

INTRODUCTION

Richard H. Ellis

John Snow (1813–1858) was a distinguished Victorian physician. He occupies a prominent place in the history of medicine for he achieved an enduring reputation and greatness in an unusual way. Most of his distinguished contemporaries became famous by making lasting contributions to one important aspect of medical science. Snow's special claim is that he made fundamental contributions to not one, but two completely unrelated aspects of medicine. These were his promotion of early anaesthesia, by establishing its scientific and practical foundations, and his discovery of the mode of spread of epidemic cholera. He has been the subject of many biographical notes, and is justly fêted by anaesthetists for his pioneering work in their specialty, and by epidemiologists for his similar work in theirs.

The Library of the Royal College of Physicians of London possesses three of John Snow's manuscript Case Books.¹ These comprise virtually the whole of Snow's still surviving manuscript material, the rest of which (in this country) is now believed to consist of little more than one brief letter and a testimonial.² The Case Books cover the period from July 1848 until Snow's death ten years later. They contain nothing directly relevant to his epidemiological work on cholera, but they do record his day-to-day activities as an anaesthetist and, to a lesser extent, as a general practitioner. This complete transcription of their contents gives an insight into Snow's general medical practice, and offers a wealth of largely unused material concerning his pioneering work as a practical anaesthetist during the specialty's earliest years.

Anaesthesia began in the United States and was first used by the dentist William Thomas Greene Morton (1819–1868) who, on 30 September 1846, administered sulphuric ether for dental extraction in his own practice.³ Two weeks later he gave the first public demonstration of ether for surgery. It was this public demonstration which established anaesthesia for the world. It took place in Boston at the Massachusetts General Hospital on 16 October 1846.⁴

At first, to gain financial advantage for himself, Morton attempted to conceal the true nature of the ether. Despite the initial enthusiasm generated by his use of anaesthesia, the secrecy with which he surrounded his invention was repugnant to most people. He was vilified for attempting to restrict the use of his humanitarian discovery and to benefit financially from such restriction.⁵ Morton's reputation was not the only casualty of this unfortunate approach, for his gauche subterfuge was one of the principal factors which led to a more or less muted reaction to the introduction of ether in the USA, the very country

¹ John Snow, *Case Books, 1848-1858*, 3 vols, Royal College of Physicians of London, accession no. 556–558.

² John Snow, manuscript letter to Professor Brande, 22 December 1852, London, St. George's Hospital Medical School; *idem*, testimonial to Thomas [Madden] Stone, 10 January 1852, autograph letters collection, Wellcome Institute Library.

³ N. P. Rice, *Trials of a public benefactor as illustrated in the discovery of etherization*, New York, Putney and Russell, 1859, pp. 62–3.

⁴ H. J. Bigelow, 'Insensibility during surgical operations produced by inhalation', *Boston medical and surgical Journal*, 1846, **35**: 309–17.

⁵ Rice, *op. cit.*, note 3 above.

in which anaesthesia had been born.⁶ In essence, the Bostonians—in late 1846—could only inform their influential friends and contacts outside America, and hope that their miraculous invention would be taken up by medical men the world over. Paradoxically, therefore, anaesthesia's subsequent development, promotion and wider acceptance depended almost entirely on circumstances, on people, and on events outside the States.⁷

Thus, the reaction of the medical professions in other countries to the discovery was to be a most important factor in fostering its widespread adoption during its earliest days. Essentially, this meant the reaction of doctors in Europe—especially those in France and Britain. The initial response of French doctors to the news of anaesthesia's invention was lukewarm and dismissive,⁸ and so it was the reaction of British doctors which was to condition the acceptance of ether anaesthesia outside Boston.

Arguably Morton, the American dentist, was the most important of all the early anaesthetists. Second only to Morton in this respect was the English physician Dr. John Snow.

JOHN SNOW'S EARLY LIFE

Snow was of humble parentage and, in the first half of the nineteenth century, this circumstance might have precluded his rising to any important and influential position in medicine. However, he was born into a time of great political, economic, social and professional change characterised by a decline in aristocratic power and the emergence of a middle class.⁹ Snow was an observant individual and must have noticed these changes which, in many ways, were to have important effects on his life and attainments.

