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MYTHS OF THE MEDICAL METHODS EXCLUSION: MEDICINE AND PATENTS IN NINETEENTH CENTURY BRITAIN

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I. INTRODUCTION

This article explores the interaction of British medical practitioners with the nascent intellectual property system in the nineteenth century. It challenges the generally accepted view that throughout the nineteenth century there was a settled or professionally agreed hostility to patenting and to the patenting of methods of medical treatment in particular. We demonstrate that a significant number of medical practitioners did seek to patent their inventions, including some methods of medical treatment, while others made use of closely related alternatives, in particular, the utility designs regime. Admittedly the number of applications remained much lower than in other fields of technical endeavour. But the failure of medical practitioners to establish a strong culture of patenting during the nineteenth century can be explained on more prosaic grounds than the traditional narrative would have us believe. Specifically, we argue there was an incompatibility between the inventive process in medicine and the internal requirements of patent law. This incompatibility applied to many forms of medical advance, but was particularly acute in the case of methods of medical (and surgical) treatment. When, towards the end of the nineteenth century, an ethical norm about the inappropriateness of patenting medical advances generally, and methods in particular, began to coalesce, this is to be attributed in no small part to the medical profession making a virtue out of necessity.

This article thus seeks to retell the history of the exclusion of medical methods from patent protection, an exclusion that remains widespread in patent laws around the world and an exclusion whose history has produced a substantial body of scholarship. However, the article's aims go beyond this. It also seeks to illuminate how medical practitioners engaged with the broader political and policy landscape in order to secure financial remuneration for their inventions. In the early nineteenth century, the (practical) difficulties that medical

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practitioners faced in using patents to secure a return for their inventive efforts led some to appeal to Parliament for assistance. In so doing medical practitioners were seeking to take advantage of a system of state rewards for inventions that had been an established feature of the legal landscape for many decades.[1] The interactions between medical practitioners and Parliament around claims for rewards are interesting at a number of levels. The appeals of medical practitioners required Parliament to confront both the legal and policy limitations of the still developing patent regime. Parliament was forced to acknowledge that there were some forms of innovation that could not be patented. It was also clear that some innovations were of such social significance that it would be undesirable to grant a period of patent monopoly. Equally, Parliament did not want inventors to eschew the patent system and keep the innovation secret in the hopes of financial gain. More positively, the lobbying of medical practitioners provoked Parliamentary debate on the State's role in rewarding innovation and, significantly, the State's role in endorsing and promoting medical discoveries.

II. HOSTILITY TO PATENTING AND THE EXCLUSION OF MEDICAL METHODS FROM PROTECTION

The generally accepted narrative in existing legal and medical histories and case law is that the nineteenth century medical profession was opposed to patenting of medical discoveries. The genesis of this position is said to be found in the desire of doctors to separate themselves in the public mind from the commercialism and opportunism of the vendors of patent medicines. This opposition is understood to have led to a particular consensus within the medical profession during the nineteenth century that it would be unethical for a medical practitioner to seek to patent a method of medical treatment. As regards this more specific claim, the legal histories invariably take the case of *Re C& W's Application* as their entry point.[2] That case concerned a means of using electricity to remove lead from the human body in cases of lead poisoning. Importantly, the patent did not claim a new medical device (such devices could be patented – a point to which we will have cause to return), but rather the method per se. Considering this method, Solicitor General Buckmaster concluded that the subject of the claim could not be associated with the manufacture or sale of a 'vendible product' and hence could not be a 'manner of manufacture' as required by s. 6 of the Statute

[1] On the existence of this system of rewards running parallel to patent protection see, R. Burrell and C. Kelly, 'Public Rewards and Innovation Policy: Lessons from the Eighteenth and Early Nineteenth Centuries' (2014) 77 MLR 858.
[2] *Re C&W's Application* (1914) 31 RPC 235 ('C&W').

of Monopolies.[3] The judgment is very short, but includes a statement indicating Buckmaster's approval of the medical profession's opposition to the patenting of discoveries 'intended to alleviate human suffering'. Despite this, Buckmaster stated explicitly that in reaching his decision he had excluded consideration of the profession's views when reaching his conclusion.[4]

Judges and academics have found Buckmaster's rationale elusive.[5] It has been argued persuasively that, despite Buckmaster's denial, the decision can only be understood as motivated by policy considerations, including the desire to uphold the medical profession's ethical position he represents it in the judgment.[6] Although the soundness of the outcome has been questioned in subsequent cases,[7] it has proved enormously powerful and is reflected in the law of most Commonwealth jurisdictions.[8] An exclusion to much the same effect is incorporated in the European Patent Convention.[9] Under the TRIPS Agreement, despite the general obligation to make patents available 'in all fields of technology',[10] Member States are free to exclude from patentability 'diagnostic, therapeutic and surgical methods for the treatment of humans or animals.'[11]

Academic comment and legal histories also reflect this understanding. Common to most judicial and academic discussion of the Methods of Medical Treatment Exclusion ('MME') is an implicit acceptance that the medical profession has long been ethically opposed to the patenting of medical and surgical methods and the monopolization of medical innovation more generally. The few legal historians who have considered this and delved back into the nineteenth century generally concur that the medical profession had set itself against patenting because doctors wanted to distinguish themselves from the vendors of

[3] For a detailed discussion of Buckmaster's decision and later judicial consideration see J. Pila, 'Methods of Medical Treatment within Australian and United Kingdom Patents Law' (2001) 24 UNSWLJ 420.
[4] 'Of course, it is well known that the medical profession do all in their power to discourage members of their body from obtaining protection for any discovery that has for its object the alleviation of human suffering, and it is impossible to speak too highly of such conduct, but it cannot affect my judgment in arriving at a conclusion upon the terms of the Section of the Act of Parliament, and I have altogether excluded such consideration from my mind' (at 236).
[5] See, e.g., Barwick CJ in Joos v Commissioner of Patents (1972) 126 CLR 611 (HCA).
[6] Pila 'Methods of Medical Treatment'; E. D. Ventose, 'Patent Protection for Methods of Medical Treatment in the United Kingdom' [2008] IPQ 58.
[7] See, e.g., per Dixon and Evatt JJ in Maeder v Busch (1938) 59 CLR 684 (HCA).
[8] Australia provides the most prominent exception, with the exclusion of methods of medical treatment from patentability being definitively rejected in Rescare Ltd v Anaesthetic Supplies Pty Ltd (1992) 25 IPR 119.
[9] Convention on the Grant of European Patents (European Patent Convention), Art. 53(c).
[10] Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), Art. 27.1.
[11] Ibid, Art 27.3(a).

patent medicines.[12] This scholarship draws on older scholarship in the history of science that set the commercial emphasis of patents against a gentlemanly ideal in medicine.[13]

Tina Piper, the leading legal historian on this issue, extends the argument to claim that it was in the interest of doctors' professionalising project in the later 1800s to exclude legal regulation – including the patent system – from medicine.[14] She argues elsewhere that the immediate and ongoing authority of the MME lies in its acceptance by the mixed legal and professional communities receiving the law, owing to its resonance with the ethical identity they came to embrace as a professional attribute.[15] While such claims about a widespread professional or ethical position may be applicable in the twentieth century, we question the existence of a similar culture in the century prior to C&W.

III. THE ETHICS AND THE ECONOMICS OF NINETEENTH CENTURY MEDICINE

It is now generally accepted that the early years of the nineteenth century marked one of the key periods in the development of the modern patent system. This is not so much because this was a period of great legislative or judicial advance, but rather because it was at this point that the patent system came into more general use, with significant and sustained increases in the number of patent applications. At this time the cult of the 'heroic inventor' started to gain momentum in Britain and the availability of the patent system become more widely known outside the metropolis.[16] Coincidentally, this was also a period of growth, change, and innovation in British medicine.[17] During the French Revolutionary and Napoleonic Wars (1793-1815) the numbers of medical practitioners increased significantly and the exigencies

[12] For the fullest treatment of this proposition see T. Piper 'A Common Law Prescription for a Medical Malaise' in L. Bently, C.W.Ng, and G. D'Agostino, (eds) The Common Law of Intellectual Property: Essays in Honour of Professor David Vaver, (Oxford: Hart, 2010) p 145: 'From the early to mid-nineteenth century, UK physicians had been professionalising, which most importantly involved distancing the practice of medicine from the prevailing market morality'. For a similar analysis in the American context see J. M. Reisman, 'Physicians and Surgeons as Inventors: Reconciling Medical Process Patents and Medical Ethics' (1995) 10 Berkeley Tech. L.J. 355, 380.

