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CONTENTS

Interpreting Quackery in Georgian England 3-9
Roy Porter

The Development of Dental Practice Before 1850 10-16
Christine Hillam

Dental Equipment 1700-1850 17-21
David Wright

Dental Treatment Before 1850 – How Effective Was It? 22-29
David Hillam

The Materia Medica of the Nineteenth Century 30-38
William F Court

Brain Science and Insanity in Victorian Murder Trials 39-48
Roger Smith

The Place of the Great War in the Making of Modern Orthopaedics 49-55
Roger Cooter

INTERPRETING QUACKERY IN GEORGIAN ENGLAND

Roy Porter

The history of medicine has typically been written as the history of orthodox medicine. The story of irregular medicine in Britain still largely awaits research in depth and detail. But how it should be addressed poses daunting problems of interpretation.

One plausible line of approach would be to construct a history of 'marginalised' or 'heretical' therapies, perhaps by analogy to radical or populist histories of working people or to feminist histories of women.[1] Taking its bearings from today's 'fringe' movements, such a history would obviously give due prominence to those alternative medical systems that flourished in the Victorian age (homoeopathy, natureopathy, medical botany, Coffinism, Thomsonianism and so forth), and it would clearly look back to the Puritan medical reformers of the Civil War era, and thence to the Paracelsists.[2] But it is less easy to fit eighteenth century irregular medicine into this framework.

A different approach has been altogether more common; that is to write off irregular medicine as rank quackery.[3] Viewing all irregular medicine as 'quackery' became an article of faith amongst champions of the cause of ethical medicine in the Victorian age. And the cumulative effect of this reformist tide was that series of legislative changes from the Apothecaries Act (1815) through to the Medical Registration Act (1858) which set medicine on a more professional, more ethical plane, in part through erecting a cordon sanitaire between it and what it labelled money-mongering quackery.[4]

But the result has been that establishment accounts of irregular medicine have automatically dismissed it through the put-down, 'quackery'. Usually this has meant that so-called 'quacks' have been set up as the target of legitimate wrath. As L. R. C. Agnew thunders:[5]

> Having spent several years in such quack-infested fields as cancer research and nutrition, I find it difficult to be objective about quackery, even quackery in seventeenth-century England. I do not like quacks; indeed, I despise them, and while I recognise that an occasional quack remedy or belief has been imported into orthodox medicine, I cannot evince the least sympathy for the breed, those crab lice that have feasted parasitically on the body medical since the very beginning of recorded medical history.

Alternatively, quacks are treated and studied just for their entertainment value. All too readily the history of heterodox medicine thus becomes a string of tired anecdotes.[6] Non-standard practice is thus reduced to a chapter in The history of popular delusions.[7]

Indeed in this reading, medicine's war against quackery is portrayed as more than an endless campaign against frauds, but as a critique of human nature. As Robert Southey put it:

> Man is a dupeable animal. Quacks in medicine, quacks in religion and quacks in politics know this and act upon that knowledge. The credulity of man is unfortunately too strong to resist the impudent assertions of the quack.[8]

Astutely, Southey saw that this was all a consequence of the desperation born of disease:

> Sickness humbles the pride of man; it forces upon him a sense of his own weakness, and teaches him to feel his dependence upon unseen Powers: that therefore which makes wise men devout, makes the ignorant superstitious. Among savages the physician and the conjurer are always the same.[9]

Most accounts of irregular medicine in 'the long eighteenth century' have conformed to this model. Superficially, at least, it seems to fit. For many of the irregulars in the public limelight such as the "Chevalier" Taylor, Gustavus Katterfelto, and James Graham were indeed showmen. And the century itself waged a concerted attack on its quacks in precisely these terms. Thus The Cheats of London Exposed: or, the TRICKS of the TOWN Laid Open to Both sexes. Being a clear Discovery of all the various Frauds and Villainies that are daily practised in that great City (1766) indicated quack doctors alongside partners-in-crime such as whores and sharpers. Indeed, quack doctors were amongst the most culpable of all, for quacks cheated people not only of their money but their health. Two features loom large in all broadsides against mountebanks, empirics, and charlatans. First, their knavishness. Quacks had always drawn the accusation of being (in Ben Johnson's definitive phrase) "turdy-facy-nasty-paty-lousy-fartical rogues". In his Dictionary Dr. Johnson was to build a fraud charge into the very definition of medical quackery, regarding the creature as

> 1. A boastful pretender to arts which he does not understand. 2. A vain boastful pretender to physic, one who proclaims his own Medical abilities in public places. 3. An artful, tricking practitioner in Physic.[10]

Second, their gift of the gab. Whether in the fulminations of pukka physicians, the back-stabbings of fellow charlatans, or the cynical picaresque of Tobias Smollett, the quack is presented as all mouth, a peddler of velvet sales patter (what Ward called "senseless cant"), emperor of bunkum.[11]

Throughout early modern England the frauds of quacks were attacked.[12] The question, however, is whether this line of exposure of quacks as vulgar, hum-bugging, mercenary crooks is historically helpful. All the evidence, for example, suggests that many quacks sincerely believed in their remedies and powers; so honesty fails as a criterion for distinguishing quacks from true doctors.

Likewise we cannot simply say that quacks were those practitioners without qualifications. For some commonly labelled as quacks had excellent medical training and title, John Pechey, for example, in the latter part of the seventeenth century, having received an apprenticeship from his father and being a graduate of Oxford and a licentiate of the College of Physicians - he noted how 'Many Men make it their business to ridicule the Public Way of Practice, because it thwarts their Private Interest'. James Graham studied at Edinburgh under Cullen and Black. Indeed, like scores of regular practitioners, many quacks such as William Brodum, William Solomon, and Ebenezer Sibly, bought their M.D.'s from St Andrews or Aberdeen.

Neither can we simply identify quacks by saying they were those practitioners whose medicaments were bogus. Indeed regular and quack preparations were often identical and it was a common grouse against quack nostrums that so many were "pilfered ... from regular practice", plagiarized from the College pharmacopoeias.

Hence, if we take many of the features supposedly defining the pretensions and impositions of the quacks, we find that they are also applicable to reputable members of the faculty. Not surprisingly a literature arose condemning no less fiercely the 'quackery' of the medical profession itself, putting orthodox doctors under the lash for identical vices and vanities.[13] Quacks were whipped for mystifying dealing in obscure trade cant. But so were what Dr. Garth dubbed "the homicides of Warwick Lane", the physicians. Quacks puffed nostrums. But scores of orthodox practitioners did nicely out of patent medicines and proprietary pills made to secret formulae, Dr Robert James profiting from his best-selling febrifuge "powders",[14] for which Horace Walpole had such a "superstitious veneration".[15] Indeed, regular doctors had no ethical qualms about nostrum mongering.[16] As John Hunter wrote to Edward Jenner:

> Dear Jenner, I am puffing of your tartar as the tartar of all tartars, and have given it to several physicians to make trial, but have had no account yet of the success. Had you not better let a book-seller have

> it to sell, as Glass of Oxford did his magnesia? Let it be called Jenner's Tartar Emetic, or anybody's else that you please.

Again, quacks were excoriated for their patter, showmanship and self-advertisement. But who could match the faculty in ritual and ostentation? Augustan satire teems with caricatures of the pomp of physicians with their Latin mumbo-jumbo, their carriages and running-footmen ("a travelling sign post", said Smollett, "to draw in customers"), and so forth. Thus quacks were denounced as frauds; yet early modern commentators took a Shavian view of all the professions; from Ben Jonson, through Butler, Gay, Swift, and Pope to Henry Fielding, it was "a world of quacks",[17] in which all professions were conspiracies against the laity.[18]

It would be a forlorn and historically misguided enterprise, I wish to argue, to draw hard and fast lines between proper practitioners and quacks, using criteria such as integrity, scientific method, or therapeutic efficacy. I am not proposing a historical "quack's charter", not arguing for relativism or nihilism. Rather I want to suggest that the label "quack" as commonly used is anachronistic, prejudicial, question-begging, and a historical dead-end. There is a historical reality of eighteenth century 'quackery' or at least a way the term can be usefully applicable to the period, but it must be used with care.

* * *

NOTES

1 See for instance S. Rowbotham, Hidden from history (London, Pluto Press, 1973).

2 For a sample see R. Cooter, 'Deploying "Pseudo-Science". Then and Now', in M. P. Hanen, M.J. Osler and R.C. Weyant (eds), Science, Pseudo-Science and Society (Waterloo, Ontario, Wilfred Laurier University Press, 1980), 237-72; J. V. Pickstone, "Establishment and Dissent in Nineteenth Century Medicine", in W. J. Sheils (ed.), The Church and Healing (Oxford, Basil Blackwell, 1982), 165-190, and T.

Barrow, "Anti-Establishment Treating: Spiritualism in Britain", in ibid., 225-248.

3 To a greater or lesser degree this is the line adopted in standard accounts of 'quackery' such as E. Jameson, The Natural History of Quackery (London, M. Joseph, 1961) and A. D. Wright, "The Quacks of John Hunter's Time", Transactions of the Hunterian Society, xi (1952-53), 68-84.

4 See J. Peterson, The Medical Profession in Mid-Victorian London (Berkeley, University of California Press, 1978).

5 L. R. C. Agnew, "Quackery", in C. D. O'Malley (ed.), Medicine in seventeenth century England (Berkeley, University of California Press, 1974), 313-26, p. 313.

6 For Graham, see Roy Porter, 'The Sexual Politics of James Graham', British Journal for Eighteenth Century Studies, v (1982), 199-206.

7 C. Mackay, Memoirs of Extraordinary Popular Delusions 2 vols (London, National Illustrated Library, 1852).

8 Quoted in C. J. S. Thompson, The Quacks of Old London (London, Bretatonos, 1928), 276.

9 [R. Southey], Letters from England 3 vols (London, Longmans, 1807), III, 284.

10 Other definitions include: "A mountebank, a bold and ignorant pretender to the art of Physic." Bailey. "A person who pretends to arts which he does not understand, generally applied to pretenders in Physic." Barclay. "A pretender to knowledge of which he is not possessed, a vilifier of all that is honourable and respectable in the Medical profession ... and a puffer of some remedy the powers of which he does not understand." Dr Hastings. Quoted in Quacks and Quackery by a Medical Practitioner (London, Simkin, Marshall, 1844), 1.

11 For Smollett see G. S. Rousseau, Tobias Smollett, Essays of Two Decades (Edinburgh, Clark, 1982); R. Hambridge, "Empiricomany, or an Infatuation in Favour of Empiricism or Quackery. The Socio-Economics of Eighteenth Century Quackery", in S. Soupel and R. Hambridge, Literature and Science and Medicine (Los Angeles, Clark Library, 1982), 47-102.

12 Thompson, The Quacks of Old London, 33-44.

13 H. Rowe, The Sham Doctor. A Musical Farce in John Croft (ed.), Memoirs of Harry Rowe (York, the Subscribers, 1801).

14 J. Crellin, "Dr James's Fever Powder", Transactions of the British Society for the History of Pharmacy, i (1974), 136-43.

15 M. H. Nicolson, "Ward's Pill and Drop and Men of Letters", Journal of the History of Ideas, xxix (1968), 173-96, p. 196. Walpole recommended James' powders, "for cough, for gout, for smallpox, for everything".

16 See S. Paget, John Hunter (London, Fischer & Unwin, 1887), 165.

17 Gentleman's Magazine, 1731, quoted in Hambridge, op.cit. (ref. 11), 76.

18 For the quackery and imposture of all the professions see C. Probyn, "Swift and the Physicians", Medical History, xviii (1974), 249-61.

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THE DEVELOPMENT OF DENTAL PRACTICE BEFORE 1850

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It is quite possible to find evidence of interventionary treatment of the teeth in the remains of a number of historic populations, but whether ancient Egyptian or Etruscan dentures were ever meant to be functional in this life as opposed to spare part replacement for the next, is a matter open to question. Certainly from the earliest of times man has been plagued by trouble of some kind or other with the teeth, often in the form of pulp exposure resulting from a very coarse diet, but that does not mean to say he was either able or willing to do anything about it. By the Middle Ages, however, the emergence of a group of professional toothdrawers suggests changes taking place. Dental decay (caries) was beginning to be more widespread but even then extraction of teeth as a remedy for toothache rather than because they had become loose through periodontal (gum) disease, was a considerable rarity. Not too surprising, perhaps, considering the instruments available and the lack of any anaesthetic agents bar alcohol.

Little attempt was made in the real world to make good deficiencies until the end of the 17th century. There then appeared on the scene a group of individuals calling themselves 'operators for the teeth' and offering to make prosthetic appliances to replace lost teeth. By the early 18th century, filling of cavities was being more commonly practised and in the 1750s the word 'dentist' entered the English language. 'Dentistry' in its modern sense had arrived, for the repertoire of the practitioner of the day comprised, in theory at least, preventive advice, treatment of the gums, filling of teeth with gold, lead or tin, partial and full dentures, crowns and bridges, root canal therapy, transplants, orthodontics, obturators and minor oral surgery. The 18th century dentist set himself the same tasks as his modern counterpart, but without benefit of scientific knowledge, technology or anaesthetics. Dental practice has been trying ever since to bring to perfection these goals set 200 years ago.

The available sources suggest that dentistry appeared initially in London and was taken to the provinces from the 1750s onwards by practitioners from the capital who took advantage of the contemporary improvement in the road network to regularly go on tours lasting several weeks to such places as were likely to provide them with patients; for, other factors apart, the economics of producing dental work in gold and ivory with the average denture costing 20gns (a year's wages for an agricultural worker) severely circumscribed the demand for their services. The return from these visits was maximised by efficient use of that other burgeoning organ of communication in the 18th century, the provincial press. By the 1760s, the provinces were producing resident dentists of their own, again going on tours from time to time. The accolade of earliest resident dentist discovered outside London is currently awarded to Birch Hesketh of Liverpool.

Nevertheless, the numbers of such men remained very low indeed. By 1800 there were still probably not more than 20 dentists in the provinces with perhaps twice that number in London. By 1850, however, most major towns had their own dental practices, and numbers had reached over 350 in the provinces with nearly 300 in London.[1] It can be argued that this remarkable upsurge was related to the growth of the consumer society, with surplus money chasing novelty and the niceties of life rather than the mere necessities. There is evidence to suggest a change in attitudes towards care of the teeth based less on modern criteria of health than of social desirability and emulation.[2] When this interacted with an undoubted increase in dental disease in the population (relatable to a considerable rise in the consumption of sugar among more social groups),[3] with the technological revolution which produced porcelain teeth and with the entrepreneurial spirit of the day which learned fast how to identify and foster a latent consumer demand, then the scene was set for the growth of such specialist treatments as dentistry.

The spread of this new phenomenon was not even, in chronological, geographical, social or simple numerical terms. The substantial increase in numbers of dental practices at any one time did not really begin until

about 1810 in the provinces; thereafter numbers doubled every ten years. Such an apparently simple statement conceals the fact that there was a very high turnover. It may come as no great surprise to find that in an expanding profession, 60-70% of practitioners in each decade were new recruits; a simultaneous drop-out rate of 40% is rather striking to the modern observer. It can be calculated that only about 55% of the practices in existence in one decade were likely to still be in operation in the next. In fact, just over 30% of all provincial dentists before 1850 survived only one year and just over 40% no more than five, although the rates were somewhat lower for the end of the period. So, the total number of dentists in practice at **some** time during a decade, say, is always considerably in excess of numbers which can be calculated for any one year during that same decade.

Nor is the geographical pattern of spread straightforward. The first places to boast resident dentists outside London were the ports and developing cities (such as Liverpool, Manchester, Birmingham) and the important towns of the old, pre-industrial society (such as Norwich). It might easily be concluded that dentists set up practice in major centres of population, but, for the whole of the hundred years up to 1850, new practices were being set up in places of exceedingly modest population size (as low as 2,000 in some cases), and that at a time when contemporaries were saying that no dentist could expect to keep body and soul together if they stayed put in a place of only 10,000.[4] Simultaneously, the new urban centres of the industrial areas were being consistently and almost studiously ignored. Stoke-on-Trent, for example, had no resident dentist until its population numbered 89,000. Although new towns were being added all the time to the list of those where dental treatment could be obtained, 70-80% of the new practices being established were being located in towns which already had a dental presence. Basically, the choice of location for a practice was related to wealth and this was more likely to be found in a city such as Manchester, with its merchants, than it was in neighbouring Oldham, with its largely working population, which, despite its size, still had no resident dental practitioner by the middle of the century. An element of personal choice also entered into the equation, just as Catherine Robinson has shown to be

the case in modern times.[5] It would seem that a dentist selected his geographical area of operation and then chose where to base himself within that area according to his personal preference of life style. He was prepared to travel around the district if necessary, to obtain patients, just as the country apothecary was. He was, moreover, helped by the fact that people are willing to travel to seek dental treatment in a way which they would not do or are not able to do in search of general medical care.

The first generation of dentists came from the ranks of jewellers, goldsmiths, hairdressers, patent medicine sellers, perfumers, cuppers and bleeders and watchmakers. A very small number emanated from the medical profession, mostly from among apothecaries, but it should be emphasised that, in the provinces at least, no more than 5% of all dentists of the period we are looking at had any formal medical training and that 5% includes a number of dentists who acquired the MRCS with no intention of practising any other calling than that of dentist.[6] Treatment of the teeth formed no part of the education of a surgeon of the period and it was considered by many dentists, probably justifiably, that the medical education then available was of little use as a preparation for dentistry. The end of the 18th century saw the first generation of dentists taking on their own apprentices and training sons to carry on the business. Some of these family firms continued for a good three generations and a few are still in existence today.[7] The available evidence suggests that up to a half of all provincial dentists up to the 1850s were trained by apprenticeship or 'regularly educated', as they would have put it. These were the ones who stayed in dentistry for careers every bit as long as their modern counterparts. As for the rest, there was no legal sanction at the time against anyone calling themselves a dentist, from the chemist and druggist who routinely acted as toothdrawer for the poor[8] to the man in search of a new means of earning a living. No training was necessary, nor was it always sought. Some dentists made quite a business of providing short crash courses and others, particularly in London, operated a kind of franchise system, teaching new recruits a few tricks of the trade before letting them loose on an unsuspecting public. A fair proportion of those who took up dentistry at a mature age probably continued, at least at first, to carry on their original trade part-time.

Yet others, perhaps by virtue of their training as watchmakers or jewellers, became employed by dentists to carry out the mechanical work of the practice and later branched out on their own. Plenty of these assistants stayed with their firms for many years and were involved in the clinical side of the work. The experience they gained probably made them just as well trained for dentistry as the young man who had served a conventional apprenticeship.[9]

With such a wide diversity of elements contained within one blanket term 'dentist' and no professional organisation to act as a forum for the exchange of ideas, clinical or ethical, it is perhaps not surprising that self-interest prevailed over unity. The 'respectable' were alarmed by the influx of incomers in the early part of the 19th century and accusations of quackery were rife.[10] But this raises the perennial riddle, 'When is a quack not a quack?' to which the answer is usually 'When he is somebody else but me'. By the 1850s the group had probably reached that stage in the life of any body where some organisation becomes inevitable, where boundaries have to be drawn, if only for the self-preservation of its most influential members.

The first hints at reform came in the late 1830s when suggestions, made by dentists, appeared in the medical press that there should be a Faculty of Dentistry. Perhaps with a sidelong look at the professionalising medical and pharmaceutical professions, in the 1840s attempts were made to interest both Parliament and the Royal College of Surgeons in dental reform, to found a dental society and start dental journals, but to no avail, largely because of the inability of a few individuals to overcome the self-interest and inertia of the majority. The years around 1850 were the lull, or perhaps the complacency, before the storm. In 1855 a young 22 year old dentist from Croydon called a public meeting of the profession which was to lead within a very few years to the establishing of two rival professional bodies, the two dental journals which supported them, a Licence in Dentistry awarded by the Royal College and two dental schools. Complete autonomy for the profession took a little longer; the General Dental Council was not established until 1956.

A detailed examination of the provincial dentists in practice before 1850 suggests that, despite an undoubtedly shady penumbra, there was at the centre a very solid and substantial core of ethical and well-intentioned practitioners who were well on the way to establishing themselves as a profession. Census records indicate that their socio-economic standing was on a par with that of the qualified surgeon and the Member of the Pharmaceutical Society and that, as a group, they did not enjoy the lowly status often ascribed to them; certainly in purely monetary terms they were better off than the average medical man of the time.[11]

* * *

NOTES

1 Calculated from trade directories for London (by D. W. Wright) and the provinces (by Christine Hillam).

2 Dental tracts and newspaper advertisements of the period persistently lay emphasis on the restoration of appearance.

3 M. E. Corbett and W. J. Moore, 'The distribution of dental caries in ancient British populations: IV, 19th century', *Caries Res.*, 10(1976), pp. 401-414.

4 'Suaviter et fortiter', 'Quackery and country practice', *Br.J.dent.Sci.*, 2(1858), p. 49.

5 C. Robinson, 'Dental manpower ratios: factors influencing dentists' choice of practice location' (unpublished M.Sc. (Community Dentistry) dissertation, University of Manchester, 1978), p. 51.

6 Based on a comparison between a list of provincial dentists in practice before 1855 with P. J. and R. V. Wallis, *18th century medics; subscriptions, licences and apprenticeships* (Newcastle upon Tyne, 1985); *London and provincial medical directory* (London, 1847); *Medical register* (London, 1779, 1780, 1783); *List of members of the Royal College of Surgeons in London* (London, 1805, 1825, 1835, 1845); *A list of persons who have obtained certificates of their fitness and qualification to practise as apothecaries from Aug 1 1815 to July 31 1840); ibid.,...from Aug 1 1840 to July 31 1852* (London, 1852); *Register of Pharmaceutical Chemists and Chemists and Druggists* (London, 1869); *Dentists Register* (London, 1879).

7 At least 30% of all provincial dentists in practice before 1855 headed or belonged to family firms. Many others went on to found their own 'dynasties' after this date.

8 This was a universal practice and accounted for a substantial part of the income of some chemists and druggists. However, work in progress suggests that chemists and druggists of this period may not have called themselves 'dentists' unless they offered a full range of dental treatment.

9 see Christine Hillam, 'Professional education for dentistry before 1859', *Br.Dent.J.*, 163(1987), pp. 204-207.

10 see especially the columns of *Forceps* (1844-45) and the prefaces to most dental tracts especially those published between 1830 and 1850.

11 Based on a survey of probate records (positive and negative) of 189 provincial dentists in practice for more than 10 years before 1855.

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DENTAL EQUIPMENT 1700 - 1850

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The period 1700-1850 is of particular interest in the study of the history of dentistry. Professionally, dentistry was still in the dark ages in 1700: by 1850, the first foundations of the profession we know today had been laid.

The same pattern can be seen in the development of dental equipment over the same period. In 1700, in general, dental equipment was little different from that in 1400, and in some ways inferior to that used in Greek and Roman times. By 1850, much of the equipment used bears a clear relation to that available today as can be clearly seen from the study of surviving artefacts.

The dental workplace itself is a case in point. Until well into the 18th century, most dental work was carried out by itinerant practitioners of varying competence. Dentistry, particularly exodontic dentistry, was a popular subject with the artists of the time and their work provides a graphic picture of contemporary dental practice. During the course of the 18th century, the dentist, particularly in the larger towns, tended more and more to operate from his (and very occasionally, her) own premises, though many of them still undertook annual journeys round the country to operate in the provinces as well, a practice which declined during the first half of the 19th century. The development of the fixed dental surgery is marked by the appearance of the specialised dental chair. One of the earliest illustrations is to be found in 'A Practical Guide to Operations on the Teeth' by the London dentist, James Snell, published in 1831. By 1850, specialised wooden dental chairs, often with elaborately carved frames, were in common use. It was not until the 1870s that the metal framed chair made its appearance.

Many smaller dental artefacts survive, and an interesting class is that devoted to tooth cleaning and oral hygiene. Since ancient times frayed

twigs have been used for cleaning the teeth. They are still used in some parts of the world today: indeed, they are still available in the United Kingdom, being quite popular among the Asian community. The familiar toothbrush was introduced during the second half of the 17th century in France. During the period 1790-1810 there was a craze in England for silver toothbrush sets: many examples survive and are almost invariably hallmarked from Birmingham or London. By the end of the 18th century, toothbrushes were in general use among the more affluent classes, and several tradesman specifically described as 'toothbrush makers' are found in the trades directories of the period. The Wellcome collection includes one originally made for Napolean Bonaparte. The fact that several toothbrushes owned by the Emperor survive suggests that he was in the habit of leaving them behind on his campaigns.

General oral hygiene sets were also popular among the wealthy during the period 1750-1850. The simplest were small sets of scaling instruments, usually with a mirror in the lid of the case to assist in the scaling operation. More elaborate sets included other instruments, such as toothbrushes, toothpowder boxes and tongue scrapers. A large number of such sets survive, as do larger scaling instruments for use by the dentist.

Instruments for cavity preparation are an interesting area for study. Prior to 1850, in general insufficient importance was attached to the eradication of caries prior to filling, although fillings had been carried out with some success well prior to that. Pierre Fauchard, writing in 1728, particularly recommends tin foil, rather than gold foil, as a filling material, and the large number of surviving excavating and stopping instruments which survive from the first half of the 19th century show that fillings were often attempted. From the 1830s onwards, attempts were made to improve cavity preparation prior to filling, using rotary excavators. The simplest of these was the bur and thimble. The bur is rotated between the thumb and forefinger, and the thimble, worn on the index finger, enables pressure to be applied without a hole being drilled simultaneously in the operator's hand by the back of the instrument. The Archimedean drill was also used from about the 1840s, but since two hands

are required to operate this type of drill, control was inevitably limited. Numerous other ideas were tried, but it was not until after 1850 that really practical drills appeared, culminating with the introduction of Morrison's treadle drill in the 1870s.

Where there is no conservative dentistry, or where it fails, dental extraction may have to occur. In the days before anaesthetics this was not a course to be taken lightly, and the patient was only driven to it in the face of the agonies of toothache. Forceps are the earliest exodontic instruments. Examples survive from classical times, but until well into the 18th century the designs were so crude that an effective grip on the tooth was not possible and alternative instruments were often used.

The first of these alternatives appeared in about 1300 - the pelican. Many examples of this instrument survive, and there was a wide variety of modifications. An adjustable design which obviated the need for a selection of claws was introduced at the beginning of the 18th century and remained in use until well into the 19th century, as signed examples demonstrate. Indeed, even the simple double-ended design was still being made up to at least 1820.

Another class of former exodontic instrument is the dental key, introduced around 1720. Early examples had loop handles and looked very like the conventional lock key, hence the name. By all accounts these instruments worked well in the hands of a skilled operator; in fact the important French surgical instrument making firm of Collin was still listing them in their catalogues as late as 1928. Again, many variants were produced.

Forceps continued to be used throughout the period and underwent some development. Several types included adjusting screws to regulate the separation of the jaws, in an attempt to prevent the collapse of very carious teeth during the course of extraction by forceps which basically acted like pliers. Another method of reducing pressure was the use of a spring between the handles: this is an idea Fauchard particularly deplores. After about 1830, considerable improvements in forceps design were made, so that the beaks of the forceps were designed to accurately

fit the neck of the tooth. Perhaps the most important innovator was the great Sir John Tomes who, from 1848, worked closely with Jean Evrard, a French instrument maker working in London. Apart from the finish, which would not be resistant to sterilization procedures, Evrard's forceps are similar to many of today's designs and are actually rather better made. Other manufacturers were quick to copy this approach to design, which became ubiquitous in the United Kingdom within twenty years.

The last area of dental equipment to be examined in this paper is dental prosthetics. The construction of a practical set of dentures, whole or partial, was a very skilled and time-consuming business. The first partial dentures were made by the Etruscans circa 600 BC, but the skill appears to have been lost after Roman times, to be rediscovered in the 17th century. Fauchard discusses denture making in some detail. It took hours of painstaking work to achieve a remotely acceptable fit since these dentures were made of ivory. Many of these survive. The Wellcome collection includes a particularly fine set associated with the so-called 'Ruspini' porcelain denture holder. Bartholomew Ruspini (1728-1813) certainly was dentist to the Prince of Wales, and the holder does carry the emblem of the Prince of Wales' feathers and appears to date from around 1800, so the association is reasonable, if not proven. Such dentures were expensive, and few people could afford them; indeed, to own a set was something of a status symbol at this date. However, ivory was far from ideal as a denture material, since it rotted in the mouth. Surviving examples show the truly disgusting condition which an ivory denture could attain, while still being worn. To overcome this problem, other denture materials were tried; in particular porcelain, commercially introduced into England by a Frenchman, Nicholas Dubois de Chémant, at the end of the 18th century. These were popular for several years, though they remained expensive and the fit was often poor. Some examples of de Chémant's work survive, but perhaps their best known memorial is the famous cartoon, 'A French Dentist.....' by Thomas Rowlandson.

Another alternative to ivory was the swaged metal (usually gold) plate, on which individual porcelain teeth were mounted, often combined with posterior ivory blocks. These were also expensive but were an improvement

on ivory. The Wellcome collection includes a good example of this type: the porcelain interiors are Claudius Ash's so-called 'gold tube' teeth (that is, the hole for mounting pins is lined with a gold tube) which were introduced in 1837. The gold plate would have been swaged on a metal model of which the BDA collection includes a rare survivor. The real breakthrough in denture making came in the 1850s, with the introduction of vulcanite as a denture base material. Vulcanite could be moulded directly on a model of the mouth, and was inert and strong enough to be work in the mouth. At last people who had lost their teeth could have an acceptable set of replacements at an affordable price.

The differences in dental equipment between 1850 and the present day, while apparently considerable, are in fact the result of five simple factors: the development of new materials for performing old tasks (such as improved metallurgy, plastics and filling materials), the discovery of anaesthesia, the understanding of the importance of antiseptics, the widespread introduction of electric power, and the invention of radiology. But dentistry is primarily a practical subject, and, between 1700 and 1850, practical and lasting solutions had been developed to meet many of its challenges.

* * *

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DENTAL TREATMENT BEFORE 1850 - HOW EFFECTIVE WAS IT?

David Hillam

In this paper I would like to look at some of the treatments offered by dentists in the period from 1750 (when dentistry began in this country) to 1850 and speculate on how effective they may have been.

There are relatively few contemporary accounts of dental treatment of the period and even fewer accounts of their success. Those reports arising from patients are anecdotal, whereas those arising from the dentists suggest either perfect, or very unsatisfactory results, depending on whether they, or some other dentist does the treatment.

It must be remembered that anaesthetics were not available in the early period. Treatment had to be quick and as painless as possible. This, together with the inferior lighting available, must have affected the thoroughness with which the operator could have done his work, even if it were based on sound mechanical principles. However, just because an operator was working 150 - 200 years ago one must not fall into the trap of believing that he was an unsophisticated, ineffective dentist peddling useless treatments and inflicting untold harm.

Filing of teeth

Where decay attacked the point of contact between two teeth, it was common practice to file away these contact points and, if the decay had not penetrated too far, hopefully eliminate it altogether. Frequently this was undertaken for prophylactic reasons. In both cases care was taken to finish with fine files to leave a smooth surface, and patients were instructed to polish the surfaces with bamboo sticks.

The result cannot have been aesthetic. Ugly gaps would be left between the teeth, it may not be possible to remove all the decay, and it is

highly likely that the exposed dentine of the tooth would not only be extremely sensitive to hot, cold and sweet foods, but would also become stained. There was the additional hazard of recurrent decay, especially in those cases where the teeth had drifted together again. In other words, this was not a very satisfactory technique, despite being very widely used.

Fillings

By the early 19th century several authors were deprecating filing of teeth for these very reasons and advocated filling or 'stopping' of teeth. Where the biting surfaces of the teeth were decayed, this was the only treatment available anyway (apart from extraction). There were, of course, severe limitations on what could be done because of the poor instrumentation and materials then available. When access to the cavity was difficult (eg between the front teeth), elastic bands or small pieces of india rubber were inserted for a few days previously in order to separate the teeth. Care was taken to remove all the decay from the cavity using 'spoons' (what would now be called excavators) and finger-held drills. Pure, soft gold was the most favoured material for the filling, and when thoroughly condensed into a well prepared and dried cavity, was likely to give a highly successful result. There are reports of these fillings lasting 40 years or more. This technique, with minor modifications, continued to be used until modern times and only relatively recently ceased to be taught in Dental Schools.

The technique was expensive, so there was a constant search for cheaper materials. Silver, platinum, lead, low melting point alloys and 'mineral pastes' were all used but none was as satisfactory as gold. The problem was that they had a different co-efficient of thermal expansion from the tooth, so they expanded and shrank with changes of temperature, they leaked around the edges, corroded and either wore away or eventually fell out. The first amalgams of silver-mercury began to be developed in the early part of the 19th century. They were called 'succedaneum', meaning literally 'artificial substitute'. Use of this material was promulgated

in the States by a rather disreputable English dentist named Crawcour. Its use was discredited; all members of the American Society of Dental Surgeons had to sign a declaration not to use it or be expelled, for it was considered that no amalgam could ever be as good as gold. By 1856, however, the American Society had lost so many members it could not make a quorum for its annual meeting and became virtually bankrupt. The increasing success of amalgam must have been a factor in this, but it was many more years before amalgam became generally acceptable filling material and its use only rivalled gold by the end of the century.

Pivot teeth

If a tooth was badly broken down, neither filing or filling would be possible. In these cases a metal or wooden post (or 'pivot') was inserted into the remains of the root, to which was attached an artificial or natural tooth. The nerve of the root was destroyed, partially or completely, by cautery with hot wires, arsenic, or by mechanical means. No attempt was made to completely fill and seal the root canal as would be considered essential now. Consequently, such teeth must have been prone to infection. Some operators advocated cutting a groove along the pivot, designed to allow pus to drain away. However, it must be said that to this day, many patients unknowingly have infected root canals, and a high proportion give little or no trouble.

With poor cementing materials, many of these pivot teeth (or post crowns, as they would now be called) must have become loose. Also, when wooden pegs, usually hickory, were used, swelling of the fibres would often have caused disastrous splitting of the root.

Extractions

A tooth decayed beyond redemption might be extracted, usually by means of a key or pelican. The design of both these instruments was such that tooth was literally wrenched sideways from its socket. Where a tooth was

already loose, the result would usually be successful but, when the tooth was badly decayed or too firmly embedded, there would undoubtedly be complications. For example, it is very possible for the tooth to break off at the level of the gum. If this occurred, removal of the root would be so difficult and painful that in most cases it would be left and hence be susceptible to the sort of infection already mentioned in connection with pivot teeth. On the other hand, the tooth was sometimes removed together with a portion of its supporting bone and gum. Sometimes two or three teeth were accidentally removed with the intervening bone. If a significant portion of the surrounding gum became torn in the operation, post-operative haemorrhage would be profuse.

By the early part of the 19th century extraction forceps were being developed. These accurately fitted the necks of the teeth, so that the teeth could be firmly gripped. This permitted the tooth to be rocked and rotated in any direction, so that its attachments to the bone were loosened prior to its final removal from the jaw. It is interesting to note that the design of extraction forceps has undergone very little change in the last 140 years.

Transplantation

The transplantation of teeth from the impecunious to the rich was a short-lived vogue in the late 18th century. It was widely advertised and perhaps frequently attempted. In many, if not most cases, the attempts would be doomed to early failure, but there are reports of such teeth being firmly retained for periods up to a month.

The treatment of periodontal disease

Our professional predecessors were well aware that periodontal disease often resulted from unclean teeth, even though they were ignorant of the precise aetiology and pathology of the various conditions. They laid great stress on toothbrushing and the need to scrape the tartar from tooth

surfaces. If this were done carefully, there is no doubt that a dramatic, but temporary improvement in the health of the gums would have resulted in many cases. Other treatments inflicted on the unfortunate patients were scarifying, and/or the application of leeches. It is difficult to see what beneficial results could ensue from scarification. The series of superficial incisions which it caused may have permitted the drainage of pus, if present, and may have allowed the temporary reduction of tissue swelling but it seems far more likely to have caused considerable trauma and even further inflammation.

As for the application of leeches to the gums, this must have been a most unpleasant experience for the patient. The greatest benefit would have been from the placebo effect. The relief of having the leeches removed from the mouth, engorged with the blood and possibly pus must have been considerable, and created a vivid impression on the patient. Any physiological effect would have been minor, and the risk of them transmitting infection considerable.

The ligation (or tying together) of loose teeth was frequently carried out. This was done with wires or silk but in both cases the ligature would be prone to collect more plaque, as well as to work its way down the roots of the teeth. In the short term, no doubt the patient would be pleased to have the loose teeth stabilised but in the long term such procedures would do more harm to the gums than good.

Dentures

It was his ability to produce dentures which identified the true dentist, separating him from the common tooth drawer. It required great skill to make even a moderately functional or aesthetic denture, given the materials available at the time. Dentures were made to replace one missing tooth or any number up to a complete set. Beeswax impressions were taken of any existing teeth and jaws. Early in the period, no trays were used to support the wax, so distortion must have been considerable, leading ultimately to an ill-fitting denture. By the 1840s, impression

trays existed which were very similar to the ones used today. Casts of the jaws were made in the impressions using plaster of Paris, lead, or 'spelter' (a metal alloy based on zinc). The entire base was made of either gold which was hammered to the shape of the cast or, alternatively, it was carved from the teeth of hippopotomus or walrus until it fitted the model. This must have been a long tedious process, often delegated to the apprentice. Teeth, either human or porcelain, were fitted to the gold or ivory bases by a variety of ingenious means depending on the type of teeth used, but loss of individual teeth would be a frequent occurrence. Where the patient still had some remaining teeth, the denture was held in place by metal clasps or silk ligatures. When no natural teeth were present, gold spiral springs were often used to join together the upper and lower denture. The finished result was almost certainly very uncomfortable, and most likely caused ulceration of the gums and cheeks if worn for any length of time. Most dentures were therefore almost exclusively worn for aesthetic reasons, and removed prior to eating.

Despite the claims of dental advertisers, such dentures must have had a very unnatural appearance, even when new. The cochineal dye sometimes used to simulate the gum only lasted a few hours. The ivory base would soon become malodorous, and together with any natural teeth, be subject to decay. The production of porcelain teeth and enamelled gumwork obviated some of the deficiencies, but it was some time before they became aesthetically acceptable replacements for natural teeth.

Dentures were often fitted over retained roots. Advertisements assured potential patients that it was not necessary to undergo the ordeal of extraction before artificial teeth could be fitted. This would, of course lead to the same pain and sepsis described earlier.

Orthodontic treatment

The orthodontic techniques of the late 18th centuries had many similarities with present-day procedures, both in objective and method. They aimed to correct overcrowding, narrow arches and malpositioned teeth.

In many cases the results would be successful. Appliances of ivory or gold were carefully designed so that forces could be applied to the teeth with wire or silk ligatures. Bite planes were used to separate the teeth of the upper and lower jaws so that teeth could move and also to direct teeth into their new positions, much like their modern counterparts. The need to remove appliances daily for cleaning and for the retying the ligatures was stressed.

Frequently, however, the necessary degree of expertise was lacking. Bell criticised operators for extracting deciduous teeth too early, actually promoting the crowding which the procedure was designed to prevent. Teeth were filed, often excessively, to relieve crowding, with the harmful effects described earlier. So routine was this practice in the 1830s that Gray stated that children at boarding schools were having their teeth filed without prior knowledge of their parents, 'their first information on the subject being derived from the item in the bill for the school-charges'.

Conclusions

Inevitably in an assessment of this kind, some generalisations and assumptions must be made. Some dentists were mere charlatans and left a trail of damage and sepsis. The materials available, were in many instances woefully inadequate for the purposes they were intended to serve. On the other hand, some dentists were highly skilled and applied their knowledge with great care. They inserted high quality fillings, extracted teeth with the minimum of trauma (at least when forceps replaced the key), were able to perform quite complex orthodontic treatments and were able to provide fairly aesthetic, if not functional dentures by the early 19th century, when porcelain teeth became available. All treatment,

however, must have been at least uncomfortable if not extremely painful and the amount of residual infection left in patients' mouths, considerable.

* * *

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THE MATERIA MEDICA OF THE NINETEENTH CENTURY

William E. Court

As the 19th century dawned, the practice of medicine was still dominated by the Humoralistic-Galenic tradition, a philosophy dependent of the trinity of venesection, emetics and cathartics to cleanse the body functions.

The range of drugs available had widened to include vegetable drugs from the New World and the more toxic chemical emetics and purgatives such as antimonials and calomel (mercurous chloride).

Medicine of the time is arguably well summarised in the typical medical stores list suggested for ships of the Royal Navy by Sir Gilbert Blane, FRS (1749-1834) and reported by Turnbull in his book Naval Surgeon (1806). Naval drugs were issued by the monopoly suppliers, the Apothecaries Hall, between 1703 and 1805. The list was discussed in detail by Court (1987). The drugs cited comprise a combination of purgatives, emetics, carminatives, stimulants, diuretics, analgesics, etc. used at that time. Although not specific cures, these drugs, in skilled hands, could alleviate suffering and encourage healing.

That the old humoral tradition still operated in 1800 was confirmed by the continued belief that it was dangerous to treat haemorrhoids, fever, gout and certain skin diseases because released corrupting humours would attack internal organs. Treatment under the Humoralism of the Eclectics frequently comprised blood-letting, cathartics and emetics together with baths, opium and bark. Bark, cinchona, was not recognised as a specific antimalarial although widely used for all fevers.

Hufeland's observation (1800) that each curative measure is an artificial disease indicated that the concept of curative diseases such as fevers, haemorrhages and eczemas, an idea from the writings of the Hippocratic

school, Galen, Boerhaave and Hahnemann, still influenced some practitioners.

Nevertheless, changes were afoot. In continental Europe the sceptics were questioning the humoral theory. Although not opposing drug therapy, they required nondogmatic investigation which, they hoped, would reduce the number of drugs in use. Therapeutic scepticism was considered as a logical development of the early Hippocratic teaching that employed and supported the healing, restorative power of nature. In theory, therapeutic scepticism was empirical; in practice, old customs and habits were not entirely forgotten. As late as 1857 J.H. Bennett in Edinburgh was still fighting, fortunately successfuly, against the practice of blood-letting already debilitated patients, yet Bäumgartner in Freiburg 5 years later still regarded the 5 pillars of therapeutics as blood-letting, emetics, purgatives, opium and quinine.

Although the so-called 'rational' therapeutics, such as 'Brownism' or 'Brunonianism' (John Brown, '<u>Elementa</u>', 1780) and Hahnemann's homeopathy, swept across Europe, and especially Germany, Britain was little affected and continued with its traditional polypharmacy. The pharmaceutical apothecaries still pursued their traditional counter-prescribing, virtually acting as general practitioners of medicine until restricted by the Apothecaries Act, 1815, which officially denied them the right to diagnose their clients' complaints and, in effect, separated pharmacy and medicine.

Typical prescriptions of the time included the following examples:-

Compound infusion of gentian	℥xij
Compound infusion of senna	℥vj
Compound tincture of cardamom	℥ij

Mix. Dose:- ℥i – ℥ii

London Pharmacopoeia, 1836.

This mixture comprised the bitter tonic gentian, the laxative senna and, as carminative and flavouring, a tincture of cardamom, ginger, cinnamon, caraway and cochineal. It was a popular, tonic medicine.

Mist. Cathartica	Black Draught.
Sulphate of magnesia	℥vj
Spirit of sal volatile	℥vj
Tincture of senna	℥iii
Infusion of senna	℥xviij
Extract of liquorice	℥vj
Oil of clove	gtt vj

Dose:- ℥iss to ℥ij for adults.

Gray's Supplement, 1848.

In this cathartic mixture senna and magnesium sulphate were the purgative agents, spirit of sal volatile was antispasmodic and stimulant, oil of clove offset the griping action and liquorice extract masked the unpleasant taste, particularly of the magnesium sulphate.

Digitalis leaf, dried	6 grains
Squill, recently dried	12 grains
Mercury Pill (mass)	36 grains
Let 12 pills be made.	Dose:- 5 - 10 grains

St. George's Hospital Pharmacopoeia, 1841.

Digitalis was recognised as a cardiac and circulatory stimulant increasing the strength and efficiency of cardiac contractions, lowering the pulse rate and improving diuresis. Squill acted similarly and mercury augmented the diuresis and was purgative. The result was an empirically successful medicine.

The sceptics, the first true medical empiricists, did not seek causal knowledge of disease, regarding such information as unnecessary, although insisting on clinically controlled experiments for the nondogmatic examination of traditional drugs and healing practices. In France, F. Magendie, a sceptic clinician, turned to scientific investigation, laying the foundations of experimental physiology, pathology and pharmacology. Although sceptics usually opposed excessive drug therapy, Magendie's 'physiologism' supported the use of chemically pure drugs and opposed the old idea that drugs and poisons had fundamentally different effects in man and animals.

Magendie's group exploited the excellent chemical discoveries of, in particular, the French pharmacists, who had isolated the nitrogenous plant substances that Meissner called alkaloids. Morphine (Serturner, 1816) and codeine (Robiquet, 1832) had, by 1855, usually supplanted opium and laudanum, subcutaneous injection being used although oral opium was preferred for the treatment of diarrhoeas.

S.E. Asian nux vomica seeds yielded the bitter, stimulant but very toxic alkaloid strychinine (Pelletier and Caventou, 1818). Although the first alkaloid used in medicine (Magendie, 1821), strychinine is seldom used today.

Cinchona barks from South America were used in Europe from 1632. Known as 'Peruvian bark' or 'Jesuit's bark', cinchona was widely used for all types of fevers. The apothecaries, who worried little about noncompliance with the theory of humours, were great users of cinchona bark. Huxham's Tincture, Compound Tincture of Cinchona, included bitter orange peel, serpentary, cochineal and saffron and appeared in the Pharmacopoeia Londonensis, 1788. Quinine was isolated by Pelletier and Caventou in 1820 but its value in malarial fevers and its side-effects e.g. tinnitus, deafness were not appreciated until the end of the century.

The nightshade alkaloids were isolated early in the 19th century. Atropine ((±)-hyoscyamine) was discovered in 1831 (Mein) and was established as a mydriatic by 1850. (-)-hyoscyamine was isolated from

henbane by Geiger and Hesse (1831). The sedative effect of these alkaloids was soon realised, confirming the long-known sedative 'narcotic' effect of henbane.

Coffee and tea were found to yield caffeine (Robiquet, 1821) and theobromine (Woskressensky, 1840); these purine bases were considered valuable heart tonics and diuretics for dropsy (Squire, 1899).

On investigation, ipecacuanha yielded an alkaloid with some emetic action and it was named emetine (Magendie and Pelletier, 1817). The strongly emetic cephaeline was not found until 1894 (Paul and Cownley). Squire (1899) did not refer to emetine as an antidysenteric and the antidysentery preparation emetine and bismuth iodide did not appear until the British Pharmaceutical Codex, 1923 was published.

The discovery of alkaloids prompted the establishment of the pharmaceutical industry. Leaders were the German pharmacists Merck (1826) and Schering (1855) and the French pharmacist Nestlé (1865). Howards of Enfield were producing quinine in England by 1823. During the 19th century British firms such as T. and H. Smith Ltd., Edinburgh and May and Baker Ltd., Dagenham developed the production of pharmaceutical chemicals, others such as Allen and Hanbury Ltd., and Stafford, Allen and Sons, Ltd., manufactured good galenical products, and there was also a thriving trade in proprietary medicines e.g. Beechams, Carters, Boots, etc.

Slowly the practice of medicine moved forward and experimental methods in physiology and pharmacology gradually developed but the greatest changes occurred in the science of chemistry.

Wöhler's synthesis of urea in Berlin in 1828 initiated the chemical imitation of natural compounds. Coniine, the anodyne active principle from hemlock, was the first alkaloid synthesised (Ladenburg, 1886).

Thorpe in '<u>Essays in Historical Chemistry</u>' (1894) observed 'The advance in every section of chemistry during this century ..... has literally been by leaps and bounds. No branch has been more fruitful in result, in

suggestion, or in possibility, than that of organic analysis (i.e. synthesis)'.

Such developments really bore fruit in the following century but the chemical anaesthetics ether, nitrous oxide and chloroform were in use by 1850 and isolated cocaine was employed in dental ophthalmic surgery by 1844 although the synthetic congeners belong to the next century.

Synthetic antipyretics were in use late in the 19th century. Kolbe's synthetic salicylic acid (1859) was commercially available by 1874 at a much lower price than its natural counterpart from willow bark or oil of wintergreen. Sodium salicylate, being water soluble, was usually used as an antipyretic. Other synthetic antipyretics introduced were antipyrine (phenazone) (1884), antifebrin (acetanilide) (1887), phenacetin (1887) and aspirin (1893).

In suggesting that salicylic acid broke down to yield phenol and carbon dioxide and so produced an antiputrefactive effect, Kolbe was establishing a logical explanation for a specific drug action and thereby setting the scene for modern medicinal chemistry.

Toward the end of the century chloral hydrate (1869) was used as a hypnotic although paraldehyde (1884) was quicker acting and sulphonal (1886) slow acting.

Despite new drugs, treatments remained primarily symptomatic. Pharmacology developed slowly in Paris, Dorpat and Edinburgh and the combination of organic chemicals, pharmacological activity, pharmaceutical formulation and knowledge of disease mechanisms produced its dramatic results post-1930.

But what of everyday medicine? A few prescriptions tell their own story.

Ext. glycyrrh. liq.		℥iij
Tr. camph. co.		℥vj
Tr. opii		℥vj
Oxymel scillae		℥xvj
Syr. marrubii		℥viij
Ol. anisi		℥ ss
Aq. dest.	ad	℥ xl

(1889).

This cough mixture included the demulcent, expectorant liquorice, expectorant squill, mildly expectorant camphor, the antispasmodic, analgesic and diaphoretic opium and horehound, a soothing agent for catarrhal states. Although empirically derived, it was effective in the alleviation of a normally self-limiting condition.

Potass. brom.	℥iss
Tinct. hyoscyami	℥ iij
Spt. ammon. aromat.	℥ iij
Aquae chloroformi ad	℥vj

M. ft. m. A sixth part to be taken every two hours.

(1892).

This recommended migraine mixture comprised sedative potassium bromide, sedative and antispasmodic hyoscyamus and the sal volatile offered some vasoconstriction and stimulation of the respiration.

Fol. stramon.	℥ij
Fruct. anisi	℥ j
Potass. nitrat.	℥ j

M. ft. pulvis

(1892).

For this asthma preparation the stramonium or thornapple leaves released nightshade alkaloids that relieved spasm of the bronchioles, the carminative anise provided aroma and potassium nitrate facilitated the combustion process that delivered the alkaloids to the site of action. This was another example of empirical success.

Perusal of many such available prescriptions suggests that a sound empirical basis had produced many effective formulations. By the end of the century, isolated active principles e.g. atropine, morphine, were more frequently in use being purer and more reliable.

Scientific medicine was in its infancy but the British Pharmacopoeias of 1867, 1885 and 1898 reveal a trend carried on in 1914 and 1932, the dominant vegetable drugs declining in importance as synthetic chemicals and isolated principles e.g. alkaloids, vitamins, enzymes, etc. increased in number.

Formulations also changed. Infusions, decoctions and waters were superceded by the more concentrated stabler tinctures, extracts, solutions and syrups, valuable components of the ubiquitous liquid medicines. New ideas such as lamellae, injections and compressed tablets were developed but the demise of the pill and the lozenge and the exploitation of new dose forms occurred after 1940.

Perhaps the 19th century is best regarded as a period when good, sound, empirical medicine held sway despite the adventurous experimenters and some poor practitioners, while the disciplines of pharmacology, pathology, chemical synthesis and analysis, and accurate and meaningful assay emerged in readiness for the post-1935 allopathic era, the era, it is claimed, of drugs of proven efficacy.

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BIBLIOGRAPHY

Court, W.E.: 18th Century Drugs for the Royal Navy, Pharm.Hist. 17 (3) 2 - 6 (1987).

Fluckiger, F.A. and Hanbury, D.: Pharmacographia. London: Macmillan and Co. (1879).

Gray's Supplement to the Pharmacopoeia: T. Redwood, ed. London: Longman and Co. (1848).

Guthrie, D.: A History of Medicine. London: Nelson and Sons Ltd., rev. ed. (1958).

Partington, J.R.: A History of Chemistry, Vol. IV. London: Macmillan and Co., Ltd. (1964).

Sigerist, H.E.: History of Medicine. Oxford: University Press (1951).

Squire, P.: Squire's's Companion to the British Pharmacopoeia. London: J. and A. Churchill, 17th ed. (1879).

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BRAIN SCIENCE AND INSANITY IN VICTORIAN MURDER TRIALS

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Psychiatrists sometimes face considerable difficulty when giving an expert opinion on mental disorder in the criminal courts. Their critics tend dismissively to refer to either the general lack of psychiatric knowledge or the incompetence of particular psychiatrists. Such views are, in fact, far too simple. One way to explore the real complexities of deciding criminal responsibility in individuals with suspected mental disorder is to refer back to the nineteenth century and, in particular, to the 1820 to 1860 period when the courts, doctors and the public became familiar with the question of the criminal responsibility of the insane.

The insanity defence became a highly visible public issue in the early years of Victoria's reign. The controversy evident then still sometimes resurfaces (as in the trial in 1981 of Peter Sutcliffe), and it is possible to discern a continuity of subject. What has changed very considerably are administrative arrangements to do with the pre-trial assessment and post-trial disposal of offenders, the presence and status of psychiatric and other professionals in the process, and legal developments - notably the plea of diminished responsibility and the abolition of hanging. However, this essay will highlight some underlying historical issues in the Victorian period and will not refer further to the present.

Four main factors contributed to what I have called the 'visibility' of the insanity defence. First, from the beginning of the nineteenth century, a mixed philanthropic and medical lobby had created a public consciousness about insanity in general. This lobby had campaigned in two directions: to regulate a growing system of private asylums ('the trade in lunacy'), used by those who had some income; and to create a new system of public asylums for paupers, integrated with the Poor Law. By 1845, the self-styled reformers had carried public opinion before them, resulting in two Acts which established the system of County public asylums and a

central full-time Commission of Lunacy, and which laid down detailed rules about certification and about licencing the private sector. Though many of these developments had not been initiated by medical men, by the 1840s the lines of a new medical occupation of 'alienist', 'medical psychologist', or 'mad doctor' were apparent; the ancestor of the Royal College of Psychiatry, the Association of Medical Officers of Asylums and Hospitals for the Insane was founded in 1841. 'Progress' was the watchword of the asylum movement: those involved believed that a rational and humanitarian response to insanity was replacing cruel and prejudiced views. Medical men believed that their involvement brought science into the field for the first time.

The same reforming ideal was present in the second factor: the institution of novel penal ideas in the penitentiary and the restriction of the capital sentence (that is, the repeal of the eighteenth-century so-called 'bloody code'). For both penal and lunacy reformers, the question of the public's response to criminal lunatics - particularly in emotional murder cases -became a potent symbol of the success or failure of humanitarian reform.

The third factor was somewhat more technical, in that it concerned the courts' increasing familiarity with expert evidence in general and medical expert evidence in particular. While medical men had often given evidence in earlier times, it was only in the early nineteenth century, in Britain, that the courts began systematically to treat such evidence in a special way; and at the same time medical jurisprudence became a distinct topic in medical writing and teaching. Those insanity specialists who were willing to appear as experts in criminal cases expected to contribute to this expansion of medico-legal relations.

The last factor to mention was perhaps the most important, and it was certainly the most specific: the occurrence of spectacular crimes by people who subsequently pleaded insanity. Just as George III's madness had drawn attention to insanity in general, so particular cases focused debate on the general question of the criminal responsibility of the insane. A famous lunatic, Jonathan Martin, was tried and acquitted at

York in 1829 for having caused a serious fire in the Minster. He had shown reason, of a kind, in gaining entry and making the blaze spread, believing, as he claimed, that the building was an instrument of the devil. In 1840, a young man, Edward Oxford, was arrested following two occasions on which he appeared to fire at the young Queen while she was out in her carriage. Tried for treason, he was nevertheless acquitted, and the court appeared to treat generously the medical evidence as to his delusional insanity. Then, in 1843, a radical Glaswegian joiner, Daniel M'Naghten, shot and mortally wounded the private secretary to Sir Robert Peel, the Prime Minister. At his trial, the Lord Chief Justice indicated to the jury that the verdict of insanity would be appropriate, following extensive medical evidence. The government dampened down the resulting outcry in Parliament, that insanity was providing an 'escape' from punishment, by requesting the Lords Justices collectively to clarify the law regarding responsibility by responding to a series of questions. The Justices' response - the 'M'Naghten Rules' - thereby came to constitute the formal framework for administering the insanity defence; the existence of the Rules, however, was no guarantee that they were always strictly followed (they were not). The crucial phrase was that a jury, to acquit on grounds of insanity, should be satisfied that the defendant did 'not know the nature and quality of the act he was doing'. If so acquitted, then the defendant was held, under an 1800 Act, 'at Her Majesty's pleasure' in an asylum or special criminal lunatic accommodation at Bethlem Hospital (or at Broadmoor from 1863).

The M'Naghten Rules embodied a traditional <u>legal</u> criterion of responsibility, mental comprehension of the nature of the act. Thus juries were expected to use common sense in deciding whether or not the circumstances of a crime, and particularly the accused's conduct, indicated that there had been a criminal intent. The legal mind was familiar with using evidence to decide whether someone had been aware of what they were doing. What it was unfamiliar with, and decidedly sceptical about, was the use of evidence to decide whether or not a crime was willed or not, that is, whether or not a person could have done otherwise. It was on this issue, for reasons that I will explain, that a small but vociferous group of insanity experts attacked the law. These

experts argued that recourse to legal rather than medical criteria to judge the issue of insanity demonstrated an antiquated prejudice, a denial of science, and stood against humanitarian progress. A few medical men were therefore prepared to appear repeatedly in court as medical experts, giving evidence for insanity even in unpopular cases, thereby keeping the question of the criminal responsibility of the insane before the public and the legal profession.

A legal clarification is in order, though this distinction was not always clear - particularly during the emotion of an actual trial - to historical actors. The question of criminal responsibility was indeed a legal question; thus, medical evidence about insanity was evidence to help the jury decide responsibility. Medical insanity did not constitute legal non-responsibility; and it was a lay jury and not insanity experts who decided the latter question. Some experts thought this was wrong, but it was the law, and their attempt, when they appeared in court, to act as if it were wrong was quickly stopped.

Why did these early psychiatrists argue with the law? The simple answer was that they believed that new medical knowledge, which they wanted to call science, made them the proper authority for deciding questions of insanity; and, because of the objective nature of science, they believed passionately that the M'Naghten Rules should have incorporated a criterion of medical disease rather than legal intent in describing the grounds of exculpation for an insane act. In the rest of this paper, I will therefore describe the nature of this new medical knowledge and its consequences for the medical approach to criminal insanity.

We can think about the medical knowledge as existing at two levels: descriptive and causal. Insanity specialists were confident that knowledge of the character of insanity had recently been transformed, notably by the recognition that many forms of the disorder primarily affected the emotional and volitional (as opposed to rational) faculties. In some cases, they argued, insanity of 'the active powers' even existed without any apparent intellectual disorder, though debate on this category of 'moral insanity' was to continue throughout the century. For medical

specialists, the obvious implication was that the Rules, in referring to absence of knowledge, had wilfully ignored the modern view of insanity - that it caused disorders of emotion and volition. Whatever the validity of this medical claim, we may note that, as the asylums became 'museums of madness', so indeed the asylum superintendents acquired a unique experience and perspective on the symptoms of insanity.

The second level of medical knowledge concerned the claim that insanity was a brain disease. As Dr. Forbes Winslow observed: 'No mind can properly be considered to be "unsound" or "insane" which is not subject to actual disease ... of some deviation from the healthy condition of the brain, its vessels or investments, disordering the mental manifestations'. Medical psychologists reiterated this claim on every possible occasion, and this emphasis requires interpretation. Undoubtedly, it articulated concern about the status and independence of the new medical occupation. I would like to concentrate, however, on a consequence of the claim, namely, that it implied determinism in lives affected by mental disorder. If indeed insanity was a brain disease then, as some doctors argued, surely the insane could not be responsible for acts influenced by that disease. Mental disease thus appeared as a cause which destroyed the capacity for responsibility. It followed that the Rules, in propounding a legal criterion of non-responsibility, totally missed the point of what science revealed as the causal effects of disease. Further, it was most certainly doctors rather than laymen who possessed knowledge of these effects.

I suggest that the medical psychologists' confidence in science derived not so much from their own knowledge of the physical bases of mental illnesses (which was extremely slight in specific terms), but from contemporary developments in neurophysiology and physiological psychology. These developments were the source of confidence that causal knowledge of insanity, and therefore a firm basis for policy, was just over the horizon, <u>if</u> society in general and the medical and legal professions in particular would accept a science-based approach to the issues.

The period from 1810 to 1840 had seen widespread acceptance that the brain was the organ of mind, a point made most forcibly to both specialist and lay audiences in the phrenological schemes deriving from F. J. Gall. There had also been a spread of sophisticated vivisectional techniques for studying the relations between structure and function in the nervous system, work exemplified by the Frenchmen François Magendie and Pierre Flourens; the differentiation of the nervous system into 'vegetative' ('autonomic'), sensory, motor and central organizing components; and the formulation of the reflex as the basic unit of structure and function in the co-ordinated life of the body (elaborated by Marshall Hall and J. Müller in the 1830s). By the mid-century, then, there appeared to be an empirically adequate language for conceiving of mental disorders as due to pathology in the nervous system and its functions, just as the future of normal psychology appeared to be with understanding the neurophysiological basis of mind.

The idea of the reflex was potent in this connection. The reflex provided a causal, physiological analogue for what previously had been represented as purposive phenomena of life (eg instinctive movement); it translated 'purpose' into an organized physical link within the nervous system. Several writers in the mid-century, of whom the writer of physiology textbooks W. B. Carpenter was perhaps best known, used the reflex as a model for thinking about abnormal states in which movements occurred apparently without conscious control. Drunken movements, epileptic states, the activities of hypnotized subjects, sleep-walking, and certain forms of insanity, all appeared explicable in terms of an underlying reflex organization. What these states shared in common was a loss of control yet accompanied by organized movements, states which, in their extreme form, appeared as 'automatism'. This way of thinking proved highly suggestive in describing the insane, in whom, it will be remembered, it was believed disorder most often affected the emotional and volitional faculties. 'Mental physiologists' (as these writers sometimes called themselves) suggested that in insanity higher controlling, rational powers of mind were suspended, leaving the brain to act automatically in a variety of ways. The actions of the insane, they believed, were therefore like reflex actions - causal and physical, even if they sometimes appeared

to be complex and purposive. The implication for responsibility followed directly: if a diseased condition resulted in the release of reflex actions, then the consequences of those actions were not of a kind for which a person could be held responsible. As insanity specialists saw it, it was this kind of thinking which the law appeared quite unable to appreciate when it restricted itself to referring to lack of knowledge as an exculpatory condition.

Some specialists did try to express this point of view as a framework for their evidence in court, but they had very mixed success. In the case of Martha Brixey (1845), a servant who murdered her master's child, medical opinion was successful in suggesting that menstrual problems had produced brain disorder sufficient to make her act out a fixed idea that the child should be saved from sin. In the case of Captain George Johnston (1846), the Central Criminal Court agreed that the extreme symptoms of drinking, delerium tremens, revealed a diseased condition in which he might have acted insanely and without responsibility. He had in fact killed a sailor; Johnston's own version of events was that the sailor had actually attacked him. By contrast, in the case of George Bryce (1864), a court summarily dismissed the expert evidence of an Edinburgh Professor, Thomas Laycock, who had claimed that a murderous act had followed reflexly from brain disorder, evident in an abnormal physiognomy. Bryce had murdered a debt collector and the court may well have thought he had a motive as well as knowledge about what he was doing. In many other cases, too, the courts showed scepticism towards specific medical claims and antagonism towards a general replacement of legal by medical ways of thought. Thus, to some specialists, it appeared that the administration of the criminal law was not benefitting in the way it should from contemporary advances in brain science.

In conclusion, I will therefore point to four different kinds of weakness in the Victorian medical experts' claim that the courts should defer to science. These weaknesses, in turn, support the theoretical view that the scientific knowledge cannot of itself provide sufficient grounds for social policy.

The first weakness was of course that the court addressed legal and not scientific questions: it was a decision for the jury, guided by the judge according to legal rules of proof, to decide the question of responsibility. As one judge acidly told a jury: 'You are not to be deprived of the exercise of your common sense because a gentleman comes from London and tells you scientific sense.' The second weakness was also a consequence of juridical thought: the English courts reached decisions through an adversarial procedure, exposing in court evidence for and against the accused. Thus legal procedure treated expert evidence, like any other evidence, as evidence for one side and therefore as intrinsically open to questioning. This devalued science as objective, authoritative knowledge, and sometimes it even humiliated experts by treating them as biased spokesmen for one side. Medical experts found it difficult to reconcile an adversarial legal appearance with their occupational ethos of scientific objectivity.

The third weakness was simple: it was far from obvious that the experts possessed a knowledge of insanity as a brain disease. There were two parts to this ignorance: first, the linkage between brain and disorder was a general claim, and doctors found it difficult to specify what the linkage was in a particular case - and yet, of course, the courts were always concerned with the particular; second, doctors had in fact little detailed knowledge of the causes of insanity - and indeed their textbooks continued to display awareness that psychology and all the circumstances of life, as much as anything specifically neurophysiological, contributed to insanity. The plausibility of the claim that insanity was a brain disease therefore rested on sympathy with the scientific mode of thought in general and not on specific evidence.

Lastly, one must draw attention to - even if it is not possible to resolve - the profound logical and conceptual weaknesses in representations of responsibility, then and now. Most straightforwardly, the medical view of non-responsibility appeared to argue that the determinism of disease, and of actions influenced by disease, created exculpatory conditions. But, if it were determinism that produced a lack of responsibility, then no sense could be made of the concept of responsibility at all since, we must

suppose, causal relations exist equally in normal as in abnormal conditions. If the medical argument were to hold, we would be equally non-responsible; Victorian lawyers and critics of the insanity specialists made precisely this point, thereby suggesting that experts were undermining the grounds of individual morality and social order. As lawyers saw it, it was therefore not scientific evidence that could decide the issue of responsibility. Many psychiatrists in the twentieth century have come to agree; but exactly how to formulate the relation between empirical statements about disorder and judgements of responsibility remains a vexed issue.

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REFERENCES

W F Bynum, Roy Porter and Michael Shepherd (eds.), The Anatomy of Madness: Essays in the History of Psychiatry (London: Tavistock, 1985, 2 vols.).

Edwin Clarke and L S Jacyna, Nineteenth-Century Origins of Neuroscientific Concepts (Berkeley: University of California Press, 1987).

Peter Clyne, Guilty but Insane: Anglo-American Attitudes to Insanity and Criminal Guilt (London: Nelson, 1973).

Michael Donnelly, Managing the Mind: A Study of Medical Psychology in Early Nineteenth-Century Britain (London: Tavistock, 1983).

Michael Foucault (ed.), I, Pierre Rivière, Having Slaughtered my Mother, my Sister, and my Brother ... A Case of Parricide in the 19th Century (New York: Random House, 1975).

Abraham S Goldstein, The Insanity Defense (New Haven: Yale University Press, 1967).

Jan Goldstein, Console and Classify: The French Psychiatric Profession in the Nineteenth Century (Cambridge: Cambridge University Press, 1987).

Charles E Rosenberg, The Trial of the Assassin Guiteau: Psychiatry and Law in the Guilded Age (Chicago: Chicago University Press, 1968).

Karl E Rothschuh, History of Physiology (Huntington, NY: Krieger, 1972).

Andrew T Scull, Museums of Madness: The Social Organization of Insanity in Nineteenth-Century England (London: Allen Lane, 1979).

Andrew T Scull (ed.), Madhouses, Mad-Doctors, and Madmen: The Social History of Psychiatry in the Victorian Era (Philadelphia: University of Pennsylvania Press, 1981).

Roger Smith, Trial by Medicine: Insanity and Responsibility in Victorian Trials (Edinburgh: Edinburgh University Press, 1981).

Nigel Walker and Sarah McCabe, Crime and Insanity in England (Edinburgh: Edinburgh University Press, 1968, 1973, 2 vols.).

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THE PLACE OF THE GREAT WAR IN THE MAKING OF MODERN ORTHOPAEDICS*

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It is generally accepted that the making of modern orthopaedics owes much to the First World War. The British Orthopaedic Association (BOA) was an end-of-the-war formation largely dependent on the fact that during the war Sir Robert Jones and his orthopaedic colleagues had laid claim to the treatment of some 65 per cent of all the injuries. Largely erased, thereby, was the view of the specialism as a backwater for medical mechanics concerned only with applying buckles and straps to crippled children. By the BOA's first annual meeting in February 1918, seventeen special military orthopaedic centres had been established in Britain, commanding some 25,000 beds for the treatment, not only of all cases of fractures, foot and joint derangement and disability, but also of cases of plastic surgery of the face, neck and jaw, all cases requiring a special surgical appliance and all cases requiring treatment of nerve lesion. The headquarters of Jones's military orthopaedic empire, at the Infirmary at Shepherds Bush, Hammersmith, which opened in March 1916, became a national showpiece of military medicine, as well as a beacon of rehabilitation and hope in an otherwise darkened world. Thus, by the end of the war, few were unaware that orthopaedics was a crucially important branch of surgery concerned with 'the treatment by manipulation, operation, re-education, and rehabilitation, of the injuries and diseases of the locomotory system', as Jones then defined the specialism. Through the 'halo cast on trauma' by the war, orthopaedists popularly and medically acquired much of the professional glory that formerly had gone mostly to abdominal surgeons.

But none of this explains how it was that a relatively obscure specialism that was focused for the most part on chronic deformities in children was enabled by the war to be so transformed. Retrospective accounts of the achievement tend to stand independent of the historical context in which the process of the specialism's transformation took place. Moreover, because of this, the actual nature of the transformation itself is

obscured in certain fundamental respects, and in other ways is distorted. In what follows, by turning to the war-time context for orthopaedics, I want to point to at least three reasons why it is in fact mistaken to attribute too instrumental a role to the war in the making of modern orthopaedics. At the same time, in order to have my cake and eat it, I'll indicate further why the historical focus on the war is nonetheless valid.

To begin with, it has to be understood that the orthopaedics that came to be popularly celebrated after the war and which came to be professionally embodied in the BOA was not simply a radically modified version of the orthopaedics that had existed before the war. Robert Jones's 'modern orthopaedics' was a distinctly new brand of orthopaedics. From the turn of the century, Jones, along with other notable British surgeons, had been a member of Sir Berkley Moynihan's Provincial Surgeons' Association, a visibly modernist group deeply influenced by American Surgery and the so-called 'scientific' hospital organisation that had emerged in America during the Progressive Era. It was those within or identifying this reformist elite, most of whom (including Jones) had close personal and professional links with leading American medical entrepreneurs such as the Mayo brothers, who established the British Journal of Surgery in 1913. Several of the more politically active in the group, almost all of whom were from the provinces, came to be directly involved in the war-time organisation of orthopaedics, as indeed, did several leading American orthopaedists (one of whom - Robert Osgood of Boston - was in fact the person responsible for organising the BOA).

In referring to the transformation of orthopaedics during the war, then, we are not talking simply about a 'natural' growth accelerated under the greenhouse conditions of war, but rather, to the operation of those same greenhouse conditions upon an insurgent professionalising cohort who embraced a distinct medico-political outlook. Properly, we should conceptualise Jones's orthopaedics as we would any other social or ideological movement, for he deliberately recruited only certain types of persons, elaborated particular sets of ideas against the reigning orthodoxy, and proselytised to bring others into the movement. Self-consciously, Jones and 'his men' distinguished themselves from a hitherto

predominantly metropolitan 'traditional' orthopaedics, as mainly centred at the Royal National Orthopaedic Hospital. Suffice to say here, that, unlike 'traditional' orthopaedics in London, Jones's was additionally preoccupied with the treatment of trauma cases, especially as incurred through industrial accidents.

Thus, both from the point of view of the types of cases Jones was to treat during the war, and from the point of view of his long-standing identification with the 'new guard' in British surgery, it could be argued that the war was less important for the establishment of modern orthopaedics than it was, as indeed was claimed in 1920, merely 'the last factor in a series of events' leading to professional fulfillment. Such is the first reason for not according the war an instrumental role in the making of modern orthopaedics.

The second reason hinges on the fact that it was not military need per se that facilitated the professional fulfillment. The point here is that there was nothing inevitable either in the event of the war itself or in orthopaedics itself to compel any broad seizure of clinical territory for the specialism during the war. One has only to recall how few orthopaedists there were at the outbreak of war who were at all qualified to handle the types of cases that eventually were to come into the special military orthopaedic hospitals to appreciate how non-inevitable was this seizure of clinical territory for orthopaedics.

So how did Jones effect his coup for his particular brand of orthopaedics? Partly, but only partly, the answer lies in his strategic cunning. From early on in the war he had conducted a campaign which involved the mustering of support from powerful patrons within the financially important Red Cross. Further, in addition to providing an experimental demonstration of his competence in the restoration of the war wounded at the commandeered Alder Hey Hospital, he was involved with exploiting propaganda about what the German orthopaedists were up to, about what the aristocratically-backed bonesetter Herbert Barker was attempting to get up to, and about what the war wounded troops might well get up to if it was not made apparent to them that every effort was being made to provide the

best specialist services. To say the least, Jones's ambitions of empire were driven by an astute political and practical sense, a further reflection of which is to be seen in the private negotiations he undertook before America entered the war to recruit young malleable American orthopaedic surgeons for his future empire.

But Jones's strategic cunning only partly accounts for his success. Equally important, indeed, inextricable, was the fact that by 1916 the structure of military medicine was breaking down as a result, on the one hand, of the devastation of military manpower and, on the other, the inability of military medicine to cope with the restoration of the war wounded in order to get them back to the trenches. Thus was created the medico-political context of opportunity in which Jones's dreams of empire could materialise. The context enabled Jones and his reform-minded colleagues to exert a much greater influence within the Army Medical Advisory Council. Again, this was not an inevitable occurrence, but a negotiated political one, which, in relation to orthopaedics in particular, was seen as highly controversial at the time.

What was negotiated during war time was not so easily sustained in peace time, however. The third reason why it is difficult to argue simply that the war 'made' modern orthopaedics is that the war was no sooner over than the political and economic forces of reaction set in, and modern orthopaedics was, to a degree, 'unmade'. Unlike in America, where the expansion of teaching in orthopaedics during the war was linked and became fastened to the universities and their connected teaching hospitals, in Britain the war-time institutional structure for orthopaedics was wholly vulnerable to post-war marginalisation and eclipse. Physically housed in schools, workhouses, asylums and mansions-on-loan, Jones's empire was only as lasting as the war itself, and with one exception - the Wingfield Hospital in Oxford - the whole of the temporary edifice fell to the axe of post-war austerity. Because the recruits into orthopaedics during the war were overwhelmingly from the colonies and from America, the war did not result either in any growth in the numbers of trained-up British orthopaedic surgeons. Furthermore, the specialism now suffered from the political and economic revenge of the general surgeons. Well aware of the

expansionist nature of Jones's orthopaedics, general surgeons were fearful for their hospital beds and even more fearful for their private practices, a large and lucrative part of which involved the treatment of non-traumatic orthopaedic cases. Thus shortly before the war was over a committee of the Council of the Royal College of Surgeons was formed with the specific intention of circumscribing orthopaedics. Jones, fearful that orthopaedics might again be 'reduced to a side show', conceded by changing the name of the military orthopaedic centres to 'Special Military Surgical Hospitals' in order to avoid what the committee of the College claimed was the 'implication that only specialists are capable of carrying on the surgery practiced in them [centres]', and to avoid 'the recognition of a class of practitioners who may, or may not, be competent general surgeons'.

Three other factors further served to circumscribe the movement Jones had built up. One ironically, was the success with which some of the orthopaedic experience of the war was incorporated into general surgical practice, especially in fracture treatment by younger surgeons in provincial hospitals. However, few of these surgeons had any particular interest in joining the ideologues in the BOA or even in becoming orthopaedic specialists. Most were content to remain general surgeons with a particular interest in orthopaedic cases.

The second factor was the revenge of the unorthodox manipulative practitioners. The third was the new competition emerging from muscle-flexing physiotherapists and advocates of physical and rehabilitation medicine, who were themselves now seeking independent specialty status.

Thus, however prepared were Jones and his disciples after the war to treat all cases of locomotory disfunction, their lack of control over hospital beds and over medical education and, hence, over enforcing and maintaining professional boundaries, plus opposition on the one hand, and competition to and co-option of their practices on the other, meant that they had little option but to retreat the marginal territory that had been theirs before the war i.e., primarily, the treatment of the chronic and acquired deformities of children in rural open-air hospitals. Lamentably, the

argument used rhetorically to legitimate the expansion of orthopaedics during the war - that military conditions were necessarily 'entirely different' from those of civilian life - proved only too effective when peace was restored.

Along with other considerations, the above lead to two rather imprecise conclusions on the role of the Great War in the making of modern orthopaedics. The first is that the war was vitally important, but that its importance was greatest at intellectual levels. What seems most impressive historically is not the generation of new surgical techniques during the war, so much as the generation of administrative skills and the heightened awareness of professional needs, aspirations and directives. Secondly, purely on empirical grounds, it is difficult to maintain that the orthopaedic specialism was either made or consolidated by the war. Neither the First nor the Second World War were historical end points or termini in the speciality's development. Indeed, we have only to compare the state of orthopaedics today with that of 1945 to realise not only that the process of its 'making' was by no means ended with the Second World War, but also, that the post-Second World War making was of a quite different order. The present focus of the specialism on the elderly, and its close identification with the highly skilled and radically invasive surgical technique for hip replacement,readily permits that the greater part of the development of orthopaedic surgery took place only after the Second World War. As with the Second, so with the First, we need to see it mostly as a watershed or as a cathartic moment which intersected and contributed to a longer term historical dynamic. Revelationary, the Great War magnified the potentials and possibilities for orthopaedic specialisation, as well as highlighting the constraints upon it. In the final analysis, then, the war did less to 'make' modern orthopaedics than to stimulate its further re-making. The problem here, however, becomes semantic, for it is precisely the idea of process, movement, negotiation and renegotiation that is central to the whole idea of '*a making*'.

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* For an extended and fully referenced discussion of the rôle of the First and Second World wars in the making of modern orthopaedics, see my forthcoming Medical Specialisation in Peace and War: A Social History of the Making of Modern Orthopaedics, 1880-1945 (Manchester University Press). For a foretaste, see my 'The Meaning of Fractures: Orthopaedics and the Reform of British Hospitals in the Inter-War Period'. Medical History, 31 (1987): 306-32.

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