped in large consignments, which made drug inspection prior to dispatch easier.⁵¹ The use of inspection reflected a general trend in government and the civil service to engage the services of specialists and in the 1890s the India Office (along with the Navy and Army) utilised the facilities of the Inland Revenue Laboratory for testing supplies.⁵²

Even though the Society's supply of drugs to India ceased in 1882, MacNamara's comments indicate how the quality of its service had not been forgotten.⁵³ In 1903 the India Office approached the Society about the feasibility of setting up a drug factory in Nassik (now Nashik), in north-western India, about 190 kilometres north of Mumbai. Initially the suggestion was to establish a factory for supplying the army and civil departments with drugs, worth around £60,000 a year. If constructed, it would have been 'probably the biggest drug manufactory in the world', and it would have enabled India to be independent in respect of drug supplies in the event of war.⁵⁴

The Society was prepared to run the Indian factory as long as it received reasonable financial security and a fair chance of profit. However, it proposed that the establishment would be more like a warehouse due to the small number of drugs that could be manufactured profitably in India. In the first few months of 1904 draft terms of agreement were drawn up. The Society would lease plant, land and buildings from the Indian government, but have control of all staff appointments. The drugs supplied would be of the same standard as those manufactured by the Society in the United Kingdom, with prices based on its wholesale price list, plus the cost of freight to India.⁵⁵

The role of the Trade Superintendent, William Chattaway (1861-1904), in the negotiations was particularly important (Figure 7).⁵⁶ After a meeting with the Director General of Stores of the India Office, E. Grant Burls, on 29 April 1904, he wrote the following in a letter to the Society's Clerk, Archer Mowbray Up-ton:

Indeed he [Burls] was so satisfied with it, that, without waiting for further instructions, and realising that it is only in the form of a suggestion at present, he has forwarded it to India. He tells me that he thinks there is every probability of its being favourably received by the Indian Government.⁵⁷

However, the plans came to nothing and the drug factory was never built. The reply from India was likely to take six to eight months, and on 7 October 1904 William Chattaway died unexpectedly, aged forty-three, following an operation for appendicitis. His death led to further reorganisations, and thereafter there was little ambition to expand the Society's trade.

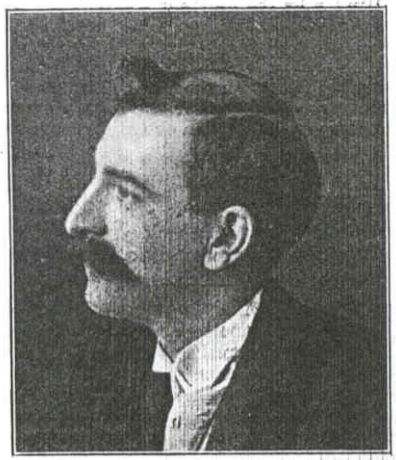


Figure 7. Portrait of William Chattaway (1861-1904). (Source: *British and Colonial Druggist*, vol. XLVI, 14 October 1904: 351)

Less than twenty years later, the Society's corporate trading role ceased after 250 years. Drug supply to India had been a central element of this activity. Although the Society never ran what could have been 'the biggest drug manufactory in the world',⁵⁸ the discussions with the India Office highlight how its trading reputation and networks remained strongest in the British Empire. Until just before the Society's trade closed in 1922, orders placed by the Crown Agents for the Colonies meant that supplies were sent to Nigeria, the Gold Coast, British Honduras, Barbados, Tehran and the Seychelles.⁵⁹ Even though the Society's trade seemed by

this date a relic of a bygone age, until the very end drugs from Apothecaries' Hall reached all corners of the world.