[13] For a neat summary of this long tradition in the history of science see L. Loeb in 'Doctors and Patent Medicines in Modern Britain: Professionalism and Consumerism' (2001) 33 Albion: A Quarterly Journal Concerned with British Studies 404 at 406. See further, T. Ueyama, 'Capital, Profession and Medical Technology: The Electro-therapeutic Institutes and the Royal College of Physicians 1888-1922' (1997) 41 Medical History 150.

[14] T. Piper, 'Watch what you export: the history of medical exceptions from patentability', in D. Castle (ed.), The Role of Intellectual Property Rights in Biotechnology Innovation (Cheltenham: Edward Elgar, 2009).

[15] Piper 'A Common Law Prescription for a Medical Malaise'.

[16] C. MacLeod, Inventing the Industrial Revolution: The English patent system, 1660-1800 (Cambridge: Cambridge University Press, 1988).

[17] C. Hamlin, Public Health and Social Justice in the Age of Chadwick, Britain, 1800-1854 (Cambridge: Cambridge University Press, 1998); R. French and A. Wear, British medicine in an Age of Reform (London: Routledge, 1991), 'Introduction'; I. Loudon, Medical Care and the General Practitioner, 1750-1850 (Oxford: Clarendon Press, 1986).

of war stimulated medical innovation and the promotion of new approaches to medicine. The end of the Wars saw a huge influx of demobilized practitioners enter the domestic market bringing with them the practices they had learned on service.[18] The suddenly increased numbers squeezed the medical marketplace and created an economically challenging period for most doctors. Facing market realities, many struggled to make a living – a situation which persisted throughout much of the nineteenth century for all but the elite of the profession.[19] These conditions would seem to have been ideal for the flourishing of a system that could guarantee the financial benefits of a monopoly. And yet, despite the climate of revolution and innovation in medicine, evidence found to date appeared to show that medical practitioners were hesitant to patent their innovations. This section examines arguments for an 'ethical' explanation for this hesitance and concludes that there is no strong evidence of a settled professional opposition to patenting or commercialized practice.

Understanding the historical position of the medical profession on patenting is complicated by the vociferous opposition to 'patent medicines' that were a catch-cry for many orthodox practitioners by the turn of the twentieth century. For many the confusion begins with the name – in fact, patent medicines were rarely patented and the generic descriptor stood as shorthand for 'secret recipe'. As described above, scholarship on this issue has contributed to a received view that medical practitioners embraced an ethical position opposed to consumerism, seeking to separate themselves in the market from 'quacks' who often sold patent medicines. While this view must have some merit, close examination of the question – both on patent medicines, and on homogeneity of ethical perspective in the profession more generally – shows it is implausible that this provides the only, or even the most compelling, explanation for the failure of most medical practitioners to seek patent protection for improvements in treatment.

Support for the argument that the early medical profession had a strong ethical position opposed to patents at first seems to be found in Thomas Percival's Medical Ethics written in 1803 which stated:

> No physician or surgeon should dispense a secret nostrum, whether it be his invention, or exclusive property. For if it be of real efficacy, the concealment of it is inconsistent with beneficence and professional liberality. And if mystery alone give it

[18] C. Kelly, War and the Militarization of British Army Medicine, 1793-1830 (London: Pickering & Chatto, 2011).
[19] A. Digby, Making a Medical Living: Doctors and Patients in the English Market for Medicine, 1720-1911 (Cambridge: Cambridge University Press, 1994).

> value and importance, such craft implies either disgraceful ignorance, or fraudulent avarice.[20]

However, this ethical injunction needs to be viewed in the context of the early to mid-nineteenth century when delineation between orthodox and quack medicine was not clear, and patent medicines occupied a prominent place even in the medical practice of physicians and surgeons who held themselves out as classically trained and formally qualified.[21] Percival's key message concerns the efficacy or safety of secret nostrums - as we know, the process of patenting requires public disclosure. Further, the potential for a medicine to be the 'exclusive property' of a doctor is clearly contemplated. Elite medical practitioners like Percival were concerned with the poor quality of 'secret nostrums', not the commercial ethics of patenting.[22] As Tina Piper has noted, 'there is no evidence that this nascent medical profession had any interest or engaged in debates over a medical exclusion from patentability'.,[23] Accordingly, hostility to patent medicines must be understood in the context of a diverse medical marketplace and not conflated with medical patents.[24] Further, elite views on secret nostrums should not be uncritically applied to the question of patentability or commercialism in medicine more generally

Thus, in the first half of the century when the professional project of doctors was not yet underway, the existence of 'patent medicines' does not offer an explanation for the failure of medical professionals to avail themselves of the patent system for their innovations. In the second half of the century a coherent and organised medical profession emerged. Hostility to patent medicines persisted and by the 1860s was the subject of a sustained campaign by the BMA, and was to an extent, twinned with an opposition to commercialism. However, even in this later period this does not point to a widely held ethical position opposed to patenting medical treatments.

By 1860, concerns about patent medicines were expressed through a campaign of organised opposition using the rhetoric of public safety. This became a distinguishing feature of medicine's professional project in Britain. It was especially evident in the final years of the

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[20] T. Percival, Medical Ethics (Manchester: S. Russell, 1803) Ch 2, section XXII.
[21] Digby, Making a Medical Living, p 63; R. Porter Health for Sale: Quackery in England, 1660-1850 (Manchester: Manchester University Press, 1989).
[22] See also, J. Harvey Young, The Toadstool Millionaires: A social history of patent medicines in America before Federal Regulation (Princeton: Princeton University Press, 1961).
[23] See Piper, 'Watch what you export' at p 444.
[24] For discussion of the diverse medical marketplace of this period see: R. Porter, Health for Sale; I. Loudon, 'Medical Practitioners 1750-1850 and the Period of Medical Reform in Britain', in A. Wear (ed.), Medicine in Society (Cambridge: Cambridge University Press, 1992) p 219.

century when 'an unprecedented assortment of mass-produced and mass-marketed patent medicines flooded the market'.[25] However, investigations of the actual practice of doctors in relation to patent medicines have provided clear evidence of an unsettled ethical position even on patent medicines within the profession. Historians who have investigated the practice of medical professionals across the nineteenth century have demonstrated that while statements like Percival's Medical Ethics can tell us to what some sectors of the profession aspired, they are not a good indicator of widespread contemporary practice. Close analysis of idealistic rhetoric denouncing commercialism and patent medicines, and comparison with the actual day-to-day activity of medical practitioners has revealed significant discrepancy.[26]

Peter Bartrip has shown through analysis of advertisements in the British Medical Journal that ethical standards, as statements of ideals, did not always conform to prevailing practice. Concurrent with the resolution of the BMA Central Ethical Committee in 1903 denouncing patents, and alongside editorials criticising those same remedies, the pages of the British Medical Journal in the early 1900's were covered in advertisements for proprietary drugs.[27] Lori Loeb has taken this analysis further and demonstrated that, succumbing to the same financial and market pressures, doctors routinely prescribed patent medicines and provided purveyors with written endorsements for inclusion in advertisements. Loeb argues that there was so much deviance from the received position on patent medicines that we must acknowledge the co-existence of radically different perceptions within the profession about the propriety of consumerism.[28] As noted by Sally Frampton, this conclusion is supported by a small number of letters from medical practitioners to The Lancet in 1847 and The Edinburgh Review in 1872 arguing that the patent system should be used to generate greater rewards for invention in medicine.[29] Accordingly, the ethical codes put forward by Percival and the BMA at either end of the century apparently demonstrating a medical ethical opposition to patenting should be treated with caution, and are, at best, indicative of the ideal rather than the reality for the majority of medical practitioners.