The young John Snow grew up before the passage of the great Reform Act of 1832, and at a time when poverty was accepted as part of the natural order of things. No attempts were made to bridge the yawning gap between the influential, wealthy and privileged upper classes on the one hand, and the poverty-stricken, disenfranchised working class on the other. A middle class was in the process of evolving, largely as a result of the prosperity and inventiveness which (for some in Britain) was to accompany the Industrial Revolution. In general, to avoid disrupting the established social order, the upper classes took great care not to suggest ways in which the poor might improve themselves, particularly through education. This attitude had hardened as a consequence of the barbarities of the French Revolution (1789–1799) during which the plebian mob had dominated, if not decimated, the aristocracy and well-to-do of France. Thus, the progress which Snow made—from being the son of a Yorkshire labourer to becoming a physician of such skill and repute that he was called upon to minister to his sovereign—is remarkable. That path led him from total obscurity to professional eminence and historical renown.

⁶ R. H. Ellis, 'Early ether anaesthesia: the news of anaesthesia spreads to the United Kingdom', in *The history of anaesthesia. Proceedings of the Second International Symposium on the History of Anaesthesia*, 1987, London, Royal Society of Medicine Services, 1989, pp. 69–76.

⁷ J. Snow, *On chloroform and other anaesthetics: with a memoir of the author by Benjamin W. Richardson*, London, Churchill, 1858, p. 18.

⁸ F. W. Fisher, 'The ether inhalation in Paris', *Boston med. and surg. J.*, 1847, **36**: 109–13.

⁹ E. L. Woodward, *The age of reform, 1815–1970*, Oxford, Clarendon Press, 1938, pp. 1–25; see also F. M. L. Thompson, *The rise of respectable society: a social history of Victorian Britain, 1830–1900*, Cambridge, Mass., Harvard University Press, 1988.

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The principal source of biographical material about Snow has been the affectionate *Memoir* which was written by his friend and colleague Dr. (later Sir) Benjamin Ward Richardson within two months of Snow's death. It was added, by Richardson, to Snow's posthumously published masterpiece *On chloroform and other anaesthetics*, the text of which Snow had virtually completed when he died in mid-June 1858.¹⁰ Richardson rounded off the work and oversaw its publication some two months later. His *Memoir* of Snow was written, with Victorian prolixity, at a time when he was only twenty-nine years old and still mourning the sudden loss of his close friend and colleague. Accordingly, careful historical judgement needs to be exercised when assessing some parts. It may, reasonably, be used to indicate the main events of Snow's life, and their timings, but some of the detail appears to be less reliable. For example, Richardson's oft-quoted account of the episode involving the removal of the Broad Street pump handle, towards the end of the devastating 1854 outbreak of cholera in Soho, is not entirely accurate.¹¹

There are at least two versions of Richardson's *Memoir*. The first, more detailed and informative, is the one that prefaced Snow's book on chloroform in 1858. This may be taken as Richardson's complete and unabridged text since it appeared in that book at his behest and virtually unfettered by any consideration of its length and the space it would occupy. Almost thirty years later, in 1887, Richardson produced the second, much abbreviated version of the same memoir in *The Asclepiad*, a publication in which it is likely that considerations of space dictated a shortened text—even though Richardson, himself, was its editor.¹² This was reproduced, without reference to the longer text, in 1936 at the time of the facsimile reprinting in the United States of Snow's work on cholera,¹³ and it differs from the longer version in one important particular. In the 1858 version Richardson gave the date of Snow's death as Wednesday 16 June 1858, which is that recorded on Snow's death certificate.¹⁴ In the later 1887 account he mis-quoted this as 17 June. In both versions Snow's date of birth appears as 15 June 1813 instead of 15 March 1813—the date shown on his certificate of baptism.¹⁵ The reason for these errors is not clear.

At the time of Snow's death the principal medical journals of the day printed only brief and uninformative notices about him.¹⁶ Thus, to construct a meaningful account of his life and work, these meagre offerings and the framework which Richardson's *Memoir* has supplied, must be supplemented with other reliable material. This consists, in the main, of the wealth of Snow's published writings and the reports of his spoken contributions to the proceedings of various learned societies. Much can be extrapolated from the plethora of well documented and general accounts of those periods of English history during which Snow was born, grew up, received his education, and practised medicine. These Case Books contain a great deal of information about his everyday clinical work—as a general

¹⁰ Snow, *op. cit.*, note 7 above.