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10. Anon. *The Apothecary Display'd or an Answer to the Apothecary's Pamphlet, called Frauds Detected in Drugs wherein his Profession and Important Character is Truly Considered*. London: 1748: 13-14. The Society faced extensive opposition at this date to attempts to broaden its jurisdiction and bring all chemists and druggists in the capital under its control.
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16. East India Company expenditure on drugs taken from Apothecaries' Hall Archive, United Stock Account Books, MS 8224 vol. 1, 1816-1831, vol. 2, 1831-1846 (Box 113), vol. 3, 1846-1859 and vol. 4, 1860-1878 (Box 112).
17. Apothecaries' Hall Archive, Court of Proprietors and General Committee the Special Subcommittee of the United Stock and Committees of Managers (hereafter GCM), 6 March 1858, 5 June 1858. Box 114, MS 8223, vol. 3, 1851-1866.
18. United Stock Account Books. (Note 16); Audited Accounts (1858-1879) and the Comparative Statement of Trade are found in United Stock/Trade Audit Book, 1858-1911, MS T/8, Box B/83. Data on income from the India Office post 1878 is found in Audit Ledger T/4, 1879-1881.
19. Apothecaries' Hall Archive, MS 8261, B5/1/3, India Orders, 1827-1828.
20. Laboratory production at the Hall had been split between chemical and galenical manufacture from the foundation of the Navy Stock in 1703 until 1826, with separate galenical and chemical operators employed. For the distinction between galenical and chemical pharmacy see Hendriksen, MMA. Bøerhaave's Mineral Chemistry and its Influence on Eighteenth-Century Pharmacy. *Ambix*. 2018: 65(4); 303-323, on 310-313.
21. Apothecaries' Hall Archive, MS 8261, India Orders, 1827-1828. Unless otherwise stated, the total weight of the drugs sent out to all locations is used. The breakdown by destination is given in the order book.
22. See Simmons, A. (Note 5) 2017: 297. For imports (including drugs) stored in East India Company bonded warehouses in 1819 see Makepeace, M. *The East India Company's London Workers, Management of the Warehouse Labourers, 1800-1858*. Woodbridge: Boydell, 2010: 22-23.
23. For the local sourcing of medicines by the East India Company see Chakrabarti, P. *Materials and Medicine: Trade, conquest and therapeutics in the eighteenth century*. Manchester: Manchester University Press, 2010: 33-44. For the drug market in India in the eighteenth and nineteenth centuries see Bhattacharya, N. Between the Bazaar and the Bench: The Making of the Drugs Trade in Colonial India, c.1900-1930. *Bull Hist Med*. 2016: 90(1); 61-91, on 66-69.
24. British Library, IOR/L/MAR/C/876, Invoices for Stores for the East India Company's own ships, sloops and hoys with a list of merchants and what they supplied, 1833.
25. Anon. *Origin* (Note 13) 1823: 2.
26. Anon. *Origin* (Note 13) 1823: 13-14.
27. Apothecaries' Hall Archive, Hall Trade: correspondence, Box 64 (formerly E/7 Loose Papers, Box 3), letters 5 October 1815, James Cobb to Master; 10 October 1815, Sotherton Backler to East India Company. The original agreement was made in 1813. GCM (Note 17), 6 March 1830. For William Brande see *Oxford Dictionary of National Biography*.
28. On Guernsey manufacture took place in a remote location and Mr Taylor, the chief manufacturer there, reported sending mercury fulminate to England packed in canvas bags, surrounded with wet straw in a hamper. Scoffern, J. *Elementary Chemistry: The Imponderable Agents, Light, Heat, Electricity, Magnetism...* London: Richard Griffin and Co, 1860: 496-497.
29. Apothecaries' Hall Archive, Hall Trade: Inquest on Mr Hennell, notes from witnesses' statements re. his fatal accident, 1842, evidence of Frederick Leffler, Box 66 (formerly E/7 Loose Papers, Box 6).
30. Inquest on Mr Hennell, 1842 (Note 29). Mayhew, H. *The Wonders of Science or Young Humphry Davy ... The Life of a Wonderful Boy*. London: David Bogue, 1855: 249. Solly, E. Henry Hennell. *Notes and Queries*. 30 June 1877: 505-506.
31. Anon. Coroner's Inquest – Explosion at Apothecaries' Hall. *Illustrated London News*. Saturday 11 June 1842: 75.
32. Henry Hennell Obituary. *Gentleman's Magazine*. August 1842: 213-214.
33. Apothecaries' Hall Archive, News Cuttings Book, Apothecaries Scrap Book, vol. 1919, cuttings about Explosion and Death of Hennell.
34. Williams, D. *The India Office, 1858-1867*. Hoshiapur: Vishveshvaranand Vedic Research Institute, 1983.
35. British Library, Bimonthly Returns by the Director General of Stores, India Office, IOR/L/AG/36/1/1, April 1869. Each return ends in the month referred to and includes all the orders being processed in that two-month period.
36. Bimonthly Returns, IOR/L/AG/36/1/1, April 1869. Larger quantities were supplied later in the year. Orders in October 1869 included 11,817 lbs of magnesium sulphate and 2,549 lbs of cod liver oil (Bimonthly Returns, IOR/L/AG/36/1/2).
37. Bimonthly Returns, IOR/L/AG/36/1/1, April 1869.
38. Bimonthly Returns, IOR/L/AG/36/1/2, October 1869.
39. Redbridge Local Studies and Archives Service, Howards and Sons Quinine Book, 1861-1908.
40. British Library, India Office, Report of the Committee on the Supply of Drugs for India (1875) and Supplement to Report on the Supply of Drugs to India, IOR/L/MIL/7/15141.
41. British Library, IOR/L/MIL/7/15141 (Note 40). Includes copy of a Report by the Director General of Stores, dated 2 November 1875, with enclosures including a letter from Henry Morley, dated 28 October 1875.
42. United Stock Account Books, vol. 4, 1860-1878 (Note 16).
43. Bimonthly Returns, IOR/L/AG/36/1/9, April 1877 and IOR/L/AG/36/1/10, June 1877.
44. For MacNamara see obituary in *BMJ*, 11 March 1899: 635-636.
45. Special GCM (Note 17) 1 May 1879.
46. Apothecaries' Hall Archive, Management Committee Minutes, 22 February 1881, 1881-1886, T/24, Box B82.
47. Management Committee Minutes. (Note 46) 22 February 1881.
48. National Archives, CO 54/641/10283, Colonial Office, Ceylon Correspondence vol. 7, Letter from Maurice Cameron, Crown Agents, to Under Secretary of State Colonial Office, 13 May 1897, contains report entitled *Drugs and Chemical Supply to Colonies*.

49. Management Committee Minutes. (Note 46) 28 June 1881.
50. Management Committee Minutes. (Note 46) 4 August 1881 and 18 October 1881.
51. Crown Agents Report. (Note 48) 1897: 7 and 9.
52. Hammond, P.W. and Egan, H. *Weighed in the Balance: A History of the Laboratory of the Government Chemist*. London: HMSO, 1992: 137.
53. In general, imported pharmaceutical products from Britain “enjoyed unrivalled status and an almost mythical reputation for ‘quality’”. Bhattacharya, N. (Note 23), 2016: 73.
54. Apothecaries’ Hall Archive, Establishment of a drugs factory at Nassik in India: papers and correspondence, 1903-1904, Box 4, (formerly E/2/5/2/6). Includes letter from E. Grant Burls to William Butler (Deputy Director General of Stores), 22 October 1903, from which the quote is taken.
55. *General Outline of the Terms upon which the Society of Apothecaries is prepared to undertake to carry on and maintain a Factory in India* (Note 54) 1904.
56. For Chattaway, see obituary in *The Analyst*. 1904: 329-330.
57. Letter from William Chattaway to A. M. Upton. (Note 54) 29 April 1904.
58. Letter from Burls to Butler. (Note 54) 22 October 1903.
59. Apothecaries’ Hall Archive, Trade Letter Book, 1914-1922, MS T/23, Box B82. The Society had built up a similar relationship with the Crown Agents to that which it had previously enjoyed with the East India Company. Orders from the Crown Agents accounted for 43% of annual turnover from 1881 to 1904 and analytical, chemical and bacteriological advisory services were also provided. Simmons, A. *The Chemical and Pharmaceutical Trading Activities of the Society of Apothecaries, 1822-1922*. Ph.D. Thesis, The Open University. 2004: 211-216.