Turning away from medicines and directly to the issue of patenting medical treatments, the medical journals of the latter half of the century do show arguments were raised against this practice. However, on close reading, these also demonstrate division

[25] Loeb, 'Doctors and Patent Medicines in Modern Britain' 409.
[26] Digby, Making a Medical Living; Loeb, 'Doctors and Patent Medicines in Modern Britain'.
[27] P. Bartrip, 'Secret Remedies, Medical Ethics, and the Finances of the British Medical Journal' in R. Baker, (ed.), The Codification of Medical Morality (Boston: Springer, 1995) pp 191-204.
[28] Loeb, 'Doctors and Patent Medicines in Modern Britain'.
[29] S. Frampton, 'Patents, Priority Disputes and the Value of Credit: Towards a History (and Pre-History of Intellectual Property in Medicine' (2011) 55 Medical History 319.

within the profession on the issue. For example, in 1847 an application was lodged for a patent for the inhalation of ether in surgical operations. This caused some controversy in the medical press and prompted interested practitioners to seek and publish the opinion of Queen's Counsel. The queries of these interested doctors were couched in the language of concern for the welfare of patients, but betray significant anxiety about loss of market share should the patent be successful. Letters from both sides, the opinion of counsel and editorial comment show that there was consensus that a naturally occurring substance could not be patented, but that a process of administrating such a substance requiring a novel device was less clear-cut.[30] The editors of the Provincial Medical and Surgical Journal referred to the application as 'absurd', but not because a method was part of the claim (as their comment has been misinterpreted in subsequent discussion both contemporary and modern) – the 'absurdity' related to the patenting of a naturally occurring substance.

In the very same pages of The Lancet a further letter appeared from a dentist, J. Chitty Clendon, showing clearly that the apparatus used to administer ether – the process of administration – was an essential component of successfully sedating a patient. This rendered fine distinctions between apparatus and medical process meaningless.[31] Many medical or therapeutic innovations during this period incorporated an array of different components. Separating the discovery or adaption of principle or theory from practice would have been difficult – as indeed it would be in the practice of medicine today. In the 1800s, a new treatment could include a new or modified device and/or regimes of therapy including bloodletting, various placements or movements of the body, and applications of medicines either ingested or otherwise applied. Each was considered a vital part of the cure.

For example, a new treatment for fever might draw on a fashion for cold-water dousing that was resurrected during the Napoleonic Wars. Innovations could include the repetition and frequency of dousing, the height from which water was dropped, a new device

[30] See various letters under 'Inhalation of Aether in surgical operations' (1847) 11 Provincial Medical and Surgical Journal 54 and 'Inhalation of Ether in Surgical Operations' (1847) 49 The Lancet 49 (including the opinion of Queen's Counsel).

[31]Any discussion of whether the internal requirements of the law were incompatible with the practice of medicine and thus prevented the development of a patenting culture in the 18th and 19th centuries must consider the question of patentability of a process. Dutton demonstrates that there was much confusion over the patentability of methods from the mid-18th century. He argues that by the 1830's the position of patents for processes was clearer 'with the grant to James Russell in 1834 and to Derosne in 1835' but that it was not until 1842 with the decision in Crane v Price (1842) 1 WPC 393, that patentees could be fairly certain that methods and processes were suitable subjects for a patent: H.I. Dutton The Patent System and Inventive Activity During the Industrial Revolution (Manchester University Press, 1984), pp 74-75. More recently, Sean Bottomley has demonstrated that the patentability of methods was well-established by the late 18th century, The British Patent System and the Industrial Revolution 1700-1852 From Privilege to Property (Cambridge: Cambridge University Press, 2014) Ch 5.

for dropping the water (or in which to receive the dropped water), and a strict dietary regime, bodily exposures and medicines to follow up and effect the cure.[32] Similarly the inventions of William Adams and James Carmichael Smyth discussed later in this article incorporated new ideas, devices to implement those ideas, and follow-up procedures to effect the desired result.

The case of the ether inhaler, does reveal debate over the professional ethics of patenting a new medical treatment, but it is not evidence of a settled position on the subject. While many within the profession were happy to condemn the 'absurdity' of an attempt to restrict the use of a naturally occurring substance, they stopped short of suggesting that medical methods should not be patented. Indeed, contemporary and modern representation of this patent application as particularly unusual is inaccurate. Although it was not common, by this time it was far from unheard of for patent to be granted for a new medical method. This article now turns from arguing that there was no widespread ethical opposition to patenting in the medical profession of the nineteenth century, to set out new evidence that, in fact, many medical practitioners did attempt to use patents and similar legal devices to gain commercial benefit from their innovations.

IV. MEDICAL PRACTITIONERS AND THE CULTURE OF REWARD

a. How they used system

In contrast to what has been generally represented as a reluctance of the medical profession to seek protection for their innovations, it is clear from the available records that medical practitioners did seek protection from the emergent intellectual property system in the nineteenth century. Existing histories of medicine and intellectual property have underplayed the protections that were granted. The widespread practice we have found of medical practitioners seeking patent protection for new medicines or new medical devices in the period is significant in terms of professional culture. Moreover, our research shows that medical methods were also patented. To develop these points further, consideration needs to be given to three matters.

[32] For examples of such treatments see the account of Robert Jackson's practices on the Isle of Wight in Proceedings and report of a special medical board appointed by His Royal Highness the Commander in Chief, and The Secretary at War to examine the state of the hospital at the military depot in the Isle of Wight, &c. &c. &c., (London: L.B. Seeley, 1808); and E. Costello, The adventures of a soldier; or memoirs of Edward Costello K.S.F., formerly a non-commissioned officer in the rifle brigade, and late captain in the British Legion (London: H. Colburn, 1841).

First, it should be noted that medicines and medical devices were patented throughout the nineteenth century. The existence of such patents has, of course, been noted before,[33] but the participation of medical practitioners themselves has been overlooked. Across much of the nineteenth century, medical practitioners did make regular use of the patent system. For example, in the period between 1800 and 1852 slightly more than 20% of English patents (29/140) over medicines and medical devices were conferred on medical practitioners.[34] It must be emphasised that in calculating these figures we have adopted a conservative approach to who counts as a medical practitioner during this period, having already noted the difficulty of demarcating the category of 'medical practitioners' prior to 1850. Specifically, in calculating these figures we have confined ourselves to inventors who identified themselves as doctors or surgeons in the application.[35] As late as 1899 we still find more than 17% of UK patents (33/194) being granted to medical practitioners. Admittedly many of these applicants were foreign nationals (with German and US doctors and surgeons doctors being particularly prominently represented), but equally it is notable that a high proportion of medical patents in general were being filed by foreign applicants at this time.

A second phenomena that needs to be taken into account when considering the level of engagement from medical practitioners with the emergent intellectual property regime in the nineteenth century is their use of the parallel, less expensive, system of protection that came into operation pursuant to the 1843 Utility Designs Act.[36] In the 40 years between the utility designs system coming into force and the passage of the Patents, Designs and Trade Marks Act 1883 – which, in effect, brought the utility designs system to an end as a distinctive form of protection[37] – at least 30 useful designs were granted over medical devices

[33] Most recently in: A. Mackintosh, 'Authority and ownership: the growth and wilting of medicine patenting in Georgian England', (2016) 49 British Journal for the History of Science 541 (medicines) and C.L. Jones, 'A barrier to medical treatment? British medical practitioners, medical appliances and the patent controversy, 1870-1920', (2016) 49 British Journal for the History of Science 601 (devices).

[34] In order to identify the patents in question we took as our starting point the Abridgement of Specifications relating to Medicine, Surgery, and Dentistry AD 1620-1866 (London: Printed by Order of the Commissioner of Patents, 2nd edn, 1872). We then excluded applications for improvements in artificial teeth, veterinary medicine, pill boxes, coffins and other funereal items, and general improvements in manufacture that were claimed to have an application to medicine e.g. improvements in the manufacture of steel tools.

[35] As such, we excluded applications by apothecaries, medical botanists, medical chemists and other inventors who would at the time have been understood to have had a legitimate role in the medical marketplace.

[36] (1843) 6 & 7 Vict. c.65. On the rise and fall of the useful design system see B. Sherman and L. Bently, The Making of Modern Intellectual Property Law (Cambridge: Cambridge University Press, 1999) Ch 4.