¹¹ A. Bradford Hill, 'Snow—an appreciation', *Proceedings of the Royal Society of Medicine* 1955, 48: 1008–12.

¹² B. W. Richardson, 'John Snow, MD. A representative of medical science and art of the Victorian era', *The Asclepiad*, 1887, 4: 274–300.

¹³ W. H. Frost, *Snow on cholera*, New York, Commonwealth Fund, 1936, pp. xxv–xlviii.

¹⁴ Death certificate of Dr. John Snow, 16 June 1858, the General Register Office, London.

¹⁵ The Parish Records of All Saints' Church, North Street, York, February 1813, Borthwick Institute, York.

¹⁶ *Medical Times and Gazette*, 1858, 1: 633–4; *Lancet*, 1858, i: 635.

practitioner and as a specialist anaesthetist—and are a rich source of material which, hitherto, has not been generally available. The picture which emerges from these different sources is of a life beginning almost certainly in the meanest of circumstances and without advantage, being fitted (despite hardship) for the medical profession, and culminating in what was later recognised to be a most prestigious medical career.

John Snow was born in York, in the north of England, on the 15 March 1813; he was the oldest of nine children.¹⁷ His family lived in a poor part of the city alongside the River Ouse which, prior to the advent of the railways in the late 1830s, was one of the main thoroughfares for the despatch of heavy goods and materials to and from York.¹⁸

At the time of Snow's birth, and during most of his childhood, his father worked as a labourer, and it is apparent that he was amongst the poorer, unskilled, manual workers in the city. Usually, the children of poor families left home to earn their own livings as soon as possible, but Snow's parents seem to have been determined to give their offspring whatever opportunities they could afford in order to better themselves. Of their other sons whose progress is known, one became a priest, another a hotel keeper and a third a colliery manager; two daughters founded a school for young ladies.¹⁹ Clearly each must have received a good education for none could have attained such positions had they not been literate, numerate, and generally well-informed.

Before 1833 there was no state involvement whatsoever in the provision of education, and attendance at elementary school was not made compulsory until several decades later.²⁰ John Snow, in the words of Richardson's *Memoir*, was educated at a "private school at York, where he learned all that he could learn there". This has, erroneously, been taken by some commentators to imply that Snow received an expensive education at an institution analogous to a present-day British public school.²¹

However, at the time of Richardson's writing, the term "private school" would have referred to something completely different which has no modern counterpart. Snow almost certainly received his elementary education at what, prior to the 1830s, was commonly called a "private school for the education of the poor" or a "common day school". Later such a school was referred to as a "private venture school" and became known colloquially as a "dame's school". This was a local, self-help school organised and paid for by the parents of the poor, lower or labouring classes for whose children educational provision was otherwise scant.²² Classes were held in a local house, and the tuition was given by whoever was thought to be the most knowledgeable, affordable or best teacher. Such schools were common until enlightened educational legislation was introduced in the 1870s.

Snow completed his elementary education by the time he was fourteen and, given its circumstances, it may well have taught him little more than reading, writing and

¹⁷ A. Leaman, 'John Snow MD—his early days', *Anaesthesia*, 1984, **39**: 803–5.

¹⁸ P. M. Tillott, *The Victoria history of the counties of England. A history of Yorkshire: the city of York*, Oxford University Press, 1961, p. 271.

¹⁹ Leaman, *op. cit.*, note 17 above.

²⁰ S. J. Curtis and M. E. A. Boulwood, *An introductory history of English education since 1800*, London, University Tutorial Press, 1960, p. 77.

²¹ A. Ashcroft, Presidential address, Newcastle upon Tyne and Northern Counties Medical Society, 1 October 1981; Leaman, *op. cit.*, note 17 above.

²² P. Gardner, *The lost elementary schools of Victorian England*, London, Croom Helm, 1984, pp. 30–4.

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arithmetic, although Richardson emphasised that he excelled in mathematics. Secondary education was then, by and large, available only to the well-to-do, by whom it was regarded as vocational training for the Church, physicianly medicine, and the law, or for those merely aspiring to be gentlemen.

