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2. Purchase, use, and adaptation: Interpreting 'patented' aids to the deaf in Victorian Britain

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> Whether there was ever as much reluctance to acknowledge defective sight as there now is defective hearing, whether the mention of spectacles was ever as hateful as that of a trumpet, I do not know; but I was full as much grieved as amused lately at what was said to me in a shop where I went to try a new kind of trumpet: I assure you. "Ma'am", said the shopkeeper, "I dread to see a deaf person come into my shop. They all expect me to find them some little thing that they may put into their ears, that will make them hear everything, without anybody finding out what is the matter with them." (Harriet Martineau, 'Letter to the Deaf', *Tait's Edinburgh Magazine,* April 1834.)

Hearing assistive devices were a more-or-less visible feature of middle-class and aristocratic life throughout the nineteenth century. Since up to one sixth of the population has historically been affected by hearing loss at some stage of their lives, the ubiquity (and therefore effective mundanity) of hearing aids seems easily explicable. Yet the changing social status of hearing loss and the changing availability of such devices force us to consider carefully the implications of the commercial relationships involved. The famous 'deaf' writer, Harriet Martineau (1802–1876) observed in her often-republished 'Letter to the Deaf' that purchasing a hearing aid was not always a well-informed or prudent shop transaction. As is well known, she enjoined those embarrassed or distressed by their hearing loss to purchase a hearing trumpet - both publicly to declare their 'deafness' and to ease communication with others. But judging from her own anecdote above, not all needed such encouragement; the

problem was rather that many assumed that they could buy an appropriate hearing aid as readily as a pair of spectacles without any professional advice on the circumstances of their particular form of hearing loss.[1]

We show that the often fraught experiences of acquiring and using a hearing aid necessitate a sensitively differentiated understanding of this apparently simple commercial transaction. Only some used hearing trumpets as openly and confidently as Martineau prescribed. Wealthy clientele wore expensive (upmarket, decorated or more than usually disguised) devices as a form of conspicuous consumption commensurate with their social position. Others were less confident: those of the professional classes who feared for their employability or marriageability could choose instead to wear disguised hearing assistance to 'pass' as fully hearing people.[2] Then again, others who purchased such commodified devices might reject or abandon them in favour of other mechanisms (lip-reading and/or epistolary methods) of communication. If they subsequently kept an aid to hearing, they might adapt it with their own creative and craft skills, over-riding any control over the transaction presumed by the patentee or vendor. Such are the issues that we explore later in this chapter.

Despite the enormous number and variety of hearing devices sold in the nineteenth century, and currently displayed in a variety of museums across the UK and USA,[3] there has hitherto been no commercially-focused study of the business of selling and making them. While this might be because remaining company records are very sparse, another key issue is that such technologies, unlike artificial limbs, do not fall obviously in the domain of disability, nor medicine or communications. Hence they have until recently been under-represented in the historical studies of the Victorian period.[4] We focus on the diverse lived experiences of hard-of-hearing people who did not necessarily identify as (partially) 'deaf', but who were nevertheless treated normatively by hearing contemporaries as if relatively deaf. By engaging with their experience of hearing aids to either pass as 'hearing' or at least

be visibly 'hard-of-hearing', our study complements the recent work of Virdi-Dhesi on medical encounters with deaf subjects;[5] of Esmail on Deaf sign-language culture,[6] and of Mills on USA hearing technologies in the 20th century.[7] We look at how a range of commercial techniques, including patenting, modulated the engagement between hard-of-hearing people and their assistive devices; we conclude by showing how users could draw upon older craft traditions to maintain their own creative culture of adapting personal property to make it their own.

Deafness vs. hearing loss as interpretive themes

The history of deafness in the UK has primarily been told by the Deaf community narrating the political repression of sign language from the 1880s–90s when the Pure Oral (non-signing) method began to dominate UK-based discussions of communication with deafened people, and then the eventual re-emergence of sign language communication in the late twentieth century.[8] But this historical narrative increasingly encompasses a variety of experiences of 'deafness' that is mirrored in the historical evidence of a huge variety of hearing aids. For example, Jennifer Esmail has noted that while Queen Victoria insisted on signing directly with deaf subjects who used signed communication, later in later life she used a large and highly ornate aid for audiences with 'hearing' people.[9] So what more generally can we say about how hard-of-hearing people chose strategies - and often devices - for communication, and how far does this relate to the varieties of deaf identity?

Esmail frames this discussion within a narrative of 'disability' by referring to hearing aids as form of 'prosthesis': as a replacement body part akin to mechanical substitutes for amputated legs, or withered arms. Certainly, as Claire Jones' editorial introduction to this volume explains, it is conventional in historical disabilities literature to categorise such devices within present day taxonomies of 'prostheses'. While hearing trumpets and other aids were not always necessarily useful prosthetics for all deaf people (e.g. those who had lost all

hearing, or whose hearing loss was not physiological in origin) these devices were prosthetic in the sense that for many hard-of-hearing people, they could replace some degree of auditory loss - depending on how these devices were chosen, fitted, used and maintained. Indeed it is clear from traces of earwax and exteriors visibly worn from frequent handling on certain remaining examples that these devices were intimately connected with wearers' body.[10] These devices were fully detachable and entirely discretionary in their contextual mobile usage, and wealthier owners might choose from a range of different assistive devices dependent on context. A visible hearing trumpet or speaking tube was a bodily accessory that was as detachable as a pair of spectacles or a watch, and portable in a purchased or user-made case when not in use.[11] For those seeking to pass as 'hearing', clothing and accessories could be purchased with discreetly installed amplification. For more sedentary settings, hearing assistance was designed into decorative objects such as domestic vases or public furnishings such as church pews. All facilitated the performance of normative 'hearing'.

Rather than taking the static identity of disability as our main theme in exploring the normative power of 'hearing', we interpret hearing loss in a diachronic vein. That is to say, we treat the experience of the 'onset' of deafness for those who identified themselves as 'hearing', directly in terms of a 'loss': a form of sensory and social bereavement, whether gradual or sudden.[12] Ours is a story of how adults came to terms with the fading of a lifetime's capacity to hear and a loss which they had to learn - to a greater or lesser extent - to self-manage. Harriet Martineau is a key case of one who, as Esmail has shown, set a model – albeit not fully consistently– for hearing loss self-managed by discretionary use of a trumpet. Various manufacturers made a multitude of hearing devices (some modelled on Martineau's) so that hard-of-hearing people could enact their responsibility, as Martineau saw it, to adapt to hearing culture's conversational norms, rather than vice-versa.[13] Eponymised versions of

Harriet Martineau's hearing trumpet can be seen in nineteenth-century instrument catalogues and in NHS blueprints through to the late 1970s.[14]

Rather than representing disability, these hearing aids were devices aimed ostensibly at diminishing what their users felt to be the social awkwardness of differential hearing capacities. The many different understandings of 'deafness' paralleled the diverse, sometime multiple aetiologies of hearing loss that were researched in the nineteenth century. Hearing loss could arise as an anticipated family trait, as the result of disease or temporary illness, or through accidental injury at work or home. There were also differences in form and presentation, such as unique personal experiences of high- or low- frequency loss, sensory-neural, conductive, unilateral/bilateral, which could also vary and multiply across an individual's lifetime. All of these resulted in many different personal experiences and (self-) representations of hearing loss over the life course. Yet the myriad of hard-of-hearing people in the Victorian period also still shared the common experience of being pejoratively cast as 'deaf' by institutions. These including charitable bodies, medical practitioners, teachers, journalistic commentators and legislators.[15]

Not least among these were hearing aid vendors who had a great financial interest in upholding normative expectations that hard-of-hearing people should purchase a commodified solution to 'overcome' their relative deafness. As Esmail, Mills and Virdi-Dhesi have noted (and discussed further below) various British companies supplied these on the British high street among other bodily accoutrements.[16] There was also a welter of opportunist vendors not previously discussed by historians, who used newspaper mail-order advertising or peripatetic direct sales. Later in the century these thrived on a climate of increasing and very real stigmatisation of hearing loss, notably in shifts in employment insurance legislation that motivated employers to hire only those with 'normalised' bodies.[17] Furthermore, the advent of the telephone as an entirely aural system from the late 1870s

increasingly excluded all unable to hear the scratchy-sounding speech transmitted through the device without any visual cues for assistance.[18]

These trends all served to entrench a broader prejudice against hard-of-hearing people as if they were the sole cause of any communication problems thereby engendered in the broader phenomenon of deafness. This prejudice was embodied pragmatically by hearing companies as a financial strategy for increased sales and profit-maximisation. In anticipation of a mass-market for hearing devices engendered by widespread anxiety about hearing loss, some makers of such devices took out patents on their inventions. But how significant was patenting as a feature of nineteenth century hearing aids - and what did it mean to the consumer to have a hearing aid that was patented?

Hearing aids as patent 'solutions' for deafness

The significance of patenting was a very widespread concern for purchasers of hearing aids since many of the devices that they encountered were at least purportedly patented or marked with the word 'patent' or naming the makers as 'patentees'.[19] But what did this status mean for a consumer? Were they meant to take this as a purely legal claim to inventors' rights, or as a legitimate statement of efficacy akin to the claims of patent medicine? For the former interpretation, truly innovative hearing devices could be used to secure a patent-wrought monopoly and thus secure large scale profits as from steam engines, telephones and light bulbs. But as Arapostathis and Gooday have recently argued, patenting was an expensive business even after the patent law reforms of 1852. There was only a prospect of return on the expense of innovation, regular Patent Office fees, and lawyer's charges if regular income could be secured through large scale sales during the fourteen year period of patent, and if infringers could be litigated into retreat. Once a patent had expired any other commercial producer could copy the design, so the original patentee sometimes took out successor patents.[20]

We can thus understand at least some patented hearing aids in the nineteenth century. According to Berger, the earliest such patent in the UK was by the aurist Alphonsus William Webster: 'Apparatus to assist the organ of hearing' (1836, No. 7033). This device was designed to imitate the cupped human hand and was apparently sold by the Rein Company.[21] In a more experimental vein, J. Marshall produced an ear-trumpet that also served for remotely hearing ship signals, while Frederick Charles Rein patented a device that communicated sound from a pulpit through tubes to pews in a church (1867, No.160). However, the absence of such devices in major museums or in private collections raises questions about whether they ever proved financially viable as mass products. The sheer cost and bureaucratic burden of securing a patent must have deterred many from the effort. Indeed several attempts at hearing aid patents were abandoned at an early stage: the surgical instrument maker, Edward Collier of Clerkenwell only received provisional protection for his invention of ear dilators 'to expand in and open the ear' in 1859. Collier may have simply dropped this patent on grounds of anticipated unprofitability, or because a similar invention had been anticipated in the public domain.[22]

Taking out no more than a provisional patent specification was enough, however, for some to claim strategically that they had secured a 'patent' for their invention. Jai Virdi-Dhesi has shown how James Yearsley, an aural surgeon in mid-nineteenth century London, took out such a provisional patent for his 'Artificial Tympanum' in 1856 to establish priority in invention over his rival Joseph Toynbee. Although Yearsley did not then pursue his patent to a full specification, he did not scruple - at some legal hazard - to advertise his device in the Medical Times and Gazette of 14 November 1857 as one that was fully patented for the 'relief' of deafness. For two shillings and sixpence his device could be obtained by post from the 'Superintendent of the Patent' (sic), Mr Charles Greene of King William-street in the

Strand.[23] While this patent-based marketing did not in fact end Yearsley's controversy, his so-called 'patent' evidently upstaged his rival in the market-place.

Clearly, however, this strategic use of 'patented' status by hearing aid inventors - or indeed any other inventors - should not be taken at face value. This takes us to the second view of the significance of patented status, as exemplified in the case of Rein and Co., which adopted a more subtle strategy than Yearsley. If they had a device to promote but no legitimate patent for it, they would simply describe the company's status as that of 'patentees', going so far as to inscribe this visibly on many of their products. This approach artfully - but entirely legally - evaded the question of whether the company was patentee for the specific device in question or just holders of patents for some other devices. While the Rein company's earliest patent was for ear plugs to attenuate sound (1864, No. 3000) and a second, as mentioned above, in 1867 for a pulpit device, apparently unpatented ear trumpets of all varieties thereafter were inscribed with the words 'F. C. Rein Patentees'. However, the strategy behind the 'Patent Aurolese' devices dating from the 1820s discussed below was altogether less legally secure: no Rein patent from that period can be found in the records, and even if it had been, the patent would not have been valid beyond the mid-1840s at the latest. The inference must be that these were to be understood as analogous to 'Patent Medicines' - a vernacular term that referred to supposedly efficacious medical cures purchased on the high street from chemists. Just as many so-called patent medicines were by no means actually patented, many hearing aids marked with claims to patent status were not the subject of a current patent.