[37] See J.E. Crawford Munroe, The Patents, Designs and Trade Marks Act 1883 (London: Stevens & Sons 1884), p 71 (noting that the 1883 Act 'has, amongst other things, abolished the distinction between useful and ornamental designs' and citing the Memorandum on the Bill to conclude that 'such useful designs as embrace mechanical action would be treated as subject-matter for a patent'. See also L. Bently and B. Sherman, 'The United Kingdom's Forgotten Utility Model: the Utility Designs Act 1843' [1997] IPQ 265, 278 (pointing out that after 1883 courts refused to recognise that a design's novelty could subsist in anything other than shape).

to those identifying as doctors or surgeons, as listed in Appendix A. Moreover, at least some attention must be given to the use by medical practitioners of the ornamental designs system. Although applications for such protection do not seem to have been common and, in any event, do not give rise to the same ethical issues (bearing in mind that ornamental designs, much like the modern registered design system, extended only to protect the surface features of objects and not the underlying operating principles) they help establish that a significant number of practitioners were not opposed to using the available legal technologies to secure market exclusivity for their creations.[38]

Importantly, the use of these early forms of intellectual property protection by medical practitioners is consistent with what we know about the operation of the medical marketplace generally during this period. As Sally Frampton has argued, by this time a professional culture had evolved where profit-making and proprietary gestures in medicine had to be negotiated with care but, importantly, they were made.[39]

If medical practitioners were not opposed to protecting some forms of innovation then a third matter that demands attention is how the patent system dealt with claims for methods of medical treatment in the nineteenth century. As we have already noted, existing histories of the MME are premised on the view that medical practitioners were opposed to patenting medical innovations and C&W gave partial effect to this opposition by excluding one type of medical breakthrough from the scope of protection. However, there has been almost no engagement with the state of the law prior to C&W. This is important because an analysis of the position prior to C&W suggests that there were numerous examples of applications for patents over methods of medical treatment over the course of the nineteenth century. Specifically, we have identified more than 35 examples of claims to methods of medical treatment, as set out in Appendix B.[40] In compiling this list we have excluded patents detailing methods for the removal of teeth and attachment of artificial teeth, of which there were a significant number.[41] We have also excluded patents where there is some degree of ambiguity as to whether the intention was to claim a method or a novel product. Included in

[38] See, e.g., Registered design number: 250232 (BT 43/68/250232) Proprietor: Edmund Adolphus Kirby, Doctor of Medicine (portable case) 1871; Registered design number: 329010 (BT 43/62/329010) Proprietor: Francis Thomas Bond, Doctor of Medicine (enclosure for a thermometer) 1878; Registered design number: 346951 (BT 43/72/346951) Proprietor: Robert Foulis, Doctor of Medicine (pocket jemmy) 1880.

[39] S. Frampton, 'Honour and subsistence: invention, credit and surgery in the nineteenth century', (2016) 49 British Journal for the History of Science 561.

[40] In a small number of cases these applications did not progress beyond provisional protection, but in most cases full protection was sought and granted.

[41] See, for example, 1855 no. 411, John Haines White, 'An improvement in the method of applying artificial teeth'.

our list are, admittedly, examples of patents that claim a method of treatment using a new instrument or medicine which is itself claimed in the patent. In such cases one might argue that the method claim is purely secondary and that it is the device or medicine that is central. However, such applications at the very least demonstrate that late into the century there was no legal impediment to patenting methods of medical treatment.[42] In any event, moreover, there were cases in which the method was central to the invention claimed. Consider, for example, Bonnet's application for 'Certain improvements in the mode of preparing and applying chemical fumigations to the treatment of human diseases, and in apparatus connected therewith'. Although, as the title makes clear, the patent did describe a particular apparatus, the specification also makes clear 'that several variations in the construction of the apparatus can be effected without deviating from the principle of my invention'. Claims to similar effect are to be found in Machell's specification for 'An improved method of applying for medical purposes, the agency of atmospheric air…'; in Prichard's, application for a 'A new method of relieving pain in the human body'; and in Johnson's claim for an 'Improved means for destroying disease germs.'

From the above it is clear that the medical profession's relationship with patents and the other types of intellectual property protection was neither straightforward nor universally hostile. It is not even possible to state that innovative methods of medical treatment were incapable of being patented and it is clear that despite any aspirational statement to the contrary, a significant number of financially harassed practitioners held ethical positions fluid enough to support an association with patents (or utility designs) over new medical devices. Here it is also worth emphasising that the statements of ethics never drew a distinction between methods of medical treatment and other forms of invention. This is hardly surprising given that it is difficult, if not impossible, to see how any such distinction could be drawn from a medical ethics perspective.[43] It is therefore apparent that Buckmaster's assertion in 1903 of an ethical standard in medicine opposed to patenting of medical methods was not supported by longstanding practice and that there continued to be a significant degree of ambiguity in the relationship between the medical profession and the intellectual property

[42] This is also consistent with the position adopted in Terrell, the UK's leading treatise on patent law. The 3rd edition published in 1895 contains nothing to suggest that methods of medical treatment were not patentable subject matter: W.P. Reynolds, The Law and Practice relating to Letters Patent for Inventions (London: Sweet & Maxwell, 3rd edn, 1895). Even by the time of the 6th edition, published in 1921, C&W was explained on the basis that the claim in that case had been poorly drafted and not on the basis that it had established a new exclusion from patentability: C. Terrell and A. Jaffé. The Law and Practice relating to Letters Patent for Inventions (London: Sweet & Maxwell, 6th edn, 1921), in particular, at p 31.

[43] See also E. Ventose, Medical Patent Law – The Challenges of Medical Treatment (Cheltenham: Edward Elgar, 2011).

system. However, as the century progressed attitudes against patents generally do appear to have hardened and across the period the medical profession never established the type of widespread culture of patenting that we find in other fields of technical and scientific endeavour. Moreover, it is notable that members of the (narrowly defined) medical profession were generally not responsible for patenting methods of medical treatment. Of the previously unnoticed inventions set out in Appendix B we have only been able to identify three examples of methods patents that were claimed by members of the medical profession and in one of these cases the inventor was resident in Paris. The reason for the underutilisation of the intellectual property system by the medical profession, in particular, as regards methods of treatment, is explored in the next section.

b. Why the system was 'underutilised'

One of the most obvious disincentives to greater use of the patent system by medical practitioners during this period would have been the cost of obtaining a patent. The economic circumstances of most medical practitioners, as outlined above, were strained. The cost of obtaining a patent was widely regarded as prohibitive well into the mid-nineteenth century, famously resulting in Charles Dickens' parody *A Poor Man's Tale of a Patent.*[44] More specifically, evidence given before the 1829 Select Committee suggests that the ordinary cost of obtaining a patent for England alone was something in the order of £120, whilst to secure protection for the entirety of the UK cost somewhere between £345 and £500.[45] Anne Digby's research on the income of medical practitioners across the nineteenth century puts these figures in context – the most eminent Physician in London had an annual income of £12,000 in 1829, while a young physician in London might hope to earn only £200. Provincial practice was significantly less rewarding. By 1877, the median gross income for general practitioners across England was about £600.[46] Clearly, for many medical innovators a patent application would have been beyond their reach. However, this impediment cannot account entirely for the failure of the early medical profession to develop a culture of seeking legal protection for innovation.

[44] This essay was originally published in (1850) 2 Household Words 73. This essay is readily available in a variety of formats online, but a scanned version of the original is available at: www.djo.org.uk/household-words/volume-ii/page-73.html.
[45] Report from the Select Committee on the Law Relative to Patents for Inventions (332) (12 June 1829), pp 12, 17.
[46] Digby, Making a Medical Living, pp 156, 190-1.

Of equal importance, in our view, is the manner in which medicine was practised during the period, which was not compatible with the internal requirements of the law. Novelty has always been an essential requirement for a valid patent. While this concept is not straightforward and has changed over time, it was already well-established that if prior 'use of an invention had been public, any subsequent patent for that invention would be voidable'.[47] Importantly, moreover, the threshold for 'public use' could be extremely low. In the 1841 decision Carpenter v. Smith,[48] it was held that the 'public display' of a lock on a gate for sixteen years was enough to invalidate a later patent application for a lock with a similar mechanism, even though the only time when the mechanism was open for inspection was on the one occasion when it had been taken for repair. The strictness of the novelty requirement was significant because of the nature of nineteenth century medical practice.

In Britain, the nineteenth century was an important point of transition in medicine, associated strongly with the rise of the hospital. Despite the persistence of older models of bedside medicine, particularly for the upper classes, increasingly doctors worked in and did some of their training at hospitals. Susan Lawrence explains that 'hospital medicine became, in a fundamental sense...public medicine'. Not only were patients observed by pupils, practitioners, visitors and other patients, but the treatment of patients was also observed by a wide variety of spectators. As 'ward-walking' became an entrenched part of medical education, 'pupils and other practitioners regularly saw staff men deploying their authority over knowledge and interacting with each other'.[49]

The very nature of medical practice and the establishing of expertise in this early period required a significant amount of public display. Operations were often performed in theatres with rows of ranked seating. They were attended by many observers: including physicians, other surgeons, and students.[50] The impact of a poorly executed public operation on a surgeon's reputation could be disastrous. As Michael Brown describes, one such incident demonstrates not only the public nature of such work, but the importance of

[47] Bottomley, British Patent System, p 166. Bottomley discusses the novelty requirement, its relation to first authorship and its interpretation by the courts in detail at pp 162-168. For a contemporary analysis see R. Godson, A Practice Treatise on the Law of Patents for Inventions and of Copyright, (London: William Benning, 2nd edn, 1844) pp. 41-49.

[48] (1841) HPC 754. See also Jones v Pearce 1831 [1844] Webster's Patent Cases 121 (public use of carriage wheels).

[49] S. Lawrence, Charitable Knowledge, Hospital Pupils and Practitioners in Eighteenth Century London (Cambridge: Cambridge University Press, 1996) p 23.

[50] L. Brock, 'An eighteenth-century amputation scene in the men's operating theatre of old St Thomas's Hospital' (1977) 59 Annals of the Royal College of Surgeons of England 415.

witnesses for a surgeon's career.[51] This was the case of Bransby Cooper whose botched lithotomy operation on the unfortunate Stephen Pollard resulted in widely read gruesome reports and articles, and a libel trial so popular with the public that there was not room for all those who wished to attend.[52]

Relevantly, the operation had been performed in Guy's Hospital (one of London's most prominent at the time) and, as was routine, was attended by a large number of people. Several of those attendees later served as witnesses at the trial. Brown's in-depth treatment of this incident demonstrates the many layers of public fora: operating theatre, print media, and courtroom in which medicine was practised, discussed and evaluated during the early nineteenth century. These fora persist today, but in the nineteenth century carried even more significance in the absence of widely agreed and accepted, objective, clinical indicators of success.[53] Of course, the public performance of a new method of operating, or exceptional skill in the operating theatre, could also be the making of a career. William Adams, to whom we will return in the following section, relied heavily on the observations of others to support his claims to inventing a procedure (for which he wanted recognition and a reward) in the surgical treatment of Egyptian Ophthalmia.[54]

The observation of practice in this period also extended to detailed publications, both within the elite virtual public space of the scientific 'republic of letters' and in pamphlets designed to be read by (or read to) the masses, especially those at a physical distance from the practice of the therapy.[55] Edward Jenner, discoverer of vaccination, used this latter public space to great effect after trying, and failing, to find a willing patient for a public demonstration of vaccination in London.[56] His self-published work, An inquiry into the causes and effects of the variolæ vaccinæ, a disease discovered in some of the western

[51] M. Brown, 'Bats, Rats and Barristers': The Lancet, Libel and the Radical Stylistics of early Nineteenth-century English Medicine' (2014) 39 Social History 182.
[52] (1828) 9 The Lancet 959.
[53] C. Lawrence, Medicine and the Making of Modern Britain, (London: Routledge, 1994) p. 29.
[54] Official papers relating to operations performed by order of the directors of the Royal Hospital for Seamen, at Greenwich, on several of the pensioners belonging thereto, for the purpose of ascertaining the general efficacy of the new modes of treatment practised by Sir William Adams, for the cure of the various species of cataract, and the Egyptian ophthalmia, published by order of the Directors (London: Manufactory for Employment of the Deaf and Dumb, 1814).
[55] On the scientific republic of letters see J. Gascoigne, Science in the Service of Empire, Joseph Banks, the British State and the uses of Science in the Age of Revolutions (Cambridge: Cambridge University Press, 1998).
[56] J. Baron, Life of Edward Jenner (London: Henry Colburn, 1827) p 150.

counties of England, ... and known by the name of the cow pox,[57] has been described as a 'do-it-yourself guide to vaccination', displayed 'for everybody to see'.[58]

Similarly, some of the most productive engines of medical and surgical innovation during the early 1800s were the British Army and Navy engaged in fighting the Napoleonic Wars. These vast enterprises employed large numbers of energetic medical practitioners many of whom, such as the famous surgeon George Guthrie, actively sought to improve surgical technique and treatments.[59] Many others were forced to innovate in the face of necessity or desperation.[60] Military medical leaders perceived the importance of the speedy capture and dissemination of new techniques. These were transferred to young surgeons through observation and training in battlefield hospitals, and through sophisticated systems of reporting and correspondence.[61] Innovations in this context became firmly embedded within military command structures, and rapidly taken up by other practitioners. There was little private physical or intellectual space for invention at war and innovations from military and naval medicine spread quickly and widely.[62]

From the discussion above, we can see that in this period the conditions for the secret creation, trial and development of new medical methods were rare. Unlike the cloistered environment of the birth chamber famously exploited by the Chamberlen family to profit from their invention of forceps,[63] nineteenth century medicine was predominantly public and observed. As described above, there is a general perception that medicine during this period embraced a set of enlightenment values, despising secrecy and rewarding public beneficence

[57] (London: printed for the author by Sampson Low, 1798).
[58] G. Williams, 'From Jenner to Wakefield: The long shadow of the anti-vaccination movement', Gresham College Lecture, 28 September 2011, available at <http://www.gresham.ac.uk/lectures-and-events/from-jenner-to-wakefield-the-long-shadow-of-the-anti-vaccination-movement>.
[59] See generally, M. Crumplin, *Guthrie's War, A Surgeon of the Peninsula & Waterloo* (Barnsley: Pen & Sword, 2010). For contemporary views on the importance and propriety of experiment and innovation within military hospitals see Proceedings and report of a special medical board appointed by His Royal Highness the Commander in Chief, and The Secretary at War to examine the state of the hospital at the military depot in the Isle of Wight, &c. &c. &c. (London: Seely 1808).
[60] C. Kelly, War and the Militarization of British Army Medicine (London: Pickering & Chatto, 2011), Chs 3-5. For discussion of innovation and the military during this period see also, U. Tröhler, *"To Improve the Evidence of Medicine"*: the 18th Century British Origins of a Critical Approach (Edinburgh: Royal College of Physicians of Edinburgh, 2000); M. Harrison, Disease and the Modern World, 1500 to the Present Day (Cambridge: Polity, 2004) p 57; D.P. Geggus, Slavery, War and Revolution: The British Occupation of Saint Domingue, 1793-1798 (Oxford: Clarendon, 1982) pp 347-72; E. Charters, '"The Intention is Certainly Noble": The Western Squadron, Medical Trials and the Sick and Hurt Board during the Seven Years War', in D. Haycock and S. Archer (eds), Health and Medicine at Sea, 1700-1900 (Woodbridge: Boydell, 2009).
[61] Kelly, ibid, Chs 3 and 5.
[62] P. Mathias, 'Swords into Ploughshares: the Armed Forces, Medicine and Public Health in the Late Eighteenth Century', in J. Winter (ed.), War and Economic Development: Essays in Memory of David Joslin (Cambridge: Cambridge University Press, 1975) p 80.
[63] P. Dunn, 'The Chamberlen Family (1560–1728) and obstetric forceps' (1999) 81 Archives of Disease in Childhood, Fetal and Neonatal Edition F232.

in the name of science. While this may have been true for some practitioners, it is also true to observe that for any practitioner desiring a successful career it would have been impossible to thrive in most areas of practice without carrying out his trade publicly and under observation. This would have created a significant obstacle to the development of a patenting culture for new inventions. The problem would have been least acute for new medicines which could be both developed in secret and administered without divulging their formulation. Devices could be developed in secret, but any serious attempt to bring them into use prior to seeking protection would have rendered them unpatentable. Medical and surgical methods faced the most serious obstacles as generally they could only be developed under public scrutiny and many of the most useful would have been in wide circulation and practised by others soon after they were developed. It is not (and was not) feasible to apply for a patent when everyone knows what you did, how you did it, and they are already copying you.

V. MEDICAL PRACTITIONERS BEFORE PARLIAMENT

We have shown that medical innovators in the nineteenth century did not sit back and accept their contribution to human welfare as its own reward. Many devices and some medical methods were patented, and not only by the lower orders of the profession. Edward Jenner himself had contemplated patenting one of his earlier medical innovations on the advice of the eminent surgeon John Hunter.[64] However, as set out above, the public nature of medical experiment and innovation in the early nineteenth century meant that new medical treatments were usually well-known. Patent protection was therefore often not available, even in the cases where the inventor had the financial means to pursue it. Further evidence that medical practitioners were comfortable making a profit from saving lives is provided by the way in which some leading medical practitioners availed themselves of an alternate means of securing recognition for their inventions by lodging a petition for a Parliamentary reward.

As we have described in detail elsewhere, by the early nineteenth century the British State had developed an elaborate system of rewards that ran in parallel with the patent system. This system had myriad components, including cash rewards and patent extensions administered by Parliament, financial rewards and prizes administered by other public and

[64] Mackintosh 'Authority and Ownership', at 552.

quasi-public bodies, and less commonly utilised arrangements such as pensions for inventors and tax incentives for innovation.[65]

Innovative medical practitioners were at times enthusiastic participants in this system of rewards. Indeed, one of the earliest Parliamentary rewards was the payment of £5,000 to Johanna Stephens in 1739 in return for her divulging her secret remedy 'for removing the cause of the stone'.[66] However, the applications for rewards that are of most interest for present purposes are the appeals made to Parliament by three prominent medical practitioners in the early 1800s. These appeals related to discoveries already in the public domain and in each case resulted in the payment of a significant sum of public money. The most widely known recipient of such an award is Edward Jenner, inventor of smallpox vaccination, who received £10,000 in 1802 and a further £20,000 in 1807. However, Jenner's was not an isolated case. At around the same Jenner's initial petition was presented to Parliament, Dr James Carmichael Smyth petitioned for a reward and was granted £5,258 in respect of his discovery of 'nitrous fumigation'. Several years later Parliament granted £4,000 to Sir William Adams in recognition of his innovations in the treatment of Egyptian Ophthalmia.[67]

The debates over these three applications, along with the reports of the relevant Select Committees, provide insight into contemporary perceptions of medicine's relationship with credit and profit, views on the patent system, and the State's role in endorsing and incentivising new research. Claims for a reward in the medical field were particularly fertile ground for this discussion because advances often did not fit neatly with the emergent categories and requirements of intellectual property and because of the unique public good aspect of medical advances. The debates in Parliament make it clear that the medical protagonists had worked hard to procure powerful political patrons who felt very passionately about these issues. Jenner is well known to have had influential patrons, but it is interesting to note that Jenner believed Smyth's application was given an easier time in Parliament because of Smyth's better connections.[68] Adams faced so much violent political opposition that his reputation would have been destroyed if not for his powerful advocate, Lord Palmerston. Medical practitioners and interested patrons supplemented their lobbying of Parliamentarians with appeals to the public through written works. These tactics of 'exciting interest' in their

[65] Burrell and Kelly, 'Public Rewards and Innovation Policy'. For a Biagoli…

[66] (1739) 12 Geo. II c. 23. For further discussion see, e.g., A.J. Viseltear, 'Joanna Stephens and the Eighteenth Century Lithontriptics; a Misplaced Chapter in the History of Therapeutics' (1968) 42 Bulletin of the History of Medicine 199.

[67] See Report from the Select Committee on the Ophthalmic Hospital, 3 July 1821, House of Commons Papers, No 732.

[68] J. Baron, Life of Edward Jenner, Vol. 2 (London: Henry Colburn, 1838) p 334.

cause bear great similarity to those of the Benthamites identified by Samuel Finer.[69] It is not surprising then, that these three petitions yield especially hard fought and engaged Parliamentary debate.

Smyth's invention was a method of fumigating rooms (or decks below ship) to rid the area of contagion (disease). His method was to mix 'pure nitre in powder and concentrated vitriolic acid' in a pipkin which was then carried through an infected area.[70] Fumigation had long been used in the fight against contagion, however Smyth's claim to innovation lay in the ability of the patients to remain in the room and breathe during the administration of his fumigation, a circumstance not possible in the common fumigations at the time which used muriatic or sulphuric acids. In 1795, under the orders of the Lords Commissioners of the Admiralty, Smyth had organised a trial of the nitrous fumigation method on His Majesty's ship The Union at Sheerness, where there had been an outbreak of fever. According to Smyth, his experiments were a success and, reflecting the rapid dissemination of effective therapies in the armed forces during this period, his methods were then used widely in the Navy, by military surgeons and in prisons.[71]

In Smyth's application he first and foremost acknowledges the dilemma facing a public-spirited medical inventor, and highlights that he (nobly) chose to sacrifice an opportunity of private wealth to benefit the public:

> ... the Petitioner, by devoting so much of his Time to an Object of public Utility, has sacrificed private to public Advantage...the Petitioner, for all his Labours, has as yet received no Recompense or Reward...And therefore praying the House to...grant him such Reward for his Services to the Public[72]

All claims for Parliamentary rewards made reference to public benefit, but in the case of medical discoveries implicit reference was also made to the possibility of keeping the invention secret. Jenner's supporters stated that his discovery had 'been given to the world with liberality', but noted that 'If he had pursued a contrary conduct, he would have realised a

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[69] S.E. Finer, 'The Transmission of Benthamite Ideas 1820-50', in G. Sutherland (ed), Studies in the Growth of Nineteenth-Century Government (Totowa, NJ: Rowman and Littlefield, 1972).

[70] J.C. Smyth, The effect of the Nitrous Vapour, in Preventing and Destroying contagion; ascertained from a variety of trials, made *chiefly by surgeons of His Majesty's Navy, in Prisons, Hospitals, and on Board of Ships:* with an introduction Respecting the Nature of Contagion, which gives rise to the Jail or Hospital fever; and the various Methods Formerly Employed to Prevent or Destroy This (London: J. Johnson, 1799) p 59.

[71] For an account of these trials see JC Smyth, An Account of the Experiment made at the desire of the Lords Commissioners of the Admiralty on Board the Union Hospital Ship to determine the Effect of the Nitrous Acid in Destroying Contagion and the Safety with which it may be Employed, in a letter addressed to the Rt Honorable Lord Spencer &c & c &c (London: J. Johnson, 1796).

[72] 25 February 1802, Journals of the House of Commons, p 173.

princely fortune.'[73] 'Contrary conduct' could only have meant keeping the details of the inoculation process secret, it being accepted by all sides that Jenner 'could expect no reward from the method of patents, which were not applicable in the present case'.[74]

Across the early nineteenth century we see Parliament concerned to ensure that medical advances (in particular) were placed in the public domain. This can be seen, for example, in debates during the passage of the Patents Act 1835, which conferred the power to award patent term extensions on the Judicial Committee of the Privy Council. Lord Brougham, who introduced the Bill in the Lords, justified the new procedure on the grounds that it was better to hold out to inventors of new medicines the prospect of an extended monopoly than to run the risk that they would keep their inventions secret.[75] Parliament's push for disclosure was not confined to medical inventions.[76] Insofar as innovations in the medical field attracted additional demands for public accessibility this can be readily explained by the strong public interest in ensuring access to lifesaving treatments. There does, however, also seem to have been an acceptance in Parliament that members of the respectable medical profession would not have been able to keep their inventions secret (either until patented or on an ongoing basis) without causing significant harm to their professional standing: reputable medicine was medicine that was practised in public.

In working out whether to give rewards to these three medical practitioners Parliament also considered its role in endorsing and promoting inventions for the public good. These were objectives that many Parliamentarians came to embrace. It was put during debates on the quantum of Dr Jenner's initial reward that the House of Commons were guardians 'of the interests of the Public' with responsibility for preserving public health.'[77] In Lord Wilberforce's view, Parliamentary remuneration would not merely recognise his individual contribution, it would also serve as an 'authentication of the discovery, and … force it into speedy and universal practice.'[78] Lord Wilberforce made a similar point in the course of debates over whether to grant Smyth a reward, noting that the grant would 'stamp

[73] 15 March 1802, House of Commons – Debates, p 203.
[74] 2 June 1802, House of Commons – Debates, p 596 per Mr Fuller MP. This was not because Jenner's invention was not a manner of manufacture, but rather because the process of inoculation (albeit using smallpox) was well-established and because his breakthrough consisted in testing a widely held folk belief that cowpox conferred immunity to small pox.
[75] 3 June 1835, Hansard, House of Lords, cols 475-476.
[76] R. Burrell and C. Kelly, 'Parliamentary Rewards and the Evolution of the Patent System' (2015) 74 CLJ 423.
[77] 2 June 1802, House of Commons – Debates, p 598 per Chancellor of the Exchequer.
[78] 17 March 1802, The Parliamentary Register, p 240.

the utility of the discovery in the mind of the Country, bring it into general use, and thus call forth all its advantages'.[79]

The State's role in endorsing innovation was also at the forefront of debates around Adams' petition for a reward. In this case, one sees Parliament having to engage with a hard-fought intra-professional dispute as to who should be given credit for the invention of the new surgical procedure (and attendant convalescent regime) for the treatment of Egyptian Ophthalmia. It was put strongly to Parliament both that Adams was attempting to claim credit for the innovations of his mentor John Cunningham Saunders, and that another rival surgeon, Dr JohnVetch had invented the procedure.

One reason it was difficult to establish who had invented the procedure was that it had not been unknown in Antiquity. Vetch published a pamphlet to bolster his claim, but rather than insisting that the procedure was entirely novel he claimed that he had in fact revived a practice of the Ancients. The revival or rediscovery of ancient knowledge was very much in vogue during this period and 'the Ancients' had important cachet in the medical marketplace. To modern eyes rediscovering a practice is not 'invention', but it must be remembered that the UK still granted patents over technologies imported from overseas at this time. For Vetch his entitlement for credit could be summarized as follows:

> I nevertheless consider that he who revives a useful practice, after it has fallen into general disuse and oblivion, is entitled to as much merit as if he had made the discovery in point of time as well as in point of fact; and every liberal person must regret that the knowledge of antiquity should ever be used to obscure the reputation of a successful innovator.[80]

Ultimately, Parliament backed Adams' claim for a reward, whilst nevertheless commending the knowledge and skill of Dr Vetch. For Parliament it was enough that Adams had 'been greatly instrumental in promulgating this knowledge, and in rendering it generally available'.[81] Parliament was therefore able to sidestep the difficult question of exactly how to apportion credit between Vetch and Adams, both of whom had being trying to revive abandoned practices. Parliament noted that it might be left to profession and the public to determine who deserved the greater credit.[82] In practice, however, Parliament's determination

[79] 25 February 1802, House of Commons – Debates p 65.
[80] J. Vetch, Observations Relative to the Treatment by Sir William Adams of the Opthalmic Cases of the Army (London: J. Callow, 1818) p 10.
[81] Report from the Select Committee on the Ophthalmic Hospital, p 6.
[82] Ibid.

that both men were worthy, but that Adam had a stronger case given his labour in bringing the treatment into general use settled the matter. Parliament's role at this time was still that of the nation's 'grand tribunal' and explicit or implicit Parliamentary endorsement of a medical practitioner's expertise had the capacity to be influential, particularly since there was a good prospect that it would be picked up in the press.[83]

Medical practitioners began to engage seriously with Parliament on a regular basis in the late eighteenth and early nineteenth centuries, in particular, through the numerous inquiries that Parliament held into matters of military and public health.[84] The reasons for this engagement were many and varied. There is no reason to doubt that practitioners were engaging with Parliamentary enquiries out of concern to improve the health of the nation. We can nevertheless accept that regular, in-depth engagement with Parliament also provided doctors with an opportunity to further their collective goal of professionalisation.[85] In much the same vein, we can say that the Parliamentary inquiry provided individual practitioners with an opportunity to promote their expertise, to have this expertise acknowledged and to have this reported by the press without doubting that they were acting in good faith. Requests for Parliamentary rewards provide the most overt examples of practitioners seeking Parliamentary endorsement of medical expertise and the efficacy of particular treatments, but they can also be seen as part of a bigger picture where mere discussion of a physician's expertise in Parliament could be expected to enhance his practice.[86]

The engagement of medical practitioners with Parliament generally in the period can therefore be viewed as one of a number of strategies used by medical innovators to secure recognition and to use the resulting reputational advantage to leverage financial success. Sally Frampton has written about the attempts of surgical innovators to negotiate credit and about the disputes that sometimes arose regarding who invented what and when.[87] More recently, Alan Mackintosh has demonstrated that excise stamps that had to be applied to patent medicines between 1783 and 1812 gave an impression of official endorsement. The presence of these stamps also created a strong disincentive to copying because forging a

[83] Cf. The Times, 11 July 1821, 2 and 5 July 1822, 2 (reporting Adams' reward and discussions of Vetch's contribution in Parliament).
[84] C. Kelly, 'Parliamentary Inquiries and the Construction of Medical Argument in the Early 19th Century' in I. Goold and C. Kelly (eds), *Lawyers' Medicine: The legislature, the courts and medical practice, 1760*–1990 (Oxford: Hart, 2009).
[85] C. Kelly, J. Tumblety and N. Sheron, 'Histories of Medical Lobbying' (2016) 388 The Lancet 1976.
[86] 2 June 1802, House of Commons – Debates, p 597(noting that Jenner's 'practice would be greatly extended' by 'this discussion' as well as by the reward itself.
[87] Frampton, 'Patents, Priority Disputes and the Value of Credit'. See also Frampton, 'Honour and Subsistence'.

stamp was a capital offence.[88] Even in cases where a patent was also obtained over a medicine, its value often lay more in the marketing advantage the patent conferred on the proprietor, than in the period of monopoly protection per se.[89] Against this background one can appreciate the desire of surgeons to ensure that instruments they invented carried their name.[90] It also puts into context the fact that it was actors in the medical marketplace who were responsible in the late eighteenth century for the early development of trade mark rights at common law,[91] and explains why doctors and druggists featured prominently in the nineteenth century among the groups that sought to use the emergent tort of passing off to protect their reputations.[92]

The ability of medical professionals to rely on reputational capital as a means of securing market advantage was enhanced by the way in which the public related to medical expertise. It was noted above that for much of the period there was an absence of objective, clinical indicators of success.[93] The successful transmission of expertise and the replicability of results was much harder to assess, making reputation a surer guarantee that patients would seek out the originator. Precisely this point was aired in Parliament during discussions around Jenner's 1802 petition. Mr Bankes MP opposed granting Jenner a significant reward on the grounds that medical inventions generally produced a reward for the inventor without the need for any State interference. This was because patients, especially those with money, who desired the treatment would prefer go 'to the fountain-head', even after the method was well-known and practised by others.[94]

VI. CONCLUSION

The picture that emerges from our study is not one of strong principled opposition to intellectual property rights (as we would now think of them) from medical practitioners in the

[88] Mackintosh, 'Authority and Ownership' at 556-557.
[89] Ibid. 546-7.
[90] Jones, 'A Barrier to Medical Treatment?' at 606-607.
[91] L. Bently, 'Trade Marks for Medicines and the Origins of English Trade Mark Law' Presentation at the 88th Pharmaceutical Trade Marks Group Conference in London, 17 April 2014, available at: <https://www.delegate.com/content/ptmg/spring/2014/documents/1_Lionel_Bently.pdf>.
[92] See, e.g., Clarke v Freeman (1848) 50 ER 759; Holloway v Holloway (1850) 51 ER 81; Williams v Hodge & Co (1887) 4 TLR 175; Humphries & Co. v The Taylor Drug Company (1888) 39 Ch. D. 693; Saxlehner v Apollinaris Company [1897] 1 Ch 893; Dockrell v Dougall (1899) 15 TLR 333. For discussion see also I. Tregoning, 'What's in a Name? Goodwill in Early Passing Off Cases' (2008) 34 Monash L Rev 75.
[93] Lawrence, Medicine and the Making of Modern Britain. See also J.V. Pickstone, '"Dearth, Dirt and Fever Epidemics: Rewriting the history of British "public health" 1780-1950' in T. Ranger and P. Slack (eds), Epidemics and Ideas, Essays on the Historical Perception of Pestilence (Cambridge: Cambridge University Press, 1995).
[94] 2 June 1802, House of Commons – Debates, p 594.

nineteenth century. In contrast to much of what has been written on this topic, it was accepted that profit could legitimately motivate upstanding members of the profession. It was accepted that a medical method could be patented. Moreover, medical practitioners saw themselves as being entitled to make a 'claim' over their inventions. This led them to explore a variety of different approaches as they sought to take advantage of a still fluid legal landscape. Our study presents significant new evidence of these interactions between the medical profession and both the patent and utility design systems.

However, the underutilisation of these protections (which has given rise to misconceptions about medical ethics) must also be explained. We have argued that this explanation lies in the law. The public nature of medical practice was such that innovations were often ineligible for protection. By the early nineteenth century medicine had become a public enterprise. Innovation often occurred in public or was immediately exposed to public scrutiny. The internal requirements of patent law could thus not be met and keeping the invention secret on an ongoing basis was an even less viable option.

We have argued further, that medical innovators were therefore forced to look for alternatives, in some cases turning to the system of Parliamentary rewards. These rewards prompted the State to engage closely with the nature of medical innovation and its compatibility with the developing principles governing the patent system. These applications for rewards and the interaction of doctors with Parliament more generally also help illustrate the strong desire of medical practitioners to secure public recognition for their creations. Public recognition was not seen exclusively as an end in itself; it was also vital to securing economic advantage. For most practitioners in most circumstances focusing on reputational enhancement was a more promising option than seeking protection through the patent system.

Appendix A:

Year	Proprietor	Useful Registered Design Number (National Archives collection reference)	Description
1847	George Dixon Hedley, MD	1029 (BT 45/6/1029)	Improved inhaler.
1847	Henry Ward, Surgeon	1038 (BT 45/6/1038)	Ether inhaler.
1847	William John Bowden, Surgeon	1055 (BT 45/6/1055)	Improved pneumatic inhaler.
1847	Keith Imray, Doctor of Medicine	1143 (BT 45/6/1143)	Pessary for the relief of prolapsus uteri or prolapsus ani.
1847	John William Phelps, Doctor of Medicine	1144 (BT 45/6/1114)	Improved spiral abdominal supporter for prolapsus uteri.
1848	Marius Pierre Philip Bourjeaurd, Surgeon	1362 (BT 45/7/1362)	Elastic surgical bandage.
1848	Marius Pierre Philip Bourjeaurd, Surgeon	1639 (BT 45/9/1625)	Elastic suspensor.
1849	Marie Maurice Gariel, MD	1787 (BT 45/9/1787)	The 'Aqueductor' for surgical purposes.
1849	John Goodman, Member of the Royal College of Surgeons	1863 (BT 45/10/1863)	'The Hydro Vapour Bath'.
1849	Marius Pierre Philip Bourjeaurd, Surgeon	1878 (BT 45/10/1878)	Elastic pessary (surgical instrument).
1849	Dr Ellis of Sudbrook Park, Petersham, Surrey	1943 (BT 45/10/1943)	Graduated glass double action aperient [purgative] fountain.
1849	Francis Taylor, Surgeon	2002 (BT 45/11/2002)	Nipple shield.
1850	Robert Calvert, MD	2327 (BT 45/12/2327)	Self-adjusting brace.
1850	W Culverwell, Surgeon	2472 (BT 45/13/2472)	Portable domestic vapour bath.
1850	William Curtis Hugman, Surgeon	2515 (BT 45/13/2515)	Portable folding truss.
1851	Louis Foucart, MD	2742 (BT 45/14/2742)	Chest expander or spinal rectifier.
1851	James Augustus Drake, Surgeon	2921 (BT 45/15/2921	An instrument to be used in the case of prolapsus uteri.
1854	William John Clapp, Dentist & Medical Student and George Fast, Surgeon	3617 (BT 45/19/3617)	Clapp and Fast's tourniquet and compress for medical and surgical purposes.

1867	William Dale, MD	4914 (BT 45/25/4914)	Sulphur fumigator.
1870	John Eldridge Spratt	5136 (BT 45/26/5136)	Dr Spratt's inguinal hernia and scrotal bandage.
1871	James Williams, Doctor of Medicine	5307 (BT 45/27/5307)	Inhaler and fomenting and disinfecting apparatus.
1873	Robert Harvey Hilliard, MD	5474 (BT 45/27/5474)	Pocket clinical thermometer.
1874	Robert Harvey Hilliard, MD	5612 (BT 45/28/5612)	The pen vaccinator.
1879	Robert Lee M D	6124 (BT 45/29/6124)	An inhaler.
1881	Dr Ward Cousins	6428 (BT 45/30/6428)	Ear protector.
1881	Dr John Ward Cousins	6468 (BT 45/30/6468)	'The safety hypodermic injector'.
1883	John Ward Cousins MD	6603 (BT 45/30/6603)	Safety pin.
1883	Dr JA Fleming	6707 (BT 45/30/6707)	A flexible electrode [catalogued by the Office under 'Surgical and Medical Instruments'].
1883	John Ward Cousins MD	6715 (BT 45/30/6715)	Flexible surgical needle.
1883	Dr J A Fleming	6718 (BT45/30/6718)	Medical battery.

Appendix B:

Year	Proprietor	Patent Number[95]	Description
1795	James Wilson	2070	Mode of preventing effects of moisture on the human body.
1797	Timothy Sheldrake	2157	New invented method of curing all the deformities of children.
1798	Benjamin Douglas Perkins	2221	Discovery of a certain art of relieving and curing a variety of…by drawing over the parts affected…various painted metals.
1802	Joseph Barreto and Mary Barreto	2644	A new method of treating and curing ruptures.
1802	Dr William Beer	2667	New and improved medicines and methods of administering the same.
1818	Thomas Machell, Surgeon	4288	An improved method of applying for medical purposes, the agency of atmospheric air, liquid or gaseous substances to the external surface…of the human body.
1824	John Vallance	5001	Improved method or methods of producing intense cold…productive of advantageous effects…whether medical, etc.
1826	Charles Whitlaw, medical botanist	5336	An improvement or improvements in administering medicine by the agency of steam or vapour.
1828	John James Watt, surgeon	5643	Application of chlorine to the genital organs of both sexes after impure sexual intercourse.
1836	Julius Jeffreys	6988	Improvements in curing or relieving disorders of the lungs.
1846	Moses Poole	11503	Means and apparatus for administering certain matter to the lungs for medical and surgical purposes.
1848	Pierre Armande Lecomte de Fontaine Moreau	12385	Hygienic apparatus and process for curing disease.
1848	Charles Meinig	12847	Certain improved modes or methods of applying galvanism and magnetism to curative and

[95] Prior to 1852 there is a single sequence of numbers for all English patents (these numbers were in fact assigned later in the nineteenth century as no numerical system was used when these patents were granted). After 1852 British patents were assigned a number at application (not grant). These numbers run in an annual sequence, such that after 1852 both the year and the number are essential to identifying the patent.

			sanatory [sic] purposes.
1853	Edward O'Connell	987	Improvements in the mode or method of feeding infants or invalids.
1854	Pierre Athonasa Roguier	1763	A new mode of treating and curing varicose veins of the human body (provisional).
1855	Henry Holmes, Doctor of Medicine and Surgeon	834	Certain processes of treating the human body by gases, vapors and electricity (provisional).
1855	William Peter Piggott, Medical Galvanist	2528	Improvements in galvanic, electric and electromagnetic apparatus, and in the mode of applying the same as a curative and remedial agent (provisional).
1857	Robert Jackson, Gentleman	2056	Improvements in protecting certain parts of the body from disfigurement in cutaneous diseases.
1857	William Alexander Clarke, Hydropathist and Thermopathist	2154	Improvements in the construction of and mode of applying hot air and vapour baths.
1857	James Darsie Morrison, Dentist	3189	Improvements in effecting surgical and medical operations by the agency of artificially induced anaesthesia.
1858	Manuel Leopold Jonas Lavater, Rubber Manufacturer	23	The application of the principle of exhausting air, as used for...breast pumps…(provisional).
1858	Gallard Auguste	1712	A new system of trusses (provisional).
1858	Hyacinthe Tertian-Moret	2452	The application of a mineral named deterso as a…curative powder.
1859	John Lewis Prichard, Chemist	2449	A new method of relieving pain in the human body. This consists in the use of alleviative drugs in combination with a battery to act upon the various parts of the human body wherein pain may be seated.
1860	Thomas Welton & Edward Henry Cradock Monckton	2820	Improvements in the application of electricity or magnetism to the human body.
1862	James Hillert Perry,	1541	An improved method of curing

	Gentleman		diseases of the human body by magnetism.
1862	William Sadler Kennedy	2806	An improved method of and apparatus for applying fomentations and other external remedies to the throat.
1863	John Morgan, Fellow of the Royal College of Surgeons of Ireland	412	Improvements in embalming and preserving from decay human bodies, and bodies of other animals.
1864	Amelie Angelina Bonnet	1784	Certain improvements in the mode of preparing and applying chemical fumigations to the treatment of human diseases, and in apparatus connected therewith.
1864	Doctor Jules Guerin of Paris	2842	Means or appliances for treating bodily injuries, affections and disorders, when atmospheric air is to be excluded from the part affected.
1866	William Hibbert	169	Improvements in the combination of chemical matters and mechanical apparatus applied therewith for the prevention or cure of contagious and other diseases.
1866	William Temple Cooper, Pharmaceutical Chemist	899	Improvements in the treatment for the cure of the venereal disease in the male sex (provisional).
1869	Thomas Welton	1388	A new method of applying oxygenated and other gas charged charcoal for curative and other purposes.
1869	John Rehse	2190	An improved system for the cure of stammering.
1870	Alfred Manks Mort, Chemist	308	Use of honey soap and resin as a special method of medical treatment (provisional).
1870	C Harrison	1635	Administering electricity (provisional).
1874	WP Lyon	1954	A method of applying magnetism for curative and other purposes.
1899	Charles M Johnson	22862	Improved means for destroying disease germs.