At some later stage Snow must have supplemented his primary education with his own further, diligent studies, for the career in medicine which he eventually followed would have demanded more than proficiency in the three Rs. When, in 1827 at the age of fourteen, and presumably intent on improving his prospects, he opted for a medical career he must have been encouraged by his family, for the premium which had to be paid at the outset of his apprenticeship would have been of the order of £100—a dauntingly large sum for his own parents to find.²³

Snow decided to be apprenticed in Newcastle-upon-Tyne (some eighty miles away from his home) rather than in York itself; it is not at all clear why this was so. However, an affluent uncle, Charles Empson of whom Snow was very fond, had some connection with Newcastle around this time, and a little later had business premises near the centre of the town.²⁴ There is a real possibility that it was Empson who paid Snow's apprenticeship fee. If so, he may also have prompted the choice of Newcastle which, in 1827, was fast becoming a much more important regional and commercial centre than York.²⁵ Without citing Empson's influence it is difficult to explain why Snow left York. Bearing in mind the limitations of coach travel at the time,²⁶ the distance between the two places meant separation from his immediate family, and the journey from one town to the other would have been prohibitively expensive for the impecunious Snow. It would have been quite easy, and probably more convenient and less expensive for him, to have been apprenticed to a medical practitioner in his home town. Extrapolating from data derived from Suffolk, it would seem that trainees were more often than not apprenticed to practitioners near their homes,²⁷ and there is no reason to think that satisfactory apprenticeships would not have been available in York in 1827. Empson seems to have been an important figure during this period of Snow's life. When, in 1837 during his further medical studies in London, Snow became seriously ill it was to Empson, rather than his parents in York, that one of Snow's friends thought of appealing for help.

The medical profession which Snow sought to join in 1827 was made up of four classes of practitioners—the physicians, the surgeons, the apothecaries, and a group referred to as “those in practice prior to the 1815 Act”.²⁸ The physicians were the intellectual élite and were of high social status. In England they belonged to London's Royal College of Physicians, which body required them to be graduates of either Oxford or Cambridge

²³ R. Milnes Walker, ‘The surgical apprentice, 1829’, *Annals of the Royal College of Surgeons*, 1979, **61**: 69–70.

²⁴ D. Zuck, ‘Charles Empson—man of mystery’, *Proceedings of the History of Anaesthesia Society*, 1993, **12**: 56–60.

²⁵ S. Middlebrook, *Newcastle—its growth and achievement*, Newcastle, Newcastle Journal and North Mail, 1950, pp. 182–95.

²⁶ J. Simmons, *Transport*, London, Readers' Union, 1962, 37–41.

²⁷ D. van Zwanenberg, ‘The training and careers of those apprenticed to apothecaries in Suffolk 1815–1858’, *Med. Hist.*, 1983, **27**: 139–50.

²⁸ W. J. Reader, *Professional men: the rise of the professional classes in nineteenth-century England*, London, Weidenfield and Nicolson, 1977, pp. 31–43.

universities. Only the physicians were entitled to be called “Doctor”: they did not take apprentices and did not operate. They consulted alone or with surgeons (whom they regarded as lowly beings superior only to the apothecaries whom they deemed to be pill-making tradesmen). Physicians prescribed medication but were not allowed to dispense it. The surgeons had, since its foundation in 1800, been overseen by the Royal College of Surgeons of London and were Members of that College. A few of their number, especially in London, were pure surgeons and were eligible for the College’s Fellowship, but the majority combined their work with midwifery and also provided medicines for non-surgical illnesses. The apothecaries, who obtained their licence to practise from the Society of Apothecaries, in London, were entitled both to supply and prescribe medicines, and had become accustomed to advise on the management of non-surgical conditions.

The steps taken towards medical reform in the early nineteenth century, and in particular the Apothecaries’ Act of 1815,²⁹ led to the emergence of a group which corresponded, in Britain, to the present day family doctors or general practitioners (a term which only came into common use in 1829).³⁰ This group, which for some decades continued to be referred to as “surgeons” or “surgeon-apothecaries”, was made up of the generally-inclined surgeons (as distinct from the pure surgeons) and the medically-inclined apothecaries (from whom the retail pharmacists soon separated and formed their own distinguished and professional body). Those established in medical practice prior to the 1815 Act, but without any formal qualifications, were permitted to continue until their retirement.

Only a few bodies were empowered to grant licences for medical practice in England in the early to mid-1800s.³¹ These were the universities of Oxford and Cambridge, and (in London) the Royal Colleges of Physicians and of Surgeons, and the Worshipful Society of Apothecaries. With no chance of gaining entrance to Oxford or Cambridge Universities, Snow was apprenticed to a man who was described as both a surgeon and an apothecary.

Snow’s apprenticeship began on the 22 June 1827 and lasted for six years. His Master was William Hardcastle, who was an established practitioner in Newcastle. Little is known of this man who, arguably, had a very important influence on Snow’s medical career. He had qualified, in 1817, as a Licentiate of the Society of Apothecaries (LSA) and, in 1818, as a Member of the Royal College of Surgeons of England (MRCS): he was thirty-one years old at the outset of Snow’s apprenticeship. He lived, near the city centre, in Westgate opposite the gateway to the still-standing St. John’s Church. He was highly thought of in Newcastle, and was some time surgeon to the city’s lying-in hospital. He retired from active practice in 1855, and died in March 1860 having lived to see his young apprentice from York rise to eminence within his profession. Indeed he outlived Snow by two years. Soon after Hardcastle’s death a stained-glass window was erected to his memory in St. John’s Church.³²

²⁹ J. Walton, P. B. Beeson and R. Bodley Scott, *The Oxford companion to medicine*, Oxford University Press, 1986, vol. 1, pp. 714–20; Susan Lawrence, in Roger French and Andrew Wear (eds), *British medicine in an age of reform*, London and New York, Routledge, 1991; Irvine Loudon, *Medical care and the general practitioner 1750–1850*, Oxford, Clarendon Press, 1986.

³⁰ W. J. Bishop, ‘The evolution of the general practitioner in England’, in E. A. Underwood (ed.), *Science, medicine and history*, London, Oxford University Press, 1953, pp. 351–7.

³¹ Milnes Walker, *op. cit.*, note 23 above.

³² Ashcroft, *op. cit.*, note 21 above.

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Snow's apprenticeship in Newcastle was an important time for him. Not only did it lay the foundations of his medical training but it was also the period in which he developed interests and attitudes which were to be with him for the rest of his life. He became familiar with the work of a family doctor, with the running of a practice, and with the dispensing of medicines. During his apprenticeship he had his first experience of cholera, whilst attending the victims of an outbreak at a nearby coal mine. It was during this time that he adopted the temperance cause, and also his vegetarian habits. Undoubtedly, he valued and retained much of the knowledge and experience which he gained during his period of apprenticeship.

The professional medical environment in which Snow found himself in Newcastle was a progressive one and it seems that he was caught up in the general desire for improvement and advance which characterised the age. On 1 October 1832 an embryonic medical school was opened in the presence, it was said, of a large number of medical men and their pupils.³³ Quite possibly both Hardcastle and John Snow were present, and Snow is recorded as having been a regular attender at the putative medical school's lectures and also at the Newcastle Infirmary. If so, this must reflect well on Mr. Hardcastle's progressive thinking, and his wish to see his apprentice prosper, for he would not have been obliged by the usual apprenticeship agreement to let his apprentice attend such instruction. (One of the most influential people in Newcastle's medical school at this time was Mr. Headlam Greenhow and it is interesting to note that these Case Books record that much later, in November 1857, one of his descendants, a Dr. Headlam Greenhow who had qualified in 1855 and was then living and working in London, was present whilst Snow gave chloroform to a patient {865}³⁴ [original page numbers are given in curly brackets, see p. xxix]).

In 1833, when he had completed his six years of apprenticeship with Mr. Hardcastle (with whom, according to Richardson's account, he got on very well) John Snow went off "and engaged himself as an assistant to Mr. Watson of Burnop Field, near Newcastle". This was a somewhat unusual course to follow. More commonly, at the end of their period of apprenticeship, would-be doctors went off to attend formal medical lectures and demonstrations, and to walk the wards of a hospital; the great majority, it would seem, went to London.³⁵ There are several possible reasons why Snow opted not to continue his medical education formally in one of the recognised teaching centres. Firstly, it may have reflected a lack of ambition on his part for it was still possible to practise a lowly form of medicine in the country, unqualified and without further training. (Formal registration of practitioners was not required until the Medical Act of 1858.³⁶) Those who did this were disparaged by the rest of the profession, and it is unlikely that Snow would have seriously considered this option. Secondly, it may have been that his mentors advised him to obtain as much clinical experience as possible in general practice before attending a formal course of instruction. Thirdly, there is the possibility that Snow, who was impoverished, and probably without financial support from his immediate family, realised that the costs of going away to study medicine at a recognised centre would be considerable, as rent and

³³ G. Grey Turner and W. D. Arnison, *The Newcastle upon Tyne school of medicine*, Newcastle, Reid, 1934, 12–21.

³⁴ *The London and provincial medical directory*, London, Churchill, 1857, p. 256, hereafter *Medical directory*.

³⁵ Van Zwanenberg, *op. cit.*, note 27 above.

³⁶ Walton, Beeson and Bodley Scott, *op. cit.*, note 29 above.

subsistence would have to be found as well as tuition fees. A period spent as an assistant in general practice would have enabled him not only to gain experience but also to save from his earnings in order to meet these expenses. In addition, it would have given him the opportunity to supplement his primary education by allowing time for private study of those required subjects, such as Latin and (possibly) Greek, in which it was unlikely that he was yet proficient. With few exceptions, medical assistants enjoyed a reasonable standard of living.³⁷ The overriding factor, however, may well have been his age, for he would not have been eligible to sit for the qualifying examinations until he reached his twenty-first birthday in March 1834.

Accordingly, at the end of his apprenticeship he went to work as an assistant in general practice at Burnop Field (near Newcastle). He remained there for a year or so, and then joined a practice in Pateley Bridge (in Yorkshire), for eighteen months.

Snow's senior colleague at Burnop Field, a Mr. Watson, is difficult to identify from presently available records, although it is likely that he was related to two other doctors of the same name who practised there a decade or so later.³⁸ It would seem from Richardson's *Memoir* that this period of Snow's professional life was not particularly satisfactory, and that he was pleased to move on from Burnop Field after just twelve months (which might then have been the minimum contract of assistantship). Writing of this time Richardson said that Snow "worked too hard for his money", and went on to quote, seemingly verbatim, disparaging words of Snow's which could (by exclusion) have referred only to Dr. Watson of Burnop Field.

When Snow returned from Burnop Field to his native Yorkshire, to work as a medical assistant for about eighteen months in Pateley Bridge, his principal there was a Mr. Joseph Warburton. Richardson states that Snow thought highly of Mr. Warburton. (It may be significant that later, when Snow sought testimonials with which to advance his prospects for a post at the Westminster Hospital, he obtained references from Hardcastle and Warburton, but not from Mr. Watson.³⁹) Pateley Bridge is in a remote part of Yorkshire, which in Snow's time was an area of scattered settlements of which it formed the largest. It was a small quarrying and lead mining town with a population of about 1,500; it was also involved in spinning flax. The local agriculture was carried out on small farms on steep, relatively poor land: the prevailing climate was cold and wet. But despite its hardships and difficulties, Snow clearly valued his time in Warburton's practice.

By mid-1836 Snow had left Pateley Bridge and returned to his family in York for a few months before setting out for London to resume his more formal medical education. He arrived in the capital in October 1836 and, for one year, he studied at the Hunterian School of Medicine in Windmill Street. The cost of a complete course of lectures, demonstrations and dissections at the Hunterian School was 29 guineas; by paying £34.0s.0d. a student could be entered as a "perpetual" with the right to return to future courses of lectures at no extra charge.⁴⁰ The Hunterian School was within walking distance of several of the

³⁷ *Medical Times*, 1848, 18: 146.

³⁸ *Medical directory*, 1847, p. 293.

³⁹ Snow, *op. cit.*, note 7 above.

⁴⁰ 'Account of the London hospitals and schools open for the reception of students during the medical session commencing October 2, 1837', *Lancet*, 1837-38, i: 4-22.

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capital's teaching hospitals, including the Westminster Hospital at which, from 1837–1838, Snow continued his studies by walking the wards.

Snow would have been advised to choose lodgings somewhere conveniently near to the Hunterian School, which was at the western edge of Soho. Nearby, to the west, were the fine houses of the well-to-do residents of Piccadilly and its surrounding, affluent streets.⁴¹ Rooms, even if they could be found in this opulent area, would have been very expensive and almost certainly beyond Snow's means. Instead, he looked in the generally poverty stricken district of Soho itself, where lodgers would be welcomed as sources of extra income by the householders, and where the rent would be more affordable. In the event, he lodged at Bateman's Buildings, a narrow and nondescript alleyway near the centre of Soho. He lived here for two years, during which time he settled himself into London, studied medicine and obtained his qualifications to practise. He passed the MRCS in May 1838,⁴² and the LSA in October of the same year.⁴³

He then set up his practice in the centre of Soho which he had come to know well, and moved from his dingy quarters in Bateman Street to lodge at a more congenial house nearby in Frith Street.⁴⁴ He stayed at this address until late in 1852 when he moved about half a mile away to a house in the more affluent Sackville Street, off Piccadilly, and there he remained for the rest of his life.

Snow seems to have been a conscientious practitioner: he joined in the meetings of various London medical societies, and soon began to establish a modest reputation for himself in the capital's medical profession. In December 1838, within a few months of qualifying as a doctor, he joined in a debate in the *London Medical Gazette* on the action of the rectus abdominis muscle.⁴⁵ He gave an independent, robust and reasoned account which conflicted with the views of more established figures.⁴⁶ Early in 1839 he joined in a discussion at the Westminster Medical Society.⁴⁷ Snow was a member of this Society, and thought highly of it; later, he was elected its President. The Society's proceedings, and his contributions to them, were regularly chronicled in the medical journals of the day. Snow contributed directly to the journals on subjects as diverse as chest and spinal deformities in children, and the capillary circulation.⁴⁸ Of particular relevance to his later work set out in his Case Books are the papers which he wrote (in 1841) on resuscitation of the newborn,⁴⁹ and (in 1842) on his invention for paracentesis thoracis⁵⁰ (the draining of fluid which, in certain diseases, accumulates within the chest and presses on the lungs and heart).

⁴¹ Charles Booth, *Descriptive map of London poverty*, publication no. 130, London, Topographical Society, 1984, north-western sheet.

⁴² Report of the Court of Examiners, 2 May, 1838, Royal College of Surgeons, London, p. 206.

⁴³ *A list of persons who have obtained certification of their fitness and qualification to practise as apothecaries, from August 1 1815 to July 31 1840*, London, Apothecaries' Hall, 1840, p. 184.

⁴⁴ R. H. Ellis, 'Dr. John Snow: his London residences, and the site for a commemorative plaque in London', *Proceedings of the Second International Symposium on the History of Anaesthesia* (London 1987), London, Royal Society of Medicine Services, 1989, pp. 1–7.

⁴⁵ J. Snow, 'Action of recti muscles', *Lond. med. Gaz.*, 1839, **23**: 415–17.

⁴⁶ E. F. Lonsdale, 'On the action of the recti muscles of the abdomen', *Lond. med. Gaz.*, 1838, **23**: 415–17.

⁴⁷ 'Westminster Medical Society', *Lond. med. Gaz.*, 1839, **23**: 619–23.

⁴⁸ J. Snow, 'On distortions of the chest and spine in children from enlargement of the abdomen', *Lon. med. Gaz.*, 1841, **28**: 112–16; J. Snow, 'On the circulation in the capillary blood vessels, and on some of its connections with pathology and therapeutics', *Lond. med. Gaz.*, 1843, **31**: 810–16.

⁴⁹ J. Snow, 'On asphyxia, and on the resuscitation of still-born children', *Lond. med. Gaz.*, 1841, **29**: 222–7.

⁵⁰ J. Snow, 'On paracentesis of the thorax', *Lond. med. Gaz.*, 1842, **29**: 705–7.

Snow gained three more medical qualifications. In November 1843 he obtained the qualifying medical degree of the then recently-established University of London (the Bachelor of Medicine, or MB). A year later, in December 1844 he proceeded to the university's higher academic degree (the Doctorate of Medicine, or MD).⁵¹ In June 1850 he sat, and passed, the examination to become a Licentiate of the Royal College of Physicians of London (LRCP).⁵² None of these additional qualifications were necessary for him to continue in practice as a family doctor, and the fact that he acquired them may indicate his continued wish to better himself and to create a more secure future. Clearly he was an enthusiast for medicine, and had an enquiring mind and an innovative outlook on the subject, but his work at this stage was neither remarkable nor enduring. None of his early contributions suggest that he had developed any special interests in medicine.

However, the advent of anaesthesia late in 1846 was to change this situation completely. Within a matter of weeks, having languished as an undistinguished general practitioner, he became the acknowledged expert of one of the already progressive era's most exciting medical advances.

JOHN SNOW AND THE BEGINNINGