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The British Market for Medicine in the late Nineteenth Century: The Innovative Impact of S M Burroughs & Co

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Historians of medicine have tended to be preoccupied primarily with scientific research, the development of therapeutically significant medicines, and ethical business practice. Roy Porter, however, adopted a wider conception. Referring to the eighteenth and early nineteenth century, he redefined the role of "the vile race of quacks" (so described by their own contemporaries[1]) as a manifestation of a burgeoning medical entrepreneurship in an emerging consumer society.[2] He maintained that "Irregular medicine . . . mobilised the growth of medicine as business",[3] an aspect of medical history which he believed to have been largely ignored hitherto and one which requires of historians an understanding of the market for pharmaceuticals.[4] Anne Digby has examined the market for medical services during the nineteenth century in an analysis of interactions between doctors and patients at a time when self-dosing was prevalent.[5] However, interactions between medical practitioners and suppliers of medicines in Britain for most of this period remain largely unexplored (with the significant exception of the work by Jonathan Liebenau[6]) and as a result, it will be argued, have been misunderstood.

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Much material used in this article is located in the archives of the Wellcome Foundation held in the Wellcome Library, London. These consist of the personal letter books of Henry Wellcome (WF/E/01/01, WF/E/01/02), of Silas Burroughs (WF/E/02/05/01–02)), his private papers (PP/SMB) and the records of Burroughs Wellcome & Co/The Wellcome Foundation (WFA). At the time of going to press, most of the material consulted was still being catalogued and was not, therefore, available to the public.

[1] John Forbes, 'On the patronage of quacks and imposters by the upper classes of society', *British and Foreign Medical Review*, 1846, **21**: 533–40, p. 533.

[2] Roy Porter, *Quacks: fakers and charlatans in English medicine*, Stroud, Tempus, 2000, ch. 2.

[3] Roy Porter, 'Before the fringe: "quackery" and the eighteenth-century medical market', in R Cooter (ed.), *Studies in the history of alternative medicine*, Basingstoke, Macmillan, 1988, pp. 1–27, on p. 19.

[4] Porter, op. cit., note 2 above, p. 285; Roy Porter and Dorothy Porter, 'The rise of the English drug industry: the role of Thomas Corbyn', in Jonathan Liebenau, G J Higby, and E C Stroud (eds), *Pill peddlers: essays in the history of the pharmaceutical industry*, new series, No. 13, Wisconsin, American Institute for the History of Pharmacy, 1990, pp. 5–28. Elsewhere Roy Porter observed that a "historical study of the roots of the pharmaceutical industry is sorely needed", op. cit., note 3 above, p. 11.

[5] Anne Digby, *Making a medical living: doctors and patients in the English market for medicine, 1720–1911*, Cambridge University Press, 1994.

[6] Jonathan Liebenau, 'Marketing high technology: educating physicians to use innovative medicines', in R P Davenport Hines (ed.), *Markets and bagmen: studies in the history of marketing and British*

This article examines pharmaceutical products and marketing innovations in the late nineteenth century and explores the ensuing transition in the relations between medical practitioners and suppliers of medicine. Such developments are set against the contextual themes of progress in medical science and the treatment of illness in the period. A perceived conjuncture between changing marketing methods and the development of a science-based pharmaceutical industry in Britain led Liebenau to conclude that increasing scientific complexity explained marketing innovation. He believed that, from the mid-1890s, the ever more technical and scientific character of the new biological therapeutics required the addition of an "educational function" in marketing which would take the form of American style "detail men", who, in addition to calling on chemists and druggists, visited doctors to explain and promote innovative medicines, preferably employing the appropriate technical and scientific language.[7] The introduction of this practice in Britain he attributed to Henry S Wellcome,[8] partner in Burroughs Wellcome & Co (BW&Co) from 1880 who, in the mid-1890s, pioneered the development and production of anti-toxins in Britain.[9]

Liebenau's strong association between science and technology and the marketing of medicine is plausible as a rational narrative. However, subsequent research into the development of the market for medicine in relation to medical reform, the nature of medical science in the nineteenth century, and the history of the predecessor company of S M Burroughs & Co (SMB&Co) suggests that the interpretation is open to question. Placed within the emergence of the contemporary market for medicine, the test conducted here focuses on the contributions made by Silas Burroughs and the enterprise he established after moving from Philadelphia to London in 1878. Historians have concentrated on their successors, Henry Wellcome and BW&Co, probably because from 1895 Wellcome was the sole surviving partner of the latter company until his death in 1936. The significance of Silas Burroughs's predecessor company, however, lies not in historians' neglect of its brief existence, but in the important contribution Burroughs made in establishing innovative marketing foundations for a modern pharmaceutical industry in Britain. Within months of BW&Co's trading in Britain, the *Medical Press and Circular* had praised the company's success in introducing innovative American products through a novel approach to marketing drugs.[10] On the opening of a large factory at Dartford in 1888, the firm of BW&Co was referred to by a reporter in the *Chemist and Druggist* as "an exponent of modern pharmacy", which, through distinctive advertising and promotion had created "an entirely new class of business" and established a "world-wide reputation . . . within the last ten years".[11]

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industrial performance, 1830–1939, Aldershot, Gower, 1986, pp. 82–101. This study grew out of Liebenau's primary research into the history of the American pharmaceutical industry, the subject of *Medical science and medical industry: the formation of the American pharmaceutical industry*, Basingstoke, Macmillan, 1987.

[7] Liebenau, 'Marketing high technology', op. cit., note 6 above.

[8] Ibid., p. 91.

[9] Almost certainly, Burroughs Wellcome & Co became the largest and indisputably the leading pharmaceutical manufacturer in Britain by 1914, the first to establish laboratories employing scientists of the highest calibre, who conducted pure research in addition to contributing to the company's commercial success. For an introduction to the history of BW&Co and a portrayal of the two partners, see Robert Rhodes James, *Henry Wellcome*, Hodder & Stoughton, 1994.

[10] *Med. Press Circular*, 3 Aug. 1881.

[11] *Chem. Drug.*, 28 Jan. 1888, **32**: 104–6.

Significantly, the reference to "ten years" included the period when SMB&Co was in business. The other justification for examining the company's history is that it provides evidence against which Liebenau's interpretation of the relationship between medicine and marketing during the late nineteenth century can be tested.

The Nineteenth-Century Market for Medicine: Narrative and Interpretation

The characteristics of the market for medicine into which Burroughs sought to introduce innovative American medical goods were those of expansion and competition. Expansion was partly a consequence of a long-term rise in real incomes begun in the eighteenth century. Substantial falls in commodity and wholesale prices occurred in the 1870s and 1880s and contributed to increasing purchasing power.[12] Falling drug prices imposed a downward pressure on profit margins which competition intensified.[13] Competition also resulted from the emergence of rival groups, each possessing an interest in stimulating the demand for medicine and in so doing contributing to the medicalization of society. First, the apothecaries spearheaded the drive to sell drugs. Chemists and druggists, whose numbers, it is estimated, increased fourfold between 1865 and 1905—from something over 10,000 to more than 40,000[14]—added to the momentum by selling drugs over the counter to meet demand generated by self-medication. Those chemists who could afford to avoid stocking patent or proprietary medicines, for which increasingly extravagant claims were vigorously advertised,[15] formed a recognizable élite in the trade, the core of an aspiring profession. They were aided by the growing numbers of wholesaler–manufacturers who, by expanding the supply and range of ingredients, facilitated retailers' ability to make up their own preparations. The retailers' tactic was to concentrate on selling at lower prices those orthodox medicines which medical practitioners dispensed at substantial profit to themselves.[16] However, commercial pressures compelled most chemists to stock a wider range of medications and toiletries. These extended to patent and proprietary medicines such as Eno's Fruit Salt for bile-laden blood, Mother Siegal's Curative Syrup for unspecified stomach ailments, and Beecham's pills. The ingredients of such proprietary medicines were secret, their trade names protected by law from 1875, and they were heavily advertised as cures for numerous conditions.[17] Both the medical profession and suppliers of drugs or pharmaceuticals disapproved of such products.

[12] C H Feinstein, 'A new look at the cost of living, 1870–1914', in James Foreman-Peck (ed.), *New perspectives on the late Victorian economy: essays in quantitative economic history 1860–1914*, Cambridge University Press, 1991, pp. 151–79.

[13] Stanley Chapman, *Jesse Boot of Boots the chemists*, London, Hodder & Stoughton, 1974, p. 26.

[14] Ibid.

[15] Hilary Marland, 'The medical activities of mid-nineteenth-century chemists and druggists, with special reference to Wakefield and Huddersfield', *Med. Hist.*, 1987, **31**: 415–39; S W F Holloway, 'The orthodox fringe: the origins of the Royal Pharmaceutical Society of Great Britain', in W F Bynum and R Porter (eds), *Medical fringe and medical orthodoxy, 1750–1850*, London, Croom Helm, 1988, pp. 129–35; S F W Holloway, 'Cutting remarks: reflections on the origins of the Proprietary Trade Association', *Pharm. J.*, 1996, **256**: 198–9.

[16] Marland, op. cit., note 15 above, pp. 418–39. See also A McAuley Brownfield-Pope, 'From chemist shop to community pharmacy: wide study of retailing chemists and druggists, *c.*1880–1960', PhD thesis, University of East Anglia, 2003, chaps. 1–3.

[17] In 1808, a Nottingham chemist sold more than 200lbs of opium and 600 pints of Godfrey's Cordial to the local poor. Roy Porter, 'Death and the

Similar diversity in business practice was evident among medical practitioners who, like chemists and druggists, belonged to an over-supplied occupation in which many struggled to survive.[18] Those reduced to becoming "sixpenny doctors", selling drugs and bottles of medicine for 6d and handing back change in cash bore a "degrading stigma of trade".[19] Others had to sacrifice their independence in clinical practice in order to make a medical living by serving friendly societies, clubs, or poor law institutions. The élite among physicians fulfilled their role as consultants in the growing number of hospitals; those in London, for whom private patients continued to be a lucrative source, enjoying the highest status and incomes.[20] Symptomatic of efforts to fulfil rising aspirations through demarcation between the various groups were the Apothecaries Act of 1815, the establishment of the Pharmaceutical Society in 1840 and of the British Medical Association in 1856, the 1858 Medical Act, and the Pharmacy Act of 1868.[21]

The characteristic products bought and sold in the market for medicine reflected the persistence of a traditional emphasis on the use of drugs to restore a healthy balance. The regulation of air, food, drink, sleep, and lifestyle were central to recommended regimes.[22] Dietetic food, therefore, fell well within the contemporary definition of medicine. At the other end of the spectrum, by the late nineteenth century, the category of science-based therapeutics was emerging. The use of the term "science" by doctors to distinguish between the practices of medical practitioners and other healers had begun early in the century.[23] It could be linked to the application of new ideas and techniques applied in hospitals, even though competing views as to the definition of "science" persisted.[24] The consultants who dominated hospital practice by the late nineteenth century often regarded treatment as experimental before prescribing for their lucrative private patients. Not all consultants were specialists, many acted as generalists, basing their reputation as much on their gentlemanly status as on their scientific knowledge. They were as much susceptible to fads and fashions as doctors working in humbler circumstances. However, for physicians of all classes, the notion of diagnosis and the prescription of drugs appeared

doctors in Georgian England', in R Houlbrooke (ed.), *Death, ritual and bereavement*, London, Routledge, 1989, p. 93. Bile beans were advertised as applicable to 38 ailments and Beecham's pills to 31. Thomas Richards, *The commodity culture of Victorian Britain: advertising and spectacle, 1851–1914*, London, Verso, 1991, p. 180. Sales of patent medicines are estimated to have risen from £0.5 m in the mid nineteenth century to £4 m by 1900. Chapman, op. cit., note 13 above, pp. 22–3.

[18] Anne Digby, *The evolution of British general practice, 1850–1948*, Oxford University Press, 1999, p. 101.

[19] Irvine Loudon, 'Medical practitioners, 1750–1850, and the period of medical reform', in Andrew Wear (ed.), *Medicine in society*, Cambridge University Press, 1992, pp. 219–47, on p. 241.

[20] Lindsay Granshaw, 'The rise of the modern hospital in Britain', in Wear (ed.), op. cit., note 19 above, pp. 197–218, on pp. 205–9.

[21] S W F Holloway, *Royal Pharmaceutical Society of Great Britain: a political and social history*, London, Pharmaceutical Press, 1991, pp. 240–61.

[22] Christopher Lawrence, 'Incommunicable knowledge: science, technology, and the clinical art in Britain, 1850–1914', *J. Contemp. Hist.*, 1985, **20**: 504–12; Michael Worboys, *Spreading germs: disease theories and medical practice in Britain, 1865–1900*, Cambridge University Press, 2000, pp. 284–9.

[23] John Harley Warner, 'The idea of science in English medicine: the "decline of science" and the rhetoric of reform, 1815–1845', in Roger French and Andrew Wear (eds), *British medicine in an age of reform*, London, Routledge, 1991, pp. 136–64, on pp. 154–7.

[24] Christopher Lawrence, *Medicine in the making of modern Britain, 1700–1920*, London, Routledge, 1994, pp. 38, 72.

to be a more focused approach and less time-consuming than the regimens typically advocated by traditional physicians. These tended to be protracted, expensive, and disagreeable.[25]

Physicians were in a powerful position to decide which medicines should be employed in their hospitals and in the growing number of other institutions that engaged their services, an increasingly important dimension of the market. The payment of physicians for medicine declined during the century,[26] but for consultants and general practitioners alike, compensation could be sought through their role as sources of prescriptions and advice. By prescribing the use of the medical products they favoured, payment for repeated advice became integral to the process of competing for patients and an alternative method of generating income. Similar consideration regarding consumers' satisfaction affected the trading activity of chemists and druggists whose own preparations encountered increasing competition from proprietary medicines.[27]

When Burroughs set up his business in London in June 1878, he confronted a market which exhibited contrasting characteristics. At one end, chemists and druggists were expanding the scope for self-doctoring and dosage; at the other, even though the literature of medical science itself was fiercely contested,[28] consultants and the élite among general practitioners were advancing an association with science to bolster their positions in the professional hierarchy, to enhance remuneration, and to secure medical control.[29] In such a complex, fluid market, opportunities existed for suppliers who could project an image of scientific modernity for the products on sale. For example, one advertisement referred to the preparation of a dietetic food, supplied to S M Burroughs & Co as the agent, to be taken under the supervision of an experienced chemist.[30] Another referred to its manufacture on Justus von Liebig's principle, that the "restorative remedy" was listed in the German Pharmacopoeia, and that the product had yet to be introduced in England on an appreciable scale.[31] Market opportunities also existed for those offering products which appealed to consumers as more acceptable than those hitherto available, for medications that were palatable, more easily administered, and which affected bodily functions to a lesser degree. Traditional homeopathy offered such an alternative. Burroughs, however, sought to promote the novel American products he introduced as thoroughly modern, submitting them to the *Lancet* for testing and report in a regular column entitled 'New inventions'.[32] The association of products with a scientific approach in production and modernity in form were additional elements in the marketing strategy introduced to England by Silas Burroughs in 1878.

[25] Porter, op. cit., note 3 above, p. 4; *idem*, op. cit., note 2 above, pp. 204, 206.

[26] Holloway, 'The orthodox fringe', op. cit., note 15 above, p. 154.

[27] E M Tansey, 'Pills, profits, and propriety: the early pharmaceutical industry in Britain', *Pharm. Hist.*, 1995, **25**: 3–9, p. 3; see also Roy Porter, *Health for sale: quackery in England 1660–1850*, Manchester University Press, 1989.

[28] Worboys, op. cit., note 22 above, pp. 284–9.

[29] Lawrence, op. cit., note 24 above, pp. 75–8.

[30] *Chem. Drug.*, 15 Feb. 1879, **21**: 63.

[31] Ibid., 14 June 1879, p. 5. Burroughs wrote to the editor of the *Medical Times and Gazette*, enclosing a sample product submitted for examination, testing, and a report in the journal. He expressed the wish that the report should include a reference to the favourable opinion on the company's products by Dr Roberts when addressing a meeting of the Lancashire and Cheshire branch of the BMA. WF/E/02/05/02, 25 July 1879.

[32] *Medical Times and Gazette*, 10 Oct. 1879. See also footnote 34 below.

The Formation and Development of S M Burroughs & Co

To offer an alternative account of this process, it is necessary to focus on the firm of SMB&Co. Following a series of positions as clerk and counter-salesman in drug stores in the State of New York from the age of nineteen, Burroughs probably joined the small Philadelphia drug-manufacturing firm of John Wyeth & Brother in 1869 when he was twenty-three and travelled on the road as a detail man.[33] He studied at the Philadelphia College of Pharmacy in 1876–7, graduating after writing a thesis entitled 'The compression of medicinal powders'.[34] The combination of the apprenticeship with the Wyeth brothers and the opportunity at college to research a subject in depth proved to be a perfect launching pad for Burroughs's long-term career in the pharmaceutical industry. The business experience of Frank Wyeth and the knowledge of John Wyeth (a Philadelphia graduate pharmacist) provided further learning opportunities, especially because in 1872, the brothers had patented the first American rotary press and had begun to manufacture compressed pills in the following year.[35]

Although this represented low technology, it remained for many years the basis of a rapidly expanding trade in compressed medicines. In his 'Inaugural essay' (graduating dissertation), Burroughs reviewed the history, state of the art, current methods of production, and the extent of the practice of making compressed medicines. He consulted sources, citing trials and publications from the United States, Germany, and Britain.[36] He possessed expert knowledge, therefore, of the theory, manufacture, and history of all aspects of compressed medicines. He was also a proven success as a detail man selling the new products (medicinal powders in tablet form, hypodermic tablets, triturates, and medicinal lozenges), which, like virtually all similar products at the time, offered questionable medicinal value but were, at least, harmless. Wellcome acknowledged this early in 1882, telling Burroughs, "No chemist, no agent can place articles before the profession as intelligently as you can".[37]

Burroughs's flaws had barely begun to irk Wellcome at this time, though they were soon to exasperate him. John Wyeth, however, had long before lost patience with his former detail man. He regarded Burroughs as wayward in his approach to detailing, incurring excessive costs in salary and expenses. He also entered into ill-considered commitments with agents and exhibited a general resistance to managerial control. To distance themselves from the perceived flaws, yet wishing to exploit Burroughs's undoubted knowledge of the new compressed medicines, the Wyeth brothers offered Burroughs a sole overseas agency to sell their products in Britain and Europe. This was a low cost arrangement for the Wyeths. They thought that by visiting doctors and chemists and leaving samples

[33] On Silas Burroughs's life, see G MacDonald, *One hundred years: Wellcome: in pursuit of excellence*, London, Wellcome Foundation, 1980; John Davies, 'Silas Burroughs, Part 1: The early years from Medina to medicines', *Wellcome Journal*, Feb. 1991: 10–11; Rhodes James, op. cit., note 9 above, chs 3–5.

[34] University of the Sciences in Philadelphia, College of Pharmacy Box, manila envelope and S M Burroughs, 'Inaugural Essay', 1877. There is some uncertainty regarding both the date when Burroughs joined the Wyeths and the duration of his studies. I am grateful to Julia Sheppard for this information.

[35] Tom Mahoney, *The merchants of life: an account of the American pharmaceutical industry*, New York, Harper, 1959, p. 31.

[36] Davies, op. cit., note 33 above, pp. 10–11.

[37] However, his weaknesses were shortly to frustrate Henry Wellcome, too. WF/E/03/01/01, p. 32, H Wellcome to S M Burroughs, between 23 Jan. and 16 Feb. 1882.

(a practice they believed to be completely unknown in Britain), Burroughs would quickly succeed, despite his faults, in creating a market for the new products.[38]

Consequently, in the spring of 1878, at the age of thirty-two, Burroughs left Philadelphia for London. His early contacts with the medical profession prompted his characterization of "the Englishman" as one who took time to convince, but who, "once convinced he stands firmly by the goods he has found good".[39] He set out to assure doctors of the unique selling points of compressed medicines: "They are convenient, both to carry and to use; they are accurate, enabling the physician to administer precisely the dose desired; and they are not liable to change by keeping". Accurate allopathic dose represented an advance in the ability to control medication; other qualities affecting ease of administration were of a more cosmetic character, though from the standpoint of patients and chemists, they were a desirable development.[40] Describing the contributions the business had made to the development of the trade, the company drew attention to its introduction of "a progressive pharmacy" in which reliability and accuracy based on a scientific approach to medicine were combined with the pleasing characteristics of homeopathic medicine. The result was to free consumers from the "nauseous and unsightly messes frequently compounded . . . worse than the diseases they were prescribed to cure".[41] Samples of the Wyeths' chlorate of potash tablets, chloride of ammonia, dialysed iron, and pepsin, as well as Parker's lint were dispatched to London hospital consultants. Their advantages were advocated during the visits that followed; this was a unique approach in the trade at the time.[42] Believing that British doctors associated compressed pills with American quackery, Burroughs claimed to be the first to replace the word "pill" with the word "tablet" which he registered as a trademark in 1878.[43]

Making personal connections, establishing communications, and being persistent were key elements in the new approach to marketing. Samples, free of charge, were sent to consulting rooms in hospitals. Doctors were assured that stocks were available in the dispensary for prescriptions to hospital patients.[44] Hospitals were regarded as the most effective route through which to establish the credibility of preparations leading to prescriptions for doctors' private patients and sometimes to favourable publicity. To Lennox Browne, FRCS, Burroughs wrote:

> We beg to present the London Throat Hospital with a small quantity of our compressed Chlorate of Potash and Chlorate of Potash with Borax . . . We shall be happy to donate a further supply of guineas worth to the Hospital if you will see that they are made up and not thrown away as has been the case with some other Hospitals to which we had made donations . . . We feel much complimented in reading your article in the *Medical Times and Gazette* that you should speak so kindly of the compressed drugs . . . We trust that you will not object to our quoting from your article in our advertisements.[45]

[38] WFA, Acc82/1 Box 15, J Wyeth to S M Burroughs, 13 April 1881.

[39] WF/E/02/05/01, S M Burroughs to J Wyeth, 22 Oct. 1878.

[40] WFA, PB110, *Medical formulae of new and improved chemical preparations*, 1881, p. 35. The list and accompanying text refer to several products supplied before 1880.

[41] *Chem. Drug.*, 27 July 1895, **47**: 91.

[42] WF/E/02/05/02, S M Burroughs to Romford Chemical Co, 6 Nov. 1879.

[43] S M Burroughs to *Chem. Drug.*, 28 May 1892, **40**: 785.

[44] WF/E/02/05/01, S M Burroughs's letters to Middlesex, St Mary's, and Paddington hospitals, 10, 12, 19 July 1878.

[45] WF/E/02/05/02, S M Burroughs to Lennox Browne, 17 Oct. 1879.

From the beginning, advertising directed at medical professionals and chemists and druggists was limited primarily to the *Lancet, British Medical Journal, Medical Press and Circular, Medical Times and Gazette, Chemist and Druggist*, and to *Price's Circular* which commanded a wide international circulation. In this respect, Burroughs adopted an ethical advertising policy. The distribution in September 1879 of 2,500 sixteen-page booklets describing products is indicative of the scale of operation.[46] Burroughs sought to identify other potential customers through retailers prior to direct mailing. Thus, in relation to his campaign to promote chlorate of potash tablets in 1879 he wrote to Messrs Lowe & Co, chemists of Dumfries: "Not having received the promised list of clergymen, lawyers, public speakers, & singers of your neighbourhood, we conclude you must have forgotten it, & beg again to call your attention to it, as a matter of importance to yourselves as much as to us."[47] John Wyeth disapproved of the volume of advertising expenditure and accused Burroughs of suffering from "patent medicine impulses",[48] such as that displayed in the marketing of chlorate of potash tablets, as effective in clearing "a husky voice . . . as by magic in the course of a few minutes".[49] Alfred Bishop's granular effervescence citrate of caffeine, advertised as "the best known remedy for headaches" was another example, although the *British Medical Journal* reported after testing, "We have administered it in nervous headaches and in the malaise following an alcoholic debauche with benefit".[50] The sale of Nubian Waterproof Blacking (widely advertised as "THE NEW DISCOVERY. A profitable addition to a druggist's business")[51] took Burroughs even further from the ethical medicine business. Wyeth urged Burroughs to stick to visiting physicians to offer them samples.[52] Burroughs defended his advertising policy by explaining that British doctors paid more attention to journals (which charged higher fees than in the US) and that editors wrote good notices relating to their advertisers. These, in turn, provided useful quotations for inclusion in trade circulars.[53]

The recruitment of commercial travellers to share the burden and to create a market outside London proved to be problematic. Burroughs told the Wyeths, "It is almost impossible in this country, the commercial traveller is a stereotyped man. Men who can do what we want are not to be had and would be too expensive even if we could find them; we are, therefore, doing it ourselves".[54] Without false modesty, Burroughs advertised for "one or two medical gentlemen (who would like to assist the leading men in the profession in the principal towns in England and Ireland) to introduce a new pharmaceutical preparation [Chlorate of Potash] and surgical appliance of much merit and interest".[55]

[46] Ibid., Order, 23 Sept. 1879.

[47] S M Burroughs to Lowe & Co, 6 May 1879, quoted in Rhodes James, op. cit. note 9 above, p. 75, note 31.

[48] WFA, Acc82/1 Box 15, J Wyeth to S M Burroughs, 13 Apr. 1881.

[49] *Chem. Drug*., 15 Dec. 1885, **27**: 97.

[50] WF/M/GB/08/01, clippings of BW&Co ads from *Br. med. J*., Book 1, 1880.

[51] *Chem. Drug*., 15 March 1879, **21**: 63.

[52] WFA, Acc82/1 Box 15, J Wyeth to S M Burroughs, 13 Apr. 1881.

[53] WFA, Acc82/1 Box 15, J Wyeth to H Wellcome, 9 July 1880; WF/E/02/05/01, S M Burroughs to J Wyeth, 22 Oct. 1878.

[54] WF/E/02/05/01, S M Burroughs to J Wyeth, 13, 19 Aug. 1878.

[55] WF/E/02/05/01, draft advertisement for the *Lancet*, 29 Sept. 1879. The "pharmaceutical preparation" was to alleviate bronchial irritation and hoarseness. It was advertised as especially convenient for singers and public speakers, including clerics. The appliance referred to was probably the Silas Burroughs Ammonia Inhaler, described in a

C Stanley Churton was appointed as commission agent to call on medical men and chemists. The terms were 20 per cent commission on orders from the former ("knowing that calling on medical men is time-consuming") and 15 per cent on chemists' direct orders.[56] A similar advertisement was directed at pharmacists.[57] In March 1879, Burroughs reported that five travellers were constantly on the road.[58]

Burroughs's approach to chemists and druggists was aimed at encouraging them to seek orders from their existing doctor clientele and sometimes included special inducements. For example, he wrote to Messrs J & H Smith, "We have pleasure in presenting to your Medical Friend specimens of [etc. etc.]. If he should see fit to order those articles through you we will in addition to our lowest prices, donate to his Hospital 1/3 as much as the order amounts to".[59] Samples, wrapped to display the chemist's own name, were distributed to the homes of medical men (located through a directory) within the district served by the chemist. Letters informed each physician that his local chemist had supplies of the sample goods in stock. At the same time, chemists were encouraged to advertise using counter displays,[60] a method of reinforcing the promotion to customers.

A similar pincer movement, directed simultaneously at professionals and trades people, involved expert endorsements, another dimension of Burroughs's marketing strategy. The firm of Claudius Ash & Son, dental wholesalers in London, was believed to be insufficiently vigorous in pushing Lawton's Absorbent Cotton ("whiter, free from contamination, most absorbent of its kind"), a product popular in the US. Burroughs supplied more specimens which bore the wholesaler's name on the wrapper indicating the wholesaler's status as an agent. He also undertook to obtain recommendations "from one or two leading men in the dental profession".[61] One eminent London surgeon was so impressed by a sample of the cotton that, according to Burroughs, he also seemed willing to endorse it fully and give his name to it as "Bryant's Absorbent Cotton". "His name will be of great service in introducing it to medical professionals in this and other countries, and he will assist us considerably, we believe, by mentioning it in his books".[62] Endorsements were inserted into diaries such as the *Physicians and surgeons memorandum book* (September 1879), which Burroughs issued to medical men.[63]

In the expectation that fluid extracts would be increasingly profitable, Burroughs arranged for the Wyeths to supply a range of these, including jasmine, dock, and sarsaparilla.[64] A significant next step was the advertisement of a range of items having trademarks registered under his own name: Silas Burroughs's Bromide of Potassium and Calisaya Bark Elixirs, Dextra Quinine, Pepsin, and Hazeline.[65] His introduction of

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quotation from the *Lancet* as "an ingenious and convenient device", which was claimed to remove catarrh and render the patient "less susceptible to the weather". WFA, PB110, *Medical formulae*, op. cit., note 40 above, p. 39.

[56] WF/E/02/05/01, S M Burroughs to C Stanley Churton, 9 Oct. 1878.

[57] WF/E/02/05/01, draft advertisement, 29 Sept. 1879.

[58] WF/E/02/05/02, S M Burroughs to L W Warner & Co., NY, 18 March 1879.

[59] Ibid., S M Burroughs to J & H Smith, 15 Oct. 1879.

[60] Ibid., S M Burroughs to Heander & Riches, 20 March, 1879.

[61] Ibid., S M Burroughs to Ash & Son, 3 Sept. 1879.

[62] Ibid., S M Burroughs to J Wyeth, 8 May 1879.

[63] Davies, op. cit., note 33 above, p.13.

[64] Annual sales of between £4,000 and £5,000 were described as "very large." WF/E/02/05/01, S M Burroughs to J Wyeth, 11 July, 15 Aug. 1878.

[65] WF/E/02/05/02, S M Burroughs to J Wyeth, 26 Oct. 1878.

Silas Burroughs's Beef and Iron Wine (*improved*) "A HIGHLY CONCENTRATED STRENGTH GIVING FOOD TONIC" in the spring of 1880, offended the Wyeths who regarded it as being in competition with their own Beef and Iron Juice. None the less, Burroughs refused their proposal that he should purchase the superior Wyeth formula "at cost", while the Wyeths supplied the beef and iron solution to which wine could be added in London.[66] Under the terms of their agreement, Burroughs had the option of acting as agent for other firms' products which did not compete with theirs.

Agency agreements proliferated. Among the first in 1878, was an agency for Nubian Waterproof Blacking,[67] a product that was supplied to Burroughs by the Blake & Goodyear Boot and Shoe Machinery Co and sold through chemists.[68] Within a year, he claimed to have succeeded in selling blacking to a majority of co-operative societies.[69] However, most agencies he acquired were for remedies, tonics, elixirs, and health foods. American trademarked preparations registered under Burroughs's name as sole agent included Professor Horsford's Acid Phosphate (presented by the makers as a remedy for physical exhaustion, headaches, and stomach disorders),[70] and Fellowes Medical Manufacturing Co's compound syrup and hypophosphates (a popular all-purpose remedy).[71] From the London Manufacturing Co in New York, Burroughs secured supplies of Starr's Extract of Beef to sell in cans in a rapidly growing but increasingly competitive market, an initiative which, by March 1879, had convinced Burroughs of the imperative to brand items in order to confer speciality status.[72] Burroughs's Hazeline (an extract of witch hazel) was one of the first. Among this varied product range, although Wyeth's compressed medicines consisted essentially of formulations of existing products, because of the form they took and the advantages in administration which they offered these innovative products proved to be the most successful in the British market for medicine.

The Acquisition of the Kepler Malt Extract Company

Dietetic food was to become a leading product of BW&Co. The product originated in December 1878, when Burroughs was party to an agreement to form the Kepler Malt Extract Company (KMEC). The purpose was to exploit the English patents for the formulae and for the mashing apparatus to make a dietetic preparation from a mixture

[66] WFA, Acc82/1 Box 15, J Wyeth to S M Burroughs, 13 April 1881; WFA, PB110, *Medical formulae*, op. cit., note 40 above.

[67] *Chem. Drug*., 15 March 1879, **21**: 63.

[68] Rhodes James claimed that Kepler Malt Extract was the first British product to be added to the Silas Burroughs line, but the association with Nubian Blacking Co preceded this. Rhodes James, op. cit., note 9 above, p. 77. WF/E/02/05/01, T Y Kelly to S M Burroughs, 16 Sept. 1878; WFA, Acc99/6/7, Memorandum of Association, Jan., 1881, which refers to the original agreement including Silas Burroughs in December 1878. Evidence of selling Kepler occurs in March 1879. WF/E/02/05/02, S M Burroughs to Alfred Lewis, 4 March 1879.

[69] WF/E/02/05/01, T Y Kelly to S M Burroughs, 16 Sept. 1878; 3 Sept. 1879.

[70] WFA, Acc85/16, Trade Marks, Silas Burroughs & Co. The substance was later found to contain fluorine, a poisonous or deleterious ingredient. This verdict appeared in *Journal of American Medicine*, 1939, **113** (1): 78.

[71] WFA, Acc85/16, Trade Marks, Silas Burroughs & Co.

[72] WF/E/02/05/02, S M Burroughs to London Manufacturing Co. NY, 18 March 1879, p. 95: "[request substitute] 'keep in a cool place' for 'keep on ice' as ice is not plentiful here in summer"; 23 Sept. 1879; 7 May 1879. S M Burroughs to Wans & Son, 2 May, 22 Sept. 23 Sept. 1879.

of cod liver oil, glycerine spirit or alcohol, and malt from which variant combinations could be produced.[73] His connection with this project began after an approach by Philip Lockwood, owner of a patent for a malt extract. Lockwood was also chairman of the Condensed Beer Company located in Jersey, whence malt was supplied to KMEC. Burroughs was invited to become managing director of KMEC and he used his own London premises for mixing, bottling, and "putting up" (labelling and packing) the cod liver oil and malt extract ready for sale, as well as for marketing the new dietetic preparation. When the enterprise was registered as a joint stock company at the Russell Street office in January 1879,[74] Burroughs held shares valued at £1,000 which represented almost 50 per cent of paid-up capital.[75] In addition to dividends, Burroughs was to receive 5 per cent on sales for his management services paid from Lockwood's royalties, the patent on Lockwood's "secret process" having passed to KMEC.[76] Within two years, Burroughs had masterminded the acquisition of the company. This included the transference of Lockwood's patent and trademark to the ownership of BW&Co, an acrimonious transaction, the final details of which were left to Wellcome to negotiate during Burroughs's absence overseas.

The connection between Burroughs and malt extract was not serendipitous. As early as July 1878, he had asked John Wyeth to secure for him a sole agency of some first class malt extracts from the US for selling in Britain, "We are satisfied it will take[?] here and if we don't ... somebody else will ... We want fluids or extracts if there is money in them."[77] It seems that the technical chemist at Allen & Hanburys thought along similar lines, enabling the company in 1879 to commence the manufacture of malt extract, by his patent method of extraction using a vacuum which was claimed by the company to be the first in Britain.[78] For some years, malted grain extract, condensed and mixed with castor or cod liver oil, had become established as a nutritive and restorative remedy and was listed in the German Pharmacopoeia. In the US, too, where Burroughs appears to have possessed some experience of researching if not selling malt extract,[79] it had begun to compete with cod liver oil, which had long been employed in Britain and Continental Europe as a treatment for phthisis and other wasting diseases, and as a remedy for defective nutrition.[80] The objectionable taste and pungent odour of cod liver oil had been reduced during the 1870s by the steam process, invented and widely adopted in Norway, but even the processed oil could still cause nausea.[81] Malt extract, however, not only further disguised the objectionable characteristics of cod liver oil but could also be used alone or with other drugs, for example, quinine, pepsin, or iron for the sake of the digestive value of pure malt extract.[82] When KMEC began to produce what the *Commissioner Patents Journal* recorded as "an invention of new or improved

[73] WFA, Acc99/6/7, Memorandum of Association. 20 Oct. 1879.

[74] Ibid.

[75] WFA, Acc99/6/7, Memorandum of Association, 22 Oct. 1879.

[76] WFA, Acc99/6/7, P Lockwood to BW&Co. 22 Oct. 1879, 9 April 1881.

[77] WF/E/02/05/01, S M Burroughs to J Wyeth, 11 July 1878.

[78] Geoffrey Tweedale, *At the sign of the plough: 275 years of Allen & Hanburys and the British pharmaceutical industry, 1715–1990*, London, John Murray, 1990, pp. 78–9.

[79] WFA, Acc99/6/7, P Lockwood to J Wyeth, 28 Aug. 1879.

[80] WFA, Acc82/1, Box 21: *Chem. Drug.*, 15 Feb. 1879, **21**: 13; 15 July 1879, **21**: 23.

[81] F Peckel Möller, *Cod-liver oil and chemistry*, London and Christiana, P Möller, 1895, pp. v–vi, lvi–lvii.

[82] H A Phillips, 'Winter time is Kepler time', *Foundation News*, 2 (Oct. 1952), pp. 6–8.

medicinal compounds",[83] malt extracts had not, hitherto, been widely introduced in Britain.[84] This had changed when American and German companies began to advertise products similar to Kepler Malt Extract in the *Chemist and Druggist* and in British medical journals. The Kepler initiative gave Burroughs the opportunity to be among the innovators in the emerging dietetic market. His high expectations regarding a market trend were to be fulfilled both nationally and across the world. The vigorously promoted Kepler extracts, one of the strongest international brands until the 1930s, contributed to this.

Burroughs adopted an approach to marketing Kepler extracts identical to that applied to compressed medicines and other preparations. This consisted of the canvassing of chemists and druggists, visits to doctors and offers of special discounts or hospital donations in kind, ethical journal advertising, and the appointment of agents, usually on a 10 per cent commission.[85] An advertisement in the *Chemist and Druggist* in February 1879, announced the sale of "improved Malt extract ... containing all the valuable Nutritive and Digestive Properties of the Best Malted Barley, Wheat and Oats concentrated in vacuo. FREE FROM ALCOHOL. Possesses from five to ten times more value than any Alcoholic or Fermented Extract of Malt." Justus von Liebig was quoted as an authoritative support for the claim of the muscular and fat-producing elements contained in wheat and oats, and for the assertion that malt was rich in diastase. The advertisement, directed especially at hospitals and surgeons, referred to the company chemist's twenty years' experience ensuring that the "new and improved" process of malt extraction under his supervision produced a high quality product.[86] Where Wyeth's goods were thought to compete with Kepler extracts, Burroughs pushed the latter. He told his Dublin agent,

> We believe ... that "Kepler" goods will meet with a more ready sale in your market than the articles introduced from Messrs J. Wyeth & Bro ... We are advertising regularly in the *Medical Press and Circular* and as they have given the goods favourable notices to other preparations of malt we trust they will make this notice as strong as possible.[87]

Burroughs was relentless in seeking favourable publicity for the new product. When samples of Kepler extracts, sent to the editor of the *Medical Times and Gazette* for testing, appeared to have been overlooked, Burroughs wrote to him offering more, "in order to examine them sufficiently to warrant a notice of them in your journal".[88] Offering to supply any quantity requested for hospital testing, he added,

> we trust that in reporting proceedings of the Lancashire and Cheshire Branch of the [BMA] ... you will not omit from [your] report of Dr. Roberts' paper that Kepler Malt Extract was mentioned first on the list of articles he had found reliable and contained a proper amount of diastase. Other leading medical journals with whom we have advertised less than with yourselves have been ready to give me notice of our goods.[89]

[83] *Commissioner of Patents Journal*, 11 Dec. 1877, p.1391.

[84] WFA, Acc82/1 Box 21, *Chem. Drug.*, 15 July 1879, **21**: 23.

[85] WF/E/02/05/02, S M Burroughs to Alfred Lewis, 4 March 1879.

[86] *Chem. Drug.*, 15 Feb., 1879, **21**: 63. The formulae provided for 3 pints of spirit to 4 gallons of malt, 3 pints glycerine, and 1 gallon cod liver oil. Alcohol was substituted for spirit in export orders.

[87] WF/E/02/05/02, S M Burroughs to Hayes & Co, 13 March 1879.

[88] Ibid., S M Burroughs to editor *Medical Times and Gazette*, 2 May 1879.

[89] Ibid.

The *Lancet*'s verdict was that KME could be used with confidence; the *Medical Times and Gazette* placed the product first on the list of extracts of its kind because of its richness in diastase and as a digester of starchy food. In 1879, Silas Burroughs referred to KME as "selling more than all the rest together", though no comparable data for SMB&Co or BW&Co have survived. Sales by S M Burroughs & Co during its first year may have reached £2,000.[90] Sales of Kepler to the value of £5,150 were recorded in 1879/80, of £6,541 in 1880/1, and of £10,223 in 1881/1882. Trading profits of the Kepler enterprise were £2,879, £3,480, and £5,046, an average return on sales of 53 per cent.[91]

"Detailing" Doctors, Chemists and Druggists: The Americanization of Marketing Medicine in Britain

As sales expanded and agencies were added, Burroughs sought the support of another who possessed experience and skills comparable to his own. It was then that he approached Henry Wellcome, also a former Philadelphia College pharmacy graduate, who had been a detail man for the New York firm of McKesson & Robbins, drug manufacturers and competitors of the Wyeths.[92] Burroughs invited Wellcome to join him, either as a manager on a salary or as a partner.[93] Though Wellcome lacked financial resources, Burroughs recognized the reputation which, at the age of twenty-seven, the young man already enjoyed in the US, both for his knowledge of pharmacy and as a successful salesman. These were valuable assets, as were his connections in the American trade, and explain the lengths to which Burroughs was prepared to go to bring his own aspirations for the business to fruition by enlisting the young American.[94] In August 1879, he wrote to Wellcome, "Think there is a big show for manufacturing Pharmaceutical Preparations and if we go into it, it will be about the first in the field. Our house is the only one in the kingdom calling on doctors with samples of new things".[95] Burroughs was also sanguine with respect to the financial prospects. "You are the man I want to pull with," he wrote to Wellcome in 1879, "and we have confidence in each other's ability"; and in early 1880, "Don't fail to come. I'm sure if you do and see the prospects here and look over our books you will stay."[96]

The partnership of BW&Co commenced in September 1880. Even before it had been legally confirmed, however, Wellcome's value to the partnership was demonstrated at the Cambridge meeting of the British Medical Association in August. Drawing on his American experience where marketing methods were more advanced, his design of the firm's pharmaceutical exhibit attracted fulsome praise from the medical press.[97] Imaginative and spectacular exhibiting continued to be a feature of the partnership's marketing

[90] This estimate is based on one month's sales figures quoted by Rhodes James, op. cit., note 9 above, p. 75. No other data have been found.

[91] WF/E/02/05/02, S M Burroughs to editor *Medical Times and Gazette*, 2 May 1879; WFA, Acc99/6/7, KMEC balance sheets.

[92] Rhodes James, op. cit., note 9 above, pp. 61–4, 78–81.

[93] Ibid., p. 86. WFA, Acc89/72/01–4, A W J Haggis, 'The life and work of Sir Henry Wellcome' (unpublished typescript, 1942), p. 83, quoting S M Burroughs to H Wellcome, 7 Feb. 1880.

[94] For a detailed account of the origins of the partnership based on Wellcome's correspondence, see Rhodes James, op. cit., note 9 above, ch. 3.

[95] S M Burroughs to H Wellcome, Aug. 1879, quoted in Haggis, op. cit., note 93 above, p. 80.

[96] S M Burroughs to H Wellcome, 20 Oct. 1879, and early 1880, quoted in Haggis, ibid., p. 81.

[97] Rhodes James, op. cit., note 9 above, pp. 89–90.

policy to support the efforts of travellers. Burroughs's marketing philosophy was described in ponderous detail in a letter to Wellcome written in 1882, while on his overseas sales tour. Salesmen, he believed, should emphasize to customers that selling the products was in their own, as well as the partners' interest, and that as a result of expanding the retailer's sales and profits, the supplier's goods deserved to be pushed as thoroughly as the retailer's preparations.[98] Burroughs also advised on detailing doctors. In a note headed 'Instructions to travellers', he emphasized the importance of calling on the retailer before the doctor because the retailer could then be mentioned as an agent for the company, thereby increasing the likelihood of his receipt of an order.[99] In the case of chemists who declined to order, Burroughs advised that they should be persuaded to undertake to order the company's products in future when prescribed by a doctor. This enabled the salesman to tell the doctor that the drugs on the list were stocked by named chemists who were agents for the company's goods.

On the detailed logistics of enlisting the support of British doctors, Burroughs recommended canvassing them while in hospital, rather than in their homes where they saw private patients. This was because "The time of a London doctor which at hospital is nothing to him is worth a guinea a minute" in private consulting rooms. Wellcome was urged to "go for the hospitals strong", visiting for a few hours during afternoons, especially when doctors and surgeons assembled in their private room to chat at the end of the day. Burroughs had found doctors to be more likely to try novelties on hospital than on private patients, partly because they hoped that reports of any tests they conducted might be published. He also urged Wellcome to "get in with hospital surgeons and apothecaries" who would make appointments to see all the leading surgeons and others at convenient hours. Finally, he noted that Formula Lists of medical preparations offered by the company should be given to students and that he should "talk them up immensely".[100] Before the first year of the partnership ended, Wellcome had begun to offer the benefit of his own experience. He brought the agency of McKesson & Robbins's sugar-coated pills into the partnership and, in Burroughs's absence in 1881–83, implemented a systematic method for researching the market and monitoring and reporting on salesmen's performances, thus building on the marketing strategy introduced to Britain by Burroughs.

A perceived conservatism of general practitioners tended to perpetuate traditional forms of medicine and discouraged connections with pharmaceutical firms.[101] However, doctors' responses to market surveys undertaken by BW&Co's salesmen in 1881 and 1882, showed them to have been favourably impressed by Wyeth's compressed tablets and hypodermics, Hazeline face cream, Kepler malt extracts, and McKesson's sugar-coated pills. Recourse to prescription was less time-consuming for busy general practitioners than novel procedures; novel prescription medicines could demonstrate to patients that something practical was being effected.[102] Orders for these goods may be interpreted as indicative of a profession willing to receive visits from travellers for the first time and willing to accept samples of

[98] WF/M/GB/32/1, Records of travellers' calls upon chemists and druggists at home and abroad, 1881–5, book 1.

[99] WFA, Acc87/33/69, 'Instructions to Travellers'.

[100] WFA, Acc87/33/2, S M Burroughs to H Wellcome, 19 Jan. 1882.

[101] Digby, op. cit., note 5 above, p. 100.

[102] Ibid., p. 99.

new products, the two main features of the new method of marketing drugs. Either this indicates a profession more receptive to innovation than has been portrayed hitherto, or it is testimony to the effectiveness of the company's travellers.[103] Compressed tablets (under the Tabloid brand registered by BW&Co in 1884), Hazeline, and Kepler goods remained the company's leading brands well into the twentieth century.

Technical Innovation, Scientific Advance, and Transformation of the Market for Medicine: Cause or Consequence?

The unparalleled scientific contribution to the foundation of a modern, laboratory-based pharmaceutical industry in Britain by BW&Co (and specifically by Henry Wellcome) between 1894 and 1914, has been well documented by E M Tansey and Rosemary Milligan.[104] Less well known, and hitherto misinterpreted, are the contributions to the Americanization of marketing in Britain before 1895, made by BW&Co, and especially by its predecessor, SMB&Co. Although evidence relating to all pharmaceutical businesses at this time is scarce, those comparisons which are possible provide some indication of the source of the early commercial success of SMB&Co and of BW&Co. Although manufacturing and selling a similar range of products to those of Allen & Hanburys, including proprietary goods (compressed medicines and cod liver oil and malt extract and infant food), by 1892, BW&Co employed 600 workers.[105] This figure was not reached by Allen & Hanburys until the First World War. Employees of BW&Co already exceeded 1,000 by 1901. By 1911, sales of £383,211 were recorded by Allen & Hanburys compared with £575,756 for BW&Co.[106] The essential difference between the two companies (and other competitors) before 1895 was marketing strategy.

Other firms were slow to emulate their methods until the twentieth century. In 1907, one of BW&Co's travellers remarked on the continuing practice of British firms to await orders (delivered personally or by mail order). This essentially passive approach to the market, he believed, placed BW&Co's well-prepared travellers on the road in an advantageous position to sell more effectively (thereby justifying higher salaries). He described the typically passive role of drug house representatives in Britain as "wandering around every three months in the ordinary way and having the orders handed to them". He contrasted this approach with the proactive engagement of travellers working for BW&Co who received regular briefings as to how to discuss with chemists the links between the company's

[103] WF/M/GB/32/2, 'Records of travellers' calls upon medical men at home & abroad, 1881–7', book 2, 26 Feb. 1883, 15 March 1883.

[104] E M Tansey and Rosemary C E Milligan, 'The early history of Wellcome research laboratories, 1894–1914', Wellcome Institute symposium on the History of the Pharmaceutical Industry, Jan. 1987; E M Tansey, 'The Wellcome physiological research laboratories, 1894–1904: the Home Office, pharmaceutical firms, and animal experiments', *Med. Hist.*, 1989, **33**: 1–41.

[105] WFA, Acc82/1 Box 13, 'Talk' 21/7/1893.

[106] These exiguous comparisons were dictated by the limited availability of data on pharmaceutical firms, the exception being Tweedale, op. cit., note 78 above, pp. 115, 118; WFA Acc 96/45, BW&Co, Sales Book 2, p. 1. Boots and Beechams were altogether larger enterprises, but before 1911 these were essentially patent and proprietary medicine manufacturers, while Boots' extensive retail organization renders comparison even more irrelevant. Among manufacturers of ethical pharmaceuticals, BW&Co was almost certainly the largest.

products included on a new regularly reviewed "push list", to talk about the chemists' trade and local dispensary practices, as well as how to interview medical practitioners.[107]

Allen & Hanburys, for example, typically announced new developments in the medical press, issued price lists, catalogues, and circulars. There is no evidence, however, that their travellers visited surgeries or hospitals before 1911, though the company sometimes distributed samples before the First World War. Mail orders continued to be important in the 1920s.[108] When American pharmaceutical companies began to show interest in the Canadian market, in 1905 the manager of Allen & Hanburys' Canadian business complained that they were destroying the company's sales.[109] May & Baker's first salesman appears to have been appointed during the early 1890s (two were employed in 1894), but there is no mention by the firm's historian of detailing physicians.[110] The Nathan brothers relied on heavy advertising and mail order to sell Glaxo products shortly before 1914, although direct approaches were made to infant welfare centres and contacts established with municipal authorities.[111] Glaxo employed travellers before 1929, though its historians do not mention detailing.[112] Edgar Jones first refers to Glaxo representatives calling on general practitioners from 1936 when the marketing strategy switched from "propaganda" to an ethical policy.[113] Of the remaining pharmaceutical firms little is known, though three, T & H Morson & Son, Whiffen, and Howard were processors of raw materials for rapid sale to wholesalers and manufacturers and did not require detailing. All were too small to support more than a rudimentary laboratory.[114]

Liebenau's emphasis on the degree to which scientific developments affected medical practice is exaggerated. Michael Worboys has shown that the scientific context within which medicine was prescribed and sold was characterized by the existence of contradictory ideas and ideals held by doctors, as well as extreme uncertainty regarding the nature, causes, and treatment of disease.[115] The context of this debate was a prevailing attitude among doctors that it was as important to be a well-informed gentleman possessing social skills and judgement, as it was to command technical expertise or medical knowledge. Trial and error was the guiding basis of medical practice on which their living depended.[116] For this reason, some younger doctors hoped to improve their market position by adopting new practices and therapies.[117] The picture painted by Worboys suggests that the period between the 1870s and 1900 did not accord with the role reversal explained by scientific advance identified by Liebenau.

[107] WFA, Acc82/1 Box 07, Proceedings of the convention of home representatives, 1907, Curry, 71.

[108] Tweedale, op. cit., note 78 above, pp. 98, 103–4, 134–5.

[109] Wellcome Library, London, Lister Archives, SA/Lis/I. 11fb, Lloyd Wood (Toronto) to Allen & Hanburys (London), 22 May 1905.

[110] Judy Slinn, *A history of May & Baker*, Cambridge, Hobsons, 1984, p. 57.

[111] R P T Davenport-Hines and Judy Slinn, *Glaxo: a history to 1962*, Cambridge University Press, 1962, pp. 38, 43–4.

[112] Ibid., p. 96.

[113] Edgar Jones, *The business of medicine: the extraordinary history of Glaxo*, London, Profile Books, 2001, p. 52.

[114] Jonathan Liebenau, 'Corporate structure and research and development', in Jonathan Liebenau (ed.), *The challenge of new technology: innovation in British* business, Aldershot, Gower, 1988, p. 35.

[115] Worboys, op. cit., note 22 above, pp. 284–9.

[116] Lawrence, op. cit., note 22 above, pp. 504–12.

[117] Worboys, op. cit., note 22 above, pp. 288–9.

Liebenau's assessment of the role of BW&Co in transforming the marketing of drugs between the 1890s and 1914 is also flawed. It is unsupported by evidence from the Wellcome archives cited in support of the hypothesis because developments in the preceding period have been ignored.[118] Those historians who have focused on the BW&Co partnership, and in particular on the role of Wellcome, have made valuable contributions to the early history of the business and of the pharmaceutical industry in Britain.[119] This limited focus, however, has obscured the preceding innovative role of Burroughs in the evolution of the market for medicine. Archive sources relating to the history of SMB&Co between 1878 and 1880, reveal Liebenau's attribution of the marketing innovations to Wellcome to be inaccurate as is the dating of their introduction to Britain.[120] His analysis misinterprets their significance.[121]

The history of marketing reveals only tenuous connections between the developments in science and therapeutics in the mid-1890s and the innovations in marketing which preceded the scientific and medical breakthrough by nearly twenty years. The trigger which heralded the introduction of modern marketing was a hand-operated machine which produced a qualitatively improved and lower cost pill, an improvement on the products of the long discarded Brockedon machine, a British invention of 1843.[122] Rhodes James's verdict on Burroughs, that he was "a superb salesman, not an innovator",[123] displays a serious lack of appreciation, both of his development of a new market in Britain for an innovative product and his introduction of the detailing approach to marketing medicine.

Low, rather than high, technology, and a more efficient, though essentially cosmetically improved form of medicine, rather than therapeutic advance, explains the Americanization of marketing in the British pharmaceutical industry before 1900. The marketing transformation was driven by consumers rather than by science; doctors and chemists needed to be persuaded of the advantages of compressed medicines and of the new malt extracts. The successful resolution of this problem was the basis of BW& Co's rapid rise to become the largest pharmaceutical business in Britain. It preceded the firm's scientific leadership of the industry from the mid-1890s when it established an enduring reputation rooted in advanced research. Applying the criterion of medical progress, it is understandable that BW&Co has attracted most attention for those achievements which emanated from the research laboratories. The laboratories were unique in Britain and have been identified as the origins of the modern pharmaceutical industry. Without the company's trading success, however, the financial basis for Henry Wellcome's investment in research and development could not have occurred and the establishment of a modern pharmaceutical industry in Britain would have been delayed. In this respect, market success of the new biological therapeutics beginning in the 1890s

[118] Liebenau, 'Marketing high technology', note 6 above, pp. 82–101.

[119] Tansey and Milligan, op. cit., note 104 above; Tansey, op. cit., note 104 above; idem, op. cit., note 27 above, pp. 3–9; Rhodes James, op. cit., note 9 above.

[120] 'The "detail man" was introduced by Wellcome'; Liebenau, op. cit., note 6 above, p. 91.

[121] Tansey, op. cit., note 27 above, pp. 3–9.

[122] Rhodes James, op. cit., note 9 above, pp. 77–8.

[123] Ibid., p. 78.

in Britain were a consequence rather than a cause of the marketing innovations introduced by Silas Burroughs between 1878 and 1880.[124]

[124] A business acquaintance referred to "initial trade and national prejudice" because of the novel character of his business and the unconventional methods he adopted. "Burroughs made his own road and it has become a highway", *Chem. Drug.*, 9 Feb. 1895, **46**: 213. The marketing innovations introduced by Silas Burroughs were not, of course, the only ones affecting the growth in sales and profits between 1880 and 1900 when the introduction of the Tabloid brand, a supporting policy of litigation in its defence, and the implementation of a resale price maintenance policy were associated with Wellcome.