Defensive strategies used by other companies included trademarking or eponymous branding to maintain company identity while avoiding the comparatively great cost of taking out and maintaining a patent.[24] As indicated above the significance of patenting was a very widespread concern for purchasers of hearing aids since many of the devices that they

encountered were at least purportedly patented or marked with the word 'patent' or naming the makers as 'patentees'.[25] This fraudulent claim of patent-protected status for commercial products was illegal and punishable in the UK by substantial fines. So why did hearing aid makers (like other pseudo-patentees) bother to take this risk? From the point of view of the consumer, patenting often signified some guarantee of reliability, of therapeutic efficacy. This drew both on the paradigm of patent medicines, and also of patenting as a royal bequest, with the implication thereby of the royal touch – traditionally a therapeutic route grounded in the Divine right of monarchs.[26]

Allegedly patented status on aids to hearing stimulated trade/sales via connotations of reliability, authenticity and trustworthiness as they had done for any British patented device since the late eighteenth century.[27] In the next section we will see the diverse response of some British hearing aid manufacturers to the opportunities thereby presented.

The hearing aid companies: Rein, Hawksley and Arnold

Various companies involved in selling hearing aids used a range of strategies to advertise their wares. Whether using patents, trademarks or eponymous branding, each of the big London names - Rein set up in 1800, Arnold in 1819, and Hawksley from 1869 - highlighted their authenticity and legitimacy through their longevity of establishment and metropolitan location. Their manifold aids (hearing trumpets, hearing tubes, etc.) were shaped to amplify sound to varying degrees for different kinds and experiences of deafness, and for use by different degrees of wealth, manufactured in a range of materials and deployed in various social and cultural contexts.[28] Wealthier users may well have owned several aids for use in different social settings e.g. an India-rubber speaking tube for everyday conversation at home and an ornate silver-plated dome for use in the Opera box.[29] Many aids were quite straightforward, fixed, simple trumpets in gunmetal. The most ornate were made of polished

brass, or sterling silver, decorative yet practical (e.g. collapsible), especially those made by Rein and Arnold. Some of these aids would have been chosen by their users on the basis of cost in the widely distributed catalogues.

Patented, disguised and the most highly ornate aids were always more expensive than simple fixed hearing horns made out of gunmetal, cardboard or tin. The Hawksley catalogue retailed the simplest devices from £0.7.6 with more expensive devices with prices that reflected the exact design and size.[30] Acts of conspicuous consumption shaped the contours of many sales from the most famous of all the companies, Rein and Co.[31] Their high street emporium, Rein's 'Paradise for the Deaf', was located at 108 the Strand - significantly central to the cultural life of the City. Its advertising claimed Rein to be 'the only Makers of real Acoustic Instruments for extreme, and every other degree of Deafness'. Much of the credibility of Rein's 'Acoustic Repository' was drawn from winning prize medals for their hearing aids at almost every single International Exhibition since they began in London in 1851. Furthermore testimonials as to 'their efficacy' was available from 'one of Her late Majesty's Judges', who used a Rein appliance on the Judicial Bench.[32] Evidently, for an upper class audience, this was a more of a significant marker of trustworthiness than Rein's status as a 'patentee'.

Nevertheless for many customers, the language of patents was important. Rein had the advantage of a long pedigree. At its centenary in 1900 the company's advertising emphasised that Rein had a progressive succession of ten 'Patent Aurolese' devices as if this gave a longue durée guarantee of quality.[33] But, at least one notion of 'patent' here was clearly not in the literal sense of being patented by the formal bureaucracy of the Patent Office. No patent numbers or years were specified: instead the more generic phrase 'Inventors and patentees' was used.[34]

[insert figure 2.1. here]

The absence of any patents can be inferred from warnings to consumers mistaking the Rein Company's products for similar models made by others e.g. Hawksley. This does not refer to the infringement of patents as would surely have been the case had Rein held any current patent rights.[35] Subtly diverting attention away from such formal legal matters, the Rein company publicity represented its series of 'Patent Aurolese' devices as the 'stepping stones to our present scientific results' as embodied in the Rein hearings aids of 1900. The credibility of these was thus based on the authority of the laboratory as much as on the exhibition prize. Examples from Rein of other 'invisible' aids, like the Aurolese - made to fit in - included fashionable accessories, many constructed to be inconspicuous in specific social contexts, such as aids for ladies in mourning that were lace-covered and black.[36] The evidence suggests that the purchasers could be very proud of these disguised and patented, pricey Rein aids.[37] However, there were many (cheaper) alternatives.

The Hawksley Company, for example, which like Rein also produced horns, tubes and shells designed to be visible luxury items, specialised in disguised devices sold with a different form of authority. According to its third Catalogue of Otoacoustical Instruments to Aid the Deaf in 1895, all devices were not only invented by Thomas Hawksley, but also made by himself at 357 Oxford Street in central London. His credibility was based not on any claims to patents, but on being 'Acoustical Instrument Maker to the Principal Aurists in England, Scotland, and Ireland, France, Germany, India and the United States of America' as well as three major London hospitals: Middlesex, Guy's and St George's. In contrast to the Rein Company's use of Establishment evidence in its advertising, the Hawksley Company therefore presented no direct personal testimonials to substantiate its claims to international sales. And, in further contrast to the Rein Company, Hawksley claimed no patents or patentee status as any kind of mark of originality or efficacy in alleviating hearing loss. The Hawksley approach was instead to borrow from the Martineau tropes of the exasperation that

unalleviated deafness could cause the hearing unless the deafened person took the trouble to invest in a hearing device:

> A deaf person is always more or less a tax upon the kindness and forbearance of friends. It becomes a duty, therefore, to use any aid which will improve the hearing and the enjoyment of the utterances of others without any murmuring about its size or appearance.

Importantly, this company's catalogue made a major concession to hard-of-hearing people that the difficulties involved here were not entirely of their own making: 'The deaf also have a just complaint against many of their friends and public speakers, who render their affliction apparently greater by an indistinct and mumbling utterance….' And given this challenge, the issues of aesthetics also came to the fore in ways not raised by Martineau:

> The ingenuity and taste of the instrument maker are required to construct mechanical aids to hearing which shall combine gracefulness of form and appearance without detracting from their efficiency, for the burden of deafness is great and the sensitiveness of the sufferers should not be wounded by the necessity of announcing their affliction to the public by having to use instruments either unsightly in form or objectionable in color or material.[38]

New forms of hearing assistance became available in the late nineteenth century, deriving from telephone amplifiers, and both Rein and Hawksley sold such devices alongside the older forms (which were retained especially for those wary of the dangers of electrical power). These new electrical devices needed careful trialling, and the pseudonymous Evan Yellon reported in his Surdus in Search of His Hearing in 1906 that the Hawksley company was one

of the few that could be trusted to show and explain their workings: 'I believe that they can show every form of aid, electrical or otherwise; they will certainly offer sound advice'.[39]

The predatory hearing aid 'patentees'

There were, however, two other particular constituencies of hearing aid vendor that did often claim to have devices with the efficacy of state-sanctioned patenting: these were the opportunist mail order company and/or roving salesman. These were the subject of exposés by campaigning journalists such as Yellon from the hard-of-hearing community who sought to show from their own experiences how untrustworthy such vendors were, notwithstanding any expectations that patents might have induced. Yellon wrote in Surdus in Search of His Hearing of the many sellers of hearing aids by postal service that could not be trusted. One of these was 'Professor Keith-Harvey' who sold his 'Aural batteries' from his office at 49 Finsbury Pavement and then latterly 117 Holborn, London. Significantly, Keith-Harvey advertised heavily in popular magazines and journals with information on purportedly successful cures of eminent patients. Yellon swiftly demolished this approach, showing that whatever personal details were submitted by letter, the same diagnosis was issued by return of post, and the same course of therapy using Keith-Harvey's 'patented Aural battery'. After analysing the hardware in question, donated by 'the kindness of a Barnsley gentleman', Yellon concluded that if any deaf person had experienced relief or cure by the Keith-Harvey system, they could 'safely assign such cure to Faith not Electricity'.[40]

This reflected a broader trend of activist journalism in the pages of dedicated late nineteenth century newspapers such as the Deaf Chronicle. This claimed to represent all conditions of deafness, including the hard-of-hearing and their travails with exploitative 'cure' merchants. This was the era of the new journalism in which writers for newspapers and magazines did not passively report on the world around them, but sought actively to expose crime and fraud.[41] In its Capanbells column, readers regularly saw its campaign against the

'Quack Doctors who profess power to cure deafness.' The column warned readers not to believe newspaper advertisements declaring 'Deafness Curable' with new ear gadgets. To supplement this in 1892 it reproduced in its entirety a piece concerning 'Swindles on Deaf People' recently published in Tit-Bits by a 'partially deaf' journalist. This was evidently for the benefit of any reader of the Deaf Chronicle still tempted by such offers.

The Tit-Bits journalist reported a recent experience of replying to an advertisement from one such opportunist company, receiving from them a pamphlet for a patented 'artificial ear-drum', which promised hearing restoration for in every case or full refund. Having filled in the patentee's questionnaire about his degree of deafness, he soon received a letter advising that it was curable by a gold-plated device at a cost of £2 11s 3d. Only half-payment was required initially, but after trying it for three months the correspondent found it ineffective, and asked to return the device for a refund. Despite the money-back guarantee, the patentee's company wrote back declining his 'second-hand' goods and demanding instead full payment. When he refused to comply, a letter soon arrived from the vendor's solicitor threatening a County Court summons; he soon learned of two other cases in his neighbourhood with the same experience, but for each the vendor evidently gave up further legal attempts to secure the return of their gold-plated device.[42]

This was just one of a series of episodes that the journalist recounted: 'How it is I don't know', but proprietors of other patents 'have found out I am deaf'. Significantly he found that he had often received pamphlets and letters 'describing something fresh.' The obvious inference is that the companies involved in this enterprise shared with each other the names and addresses of those who wrote to them, confident in many cases that the unhappy affluent hard-of-hearing would keep spending money on ever new varieties of ineffective devices. Yet, the ever-campaigning journalist did not stop there in his exposure of fraudsters.

He also related a story of one pamphlet that announced the visit of a company agent to a large town with a new device to offer. After a few questions about his experience of hearing loss, an ear inspection, and a check on whether he was in a position to pay £2 14s 6d, the agent inserted two instruments into the journalist's ears. Upon being told by the agent that he could thus now 'hear better', the journalist tried to put his pocket watch to his ear to test their efficacy – implicitly implementing the standard clinical test for hearing a 'ticking' watch. However, the agent prevented him from doing so, asserting that one should not in fact expect to be able to hear this ticking through the new hearing aid. The journalist thus departed a 'non-purchaser' more determined than ever not to part with 'hard-earned money' on ineffective aids to hearing.

Nevertheless, these merchants of mock-cures were still advertising undeterred by the time that the Deaf Chronicle had evolved again into the British Deaf-Mute, in late 1895. Such was the relentlessness of their advertising campaign, that in 1895, the partially deaf house journalist George Frankland wrote an evaluative piece titled 'Aids to deafness'. Comparing the many treatments of the quasi-medical 'Aurists', the high-street 'Auricians' and the newspaper-advertising 'Quacks' that he had experienced, Frankland reported:

> Aurists have syringed, painted, oiled, physicked, inflated and perforated me. Auricians have furnished me with diaphragms, trumpets, whispering tubes and noise machines. Quacks have sent me their works, exhibited their devices, and endeavoured to bleed me. So, by this time, I ought to be an authority on any subject. The general result of my experience has been to bias me in favour of the regular aurists and auricians. [43]

As Frankland explained further, the respectable aurists and auricians were to be trusted because they assiduously kept 'abreast of the latest scientific discoveries' and thus were more

likely to know how to capitalise upon innovations than 'untrained amateurs' that had to advertise their devices. Indeed as the regular practitioners were reputable enough not to need to 'advertise very largely', they could afford 'to sell their goods at a moderate profit' - not at the exorbitant prices demanded by the 'Quacks' with regular advertising bills to pay.[44]

One 'persistent' advertiser that Frankland reported was as an individual fashioning himself as Dr. J. H. Nicholson. The 'Ear Drums' he advertised in his mail-order pamphlets at two guineas were too costly for Frankland to warrant purchase, especially without a free trial. Receiving no response to the first pamphlet posted to him, Nicholson sent 'another, and yet another'. For all Frankland knew or cared, Nicholson was probably still 'bombarding my ancient residence with them to this day'. Eventually, at a surgical instrument shop, Frankland obtained a similar appliance - a rubber disc attached to a wire - at a twentieth of Nicholson's price. This Frankland wore 'for a time to no purpose', without therapeutic relief. Another energetic advertiser that Frankland encountered was a 'plausible, bustling' fellow who represented himself as the respectable-sounding Rev. Mr Silverton. Frankland had met him various visits to Liverpool, Silverton having with him all manner of 'shining and expensive serpent tubes and trumpets', such as might be seen at any conventional 'aural depot'. While Silverton inevitably alleged his devices to be 'better' than others, Frankland saw nothing to suit him as he had tried 'like appliances' before. Most suspect of all was Silverton's lack of professional ethics in selling hearing aids, a conspicuous characteristic of all advertisers:

> At a respectable aural establishment one can readily obtain them on trial, cash returned if useless; but this is not the practice of our advertising friends. Perchance it would not be profitable.[45]

Columnists for the British Deaf-Mute and its successor The British Deaf Times regularly warned its readers against opportunists like Nicholson and Silverton. Such journals, did, however, welcome and endorse new electrical gadgets that came along at the turn of the

century, based on the microphone amplification technologies of the telephone - and later the amplifying valves of early wireless (radio) sets. Thus, for example, in 1911, the Globe Ear-phone imported from the USA was the subject of a glowing review in The British Deaf Times, contrasted favourably with recent products by the American Miller Reece Hutchison (the 'Akoulallion' and patented 'Acousticon'). The operations of this device were clearly explained in the accompanying literature, and trials at home with money-back guarantee were offered: these two characteristics were soon to become standard features of the trust relationship between vendor and makers of hearing aids. More than this, readers of the journal were asked to become active experimenters and commentators on the merits of these devices.[46]

Personalising hearing aids in use

Finally we turn to the context of hearing aids in use, for at least some users were evidently satisfied enough with their purchases to deploy them regularly over long periods. Their independent views and creative activities in using hearing aids was a domain outside that of the commercial control of hearing aid makers and vendors, and they could make these devices their own by subtle processes of adaptation. More than just artefacts of patenting or prostheses, hearing aids were 'things' that circulated in everyday life and contributed to social status in ways well-established within Victorian studies,[47] subject to the characteristic forms of relationship between designers, users, and user-designers.

Given the prevalence of so many kinds of vendors and devices with no extant records, it is impossible to reconstruct sales figures for Victorian hearing aids. In the absence of such data, a study of hearing aids in use provides us with at least information about the shifting preferences, or successes of the market, the socio-economic or gendered dynamics of those who could afford/desired (patented or unpatented) aids and those who had to 'make do' with the rougher and readier constructions of the local tin merchant. Except for the transient

cardboard models, the collections held by museums like the Thackray Medical Museum, Leeds, UK, demonstrate that some hearing aid designs persisted over a long period of time. This persistent availability of some types of aid suggests that those types at least were functionally effective and desired. With a reputation for utility some types therefore remained in demand, regardless of wider debates about/perceptions of deafness and hearing loss, or newly patented additions to the field; a case in point is the long-lasting Martineau aid discussed above.

Moreover, looking at the artefacts themselves, many of the hearing trumpets held by the Thackray Medical Museum are too delicate for display because of wear and tear, which in and of itself is evidence of their long-term use and value to their users. A particularly fascinating example in the collection is an Arnold Hearing Horn:[48]

[insert figure 2.2. here]

It is made of nickel-plated gunmetal and is unadorned bar the Arnold trademark (it was not patented). It is slightly dented and from this general wear and tear, we can infer that it was used frequently. Moreover, its (presumptively) female user valued it enough to make/have made a draw-string bag to contain it: a personal adaptation, made of hand-sewn modest (possibly curtain) fabric decoratively embossed with flowers. Unlike their Hawksley competitors, which could be bought with leather, silk-lined carrying cases,[49] Arnold's London domes were not, as far as can be determined, normally purchased with bags. And, this example was far from being the only aid to have been adapted its user. Another London dome, a brass example made in France by Audios c. 1890, is slightly dented and covered in a close-fitting crochet cover (the cover being typical of 'local peasant crochet work'). A conversation tube with an ivory horn, c. 1890, has had tape placed over the joins between tube and horn, and tube and earpiece, presumably to protect those joins from wear and tear or fingers marks building up in use.[50]

Another example of adaptation to context is the Rein open pan model c.1916 (marked 'Patentee and Inventors and from the new Rein premises in Charing Cross Road'). This was acquired by a World War I aeroplane pilot who lost significant use of his hearing in a combat crash. Although long thought in the family to be his own creation, the clear indications are that he acquired this Rein device and then adjusted it to be shorter than the original. He thereby established this device as his 'own' in just as significant a way as a patentee claiming proprietary rights over an invention.[51]

If we consider the users, through their production of alternative and alteration of existing designs, they over-rode any control over the transaction presumed by the patentee or vendor. Each modification by a user, opting in or out of what was prescribed at the point of sale, tells us about time spent in the care of the object, and adaptation for personal use. Victorian aids to hearing might involve dressing to hear, but were also selected for purpose and had to be fit to use: maintained both as an aid, and within the context of life as it was lived.

Conclusions

This chapter has focused on these 'hard-of-hearing' subjects from their own perspective, in relation to hearing aids within the domain of patenting. Considering its life cycle in design, patenting, manufacture and use, the interpretation of a hearing aid's story cannot be abstracted from its social relations - particularly the often complicated and sometimes distrustful relationship between hearing aid sellers and purchasers. Looking through the historical 'lens' of the hearing aid we have explored the potential of many different reports, adaptations and perceptions of it - including its interpretation as a device fashioned perjoratively for the 'afflicted'). From these we have shown how we can investigate the histories of the deafened and hard-of-hearing through the everyday material culture they

accessed - purportedly designed for (and occasionally by) them - with all the complex, ambiguous and sometimes disingenuous use of patenting rhetoric.[52]

To put the whole commercial process of selling hearing aids into perspective, we can note that problems posed by opportunist advertisers of hearings aids lingered well into the twentieth century. It was only with the post-World War One rise of the National Institute for the Deaf (NID) that a campaigning organization was able to coordinate countrywide resistance to the fraudulent or disingenuous practices involved. As the NID announced in its Annual Report to members in 1929:

> Advertisements, encouraging the deafened, regardless of the nature or degree of their auditory defect, to expect the return of normal hearing, prey to-day, more than ever before, upon their natural hope for relief; and large numbers of hearing aids are purchased only to be cast aside as useless. The refusal of certain dealers to allow an adequate trial of their instruments before purchase or to refund any part of the money paid if they do not help, results in disappointment and serious loss to the deafened. Certain advertisers should be compelled to adjust their misleading advertisements to the facts of deafness and the possible performance of their instruments and to amend their methods of business to ensure a fair deal to the deafened. [53]

In response to this, the NID indicated that no more should their members be left to judge the plausibility of hearing aid efficacy from advertised or patented status from companies that were only interested in 'the extent of their sales'. They thus launched a register of firms and dealers who would make no unscheduled house calls, offer disinterested advice on the suitability of any electrical or mechanical device; and offer a full refund if any device proved unsatisfactory. 'Deafened persons' were strongly advised to deal only with those who met

these conditions, and such people could receive a copy of this list from the NID simply by mailing the cost of return postage to the Institute.

It was by such organizationally-wrought approval by the broad deaf community – whether through monthly newspapers or activist institutions – that hearing aids were evaluated less by a purported 'patented' status and more by open accountability of vendors to demonstrate the technical efficacy of their products and the financial transparency of their sales operations.

[1] Andrea Broomfield and Sally Mitchell Prose (eds) Victorian Women: An Anthology (London; New York: Garland, 1996), p. 51, report that Martineau's letter was often republished by charitable and cooperative organizations: Harriet Martineau, 'Letter to the Deaf', in Miscellanies, vol.1. (Boston: Hilliard, Gray and Company, 1836), pp. 248–265. See extensive discussion of Martineau in Jennifer Esmail, Reading Victorian Deafness: Signs and Sounds in Victorian Literature and Culture (Athens: Ohio University Press/ Swallow Press, 2013), pp. 169–73. For a sympathetic discussion of Martineau's deafness, see Mrs. F. Fenwick Miller, Harriet Martineau (Boston: Roberts Brothers, 1887), esp. pp. 32–38.

[2] The concept of 'passing' has been discussed with reference to contemporary disability in Jeffrey A. Brune and Daniel J. Wilson (eds), Disability and Passing: Blurring the Lines of Identity (Philadelphia: Temple University Press, 2013).

[3] 'Deafness in Disguise: Concealed Hearing Devices of the 19th and 20th Centuries', (St. Louis, Missouri: Washington University School of Medicine, 2009) http://beckerexhibits.wustl.edu/did/ [accessed 1 June 2016].

[4] Whereas Asa Briggs, Victorian Things (Harmondsworth: Penguin, 1990) focuses on the Philosophy of the Eye, there is minimal discussion of the process of hearing or of the ubiquity of hearing aids. Jaipreet Virdi-Dhesi, 'Curtis's Cephaloscope: deafness and the making of surgical authority in London, 1816–1845', Bulletin of the History of Medicine, 87:3 (2013), 347–77; 'From the Hands of Quacks: Aural Surgery, Deafness, and the Making of a Surgical Specialty in 19th Century London' (PhD thesis, University of Toronto, 2014). Mara Mills, 'Hearing Aids and the History of Electronics Miniaturization', Annals of the History of Computing, IEEE, 33:2 (2011), 24–45. Esmail, Reading Victorian Deafness.

[5] Virdi-Dhesi, 'Curtis's Cephaloscope'; 'From the Hands of Quacks'.

[6] Esmail, Reading Victorian Deafness.

[7] Mills, 'Hearing Aids and the History of Electronics Miniaturization'.

[8] See Jan Branson and Don Miller, Damned for their Difference: The Cultural Construction *of Deaf People as "Disabled": A Sociological History* (Washington D.C.: Gallaudet University Press, 2003), p. 145. Deaf cultures thus do not see deafness as a disability, but as an issue about communications. For the wider debates about the Deaf and communication, and the eventual dominance in Europe of Pure Oralism as the most 'modern' and 'rational' form of communication in the late nineteenth century, see Iain Hutchinson, 'Oralism – a Sign of the Times', European Review of History, 14:4 (2007), 481–501; Christine Aicardi, 'The analytic spirit and the Paris Institution for the Deaf-Mutes, 1760–1830', History of Science: an annual review of literature, research and teaching, 47:2 (2009), 175–221; Sophia A Rosenfeld, 'The political uses of sign language: the case of the French Revolution', Sign Language Studies, 1 (2005), 17–37; Lennard J. Davis, Enforcing Normalcy: Disability, Deafness and the Body (New York: Verso, 1995).

[9] Esmail, Reading Victorian Deafness, pp. 1–2. Information on a model of Queen Victoria's ornate Rein hearing horn from Allan Humphries, Thackray Medical Museum, Leeds.

[10] This is in contrast to the kinds of medical and surgical devices and interventions supposed to 'cure' deafness, such as the artificial timpani discussed by Jaipreet Virdi-Dhesi, 'Priority, Piracy, and Printed Directions: James Yearsley's Patenting of the Artificial Tympanum', Technology and Innovation 16:2 (2014), 144–54.

[11] As with other forms of bodily accessories, a display of wealth could be implicated as much by what was construed by the user to be successful disguise as by an ostentatious material display of chased silver).

[12] Compare with David Lodge, Deaf Sentence, (London: Harvill Secker, 2008).

[13] Advertisement, Review of Reviews, 41:246 (June 1910), 579; Advert for 'the Stolz Electrophone', Review of Reviews, 50:300 (Dec 1914), 467: 'It is exercise the deaf ear requires to bring it back to its original activity...' The converse was rarely the case since the hearing population did not generally take great effort to adjust speech to greater audibility e.g. T. Morison, 'New Ear Trumpet', Blackwood's Edinburgh Magazine, 14:79 (1823), 199. Retrieved from http://search.proquest.com/docview/6526703?accountid=13651 [accessed 1 June 2016].

[14] Harriet Martineau, 'Letter to the Deaf' in *Tait's Edinburgh Magazine*, 1 (1834), 174; Trumpet Hearing Aid, Telescopic Cone Shape, Black Celluloid, ear piece: vulcanite, c. 1890s–1900, Thackray Medical Museum Object Number 1333.022; 1976 Blueprint for Hearing Apparatus, Telescopic Ear Trumpet with Bent End, Celluloid, National Health Service, Model OL370; Hearing Apparatus, Telescopic Ear Trumpet with Bent End, Celluloid, National Health Service Model OL370, Thackray Medical Museum Object Number 2007.0431, Ref Surgical Manufacturing 1930, P. 195, No. 1361, and similar to Arnold and Sons, 1904, p. 340, Fig. 1156.

[15] For many Victorians, a popular understanding of those Deaf/deafened people who appeared unable (or unwilling) to find a way to adapt to the expectations of the hearing world, especially in the poorer community, was as 'afflicted'/unfortunate. For a sympathetic period example of the use of 'afflicted' see series of letters sent in reply to 'OUT IN THE COLD', 'Life and Work at Home', The Woman at Home: *Annie Swan's Magazine*, c.1895 p. 892.

[16] www.eartrumpets.co.uk/history.php [accessed 1 June 2016].

[17] Peter Jackson, Britain's Deaf Heritage (Edinburgh: Pentland Press, 1990).

[18] See McGuire's chapter in this volume, and Esmail, Reading Victorian Deafness, 188–89.

[19] The ambiguous status of objects marked as patented is touched upon in James F. Stark and Graeme J. N. Gooday, 'Patents and publics: Engaging museum audiences with issues of

ownership and invention', Museum and Society, 12 (2014), 104–17. See also resources at www.thackraymedicalmuseum.co.uk/library-resources/collaborative-research/recent-projects/ [accessed 1 June 2016].

[20] Stathis Arapostathis and Graeme Gooday, Patently Contestable: Electrical Technologies and Inventor Identities on Trial in Britain (Cambridge MA and London: MIT Press, 2013).

[21] Later patents in the UK came in the 1860s. The surgical instrument maker Joseph John Pratt produced a double ear trumpet (1860 No. 2990); John Henry Johnson patented an at-ear sound deflector (1860 No.3164), imported from Charles Grafton Page in the USA. Thanks to Ross Macfarlane at the Wellcome Trust Library for pointing us to this original patent specification and others of its sort in its comprehensive holding of medical patents. The Webster device is the earliest in this collection and the priority of that patent in the UK is claimed by Kenneth Berger in Kenneth Berger, The Hearing Aid: Its Operation and Development (Lavonia Michigan: National Hearing Aid Society, revised edn., 1974), p. 13.

[22] Patent 1859 2145, Wellcome Trust Library.

[23] See Virdi-Dhesi, 'Priority, Piracy, and Printed Directions' and her chapter in this volume.

[24] See Claire L. Jones, The Medical Trade Catalogue in Britain, 1870–1914 (London: Pickering & Chatto, 2013) and Jones' editorial introduction to this volume.

[25] Stark and Gooday, 'Patents and publics.' See also resources at www.thackraymedicalmuseum.co.uk/library-resources/collaborative-research/recent-projects/ [accessed 1 June 2016].

[26] See Alan Mackintosh, 'Potency of Print: Selling Patent Medicines in Late Georgian England' (PhD thesis, University of Leeds, 2015). 'The Patent Medicines Industry in Late Georgian England: A Respectable Alternative to both Regular Medicine and Irregular Practice' forthcoming in Social History of Medicine,

http://shm.oxfordjournals.org/content/early/2016/05/27/shm.hkw054.full.pdf?keytype=ref&ijkey=L73YDHIPMOSIzm9 [accessed 2nd June 2016]

[27] Helen Berry, 'Polite Consumption: Shopping in Eighteenth-Century England', Transactions of the Royal Historical Society, 6th Series, 12 (2002), 375–94, p. 383; Christelle Rabier, 'Introduction: Expertise in Historical Perspectives' in Christelle Rabier, (ed.) Fields of Expertise: A Comparative History of Expert Procedures in Paris and London, 1600 to the Present (Newcastle: Cambridge Scholars Publishing, 2007), pp. 1–34, esp. pp. 10, 12–15. Available online at: http://eprints.lse.ac.uk/43413/ [accessed 8 October 2015].

[28] Studying the material culture of devices makes us consider their composition. Some were made out of very simple materials, such as tin, or even cardboard (the latter are described in the Hawksley catalogues, though a surviving example has not yet been found). Others were fabricated from shell - and later faux shell - possibly because some of the earliest aids were actual shells, and through the material the association remained strong, as well as shell being decorative and reputedly low in vibration. John Bell & Croyden, London, Wigmore Street, W1, The Complete Hearing Service for the Deaf [pamphlet] (c. 1920-30), p. 12. Available at: http://gateway.proquest.com/openurl?url_ver=Z39.88-2004&res_dat=xri:jjohnson:&rft_dat=xri:jjohnson:rec:20080730103009mf [accessed 1 June 2016].

[29] Myk Briggs, photographer and independent collector, email to Karen Sayer 14 October 2013; 'As for which to choose, it is a minefield of vendor opportunism… More work needs to be done if manufacturers' sales/distribution records can be located how many such devices were made and sold, and to whom, or indeed how many patented aids to hearing were sold in proportion to unpatented devices, and whether this changed over time/as any patents were defended'.

[30] See Hawksley, Catalogue of Otacoustical Instruments (London: John Bales Sons & Danielsson, 6th edn., 1909), 'Class B (series 1) Simple Rigid Cones, p. 26; also Arnolds, Catalogue, p. 341, Fig 1161, & Allen & Hanbury's 1923, p. 190, No. 21153.

[31] A Rein notebook in the Thackray Museum's collection shows some evidence of personalised home fitting service to the more famous seeking discretion (including William Ewart Gladstone).

[32] F. C. Rein & Son, 'The Paradise for the Deaf', Centenary promotional pamphlet (1900). F. C. Rein Publicity pamphlet reproduced from Mary Lou Koelkebeck, Donald Calvert and Colleen Detjen, Historic Devices for Hearing: The CID-Goldstein Collection (St. Louis, MO: Central Institute for the Deaf, 1984). Elisabeth Bennion, Antique Hearing Devices (London and Brighton: Vernier Press, 1994). For more on Rein, see Kenneth W. Berger, The Hearing Aid: its Operation and Development (Michigan, USA: National Hearing Aid Society, 1st edn. 1970, revised 1974); See this image for a 'flesh-coloured' flexible hearing tube of the period: http://www.sciencemuseum.org.uk/broughttolife/objects/display?id=92088#wwKyg12c8I66y1fi.97 [accessed 11 October 2013); also 'Deafness in Disguise', http://beckerexhibits.wustl.edu/did/index.htm curated by the Washington School of Medicine and Bernard Becker Medical Library [accessed 11 October 2013].

[33] Examples of these can be found on the site 'Deafness in Disguise'. http://beckerexhibits.wustl.edu/did/advert/part2.htm [accessed 9 September 2015], and Bennion, Antique Hearing Devices.

[34] Brand marking on acoustic pan produced by Rein company: 'F C Rein & Son. Inventors & Patentees, 35 Charing X Rd. London.' Note that no patent number or year is claimed. See final section for discussion of this device.

[35] 'Warning: any Shapes after the above must not be mistaken for our new POWERFUL PATENT AUROLESE INVISIBLE PHONES'.

[36] The largest UK collection of these is held at the Thackray Medical Museum, Leeds; it is possible to see some of the collection in use on film via Pathe, 'Hearing Aid Museum' (1967) Film ID 411.03 http://www.britishpathe.com/search/query/Search/film_id/41103 [accessed 1 June 2016].

[37] E.g. 'this ambrotype … suggests a proud owner.' Item History Date 1851–1880 Origin United Kingdom Specifications Materials Leather, glass, gilt, velvet Weight (Approximate)70 gms Size (Approximate)110 × 60 × 5 Physick Medical Antiques, 'Ambrotype of Man Wearing Ear Trumpet' mm, at: http://phisick.com/item/ambrotype-of-man-wearing-ear-trumpet/ [accessed 30 Nov 2015].

[38] T. Hawksley, Catalogue of Otacoustical Instruments to Aid the Deaf, 1883, preface.

[39] Evan Yellon, Surdus in Search of His Hearing: An Exposure of Aural Quacks and a Guide to Genuine Treatments and Remedies, Electrical Aids, Lip-Reading and Employments for the Deaf etc., etc. (London: Celtic Press, 1st edn., 1906).

[40] Yellon, Surdus in Search of His Hearing.

[41] Gowan Dawson, 'The Review of Reviews and the New Journalism in late-Victorian Britain', in Geoffrey Cantor and Sally Shuttleworth (eds), Science in the Nineteenth-Century Periodical: Reading the Magazine of Nature (Cambridge: Cambridge University Press, 2004), pp. 172–95.

[42] 'Tit-bits', reproduced in The Deaf Chronicle (1892), 142–3.

[43] 'Aids to Deafness', British Deaf-Mute, 5 (1895), 84.

[44] 'Aids to Deafness', p. 84.

[45] 'Aids to Deafness', p. 84.

[46] 'The Globe Ear-phone', British Deaf Times, 8 (1911), 127–8.

[47] See, for example, Jennifer Sattaur, 'Thinking Objectively: an Overview of "Thing Theory"', Journal of Victorian Literature and Culture, 40 (2012), 347–57; Alastair Owens,

Nigel Jeffries, Karen Wehner and Rupert Featherby, 'Fragments of the Modern City: Material Culture and the Rhythms of Everyday Life in Victorian London', Journal Of Victorian Culture, 15:2 (2010), 212–25; Marieke M.A. Hendriksen, 'Consumer Culture, Self-Prescription, and Status: Nineteenth-Century Medicine Chests in the Royal Navy', Journal of Victorian Culture, 20:2 (2015), 147–67.

[48] Arnold-branded hearing horn in gunmetal, Thackray Medical Museum collection, Object No. 2005.0338.

[49] For an example see Alex Peck, Medical Antiques, 'A late 19th Century large London Dome ear trumpet by Hawksley in its original leather and silk lined carrying case' Image © 2016 Phisick at http://phisick.com/item/london-dome-ear-trumpet-by-hawksley/ [accessed 1 June 2016].

[50] 'It is French and I am told very typical of local peasant crochet work, so I believe it to be a home-made addition', Myk Briggs [bigloaf@gmail.com] (14 October 2013) re http://www.eartrumpets.co.uk/pictures2.php?pageno=23&buyno=128 [accessed 14 October 2013]; 'one of my conversation tubes (#171) has home made sleeves at either end - they are not as manufactured but definitely of the period - I think to catch the finger traces off the user' myk briggs [bigloaf@gmail.com] (14 October 2013) http://www.eartrumpets.co.uk/trumpets5b.php?ref=194&picno=D3x6770.jpg&field=&fieldno=0&test=&sort=buyno [accessed 14 October 2013].

[51] Rein model c.1916 from the private family memorabilia of Gavin Poole.

[52] As Deaf comedian John Smith (aka Beautiful BSL) has stated, 'hearing aids are for the hearing' (unpublished performance for Disability and the Victorians, conference Leeds Trinity University August 2012) www.beautifulbsl.co.uk/ [accessed 8 August 2014]; also see image 'The destruction of hearing aids by Jean-Francois Mercurio hostile deaf community',

illustration and caption from Rebecca A. R. Edwards, 'Sound and Fury; or, Much Ado about Nothing? Cochlear Implants in Historical Perspective', Journal of American History, 92:3 (2005), 892–920.

[53] 'Aids to Hearing', National Institute for the Deaf Annual Report (London: National Institute for the Deaf, 5th edn., 1929), pp.15–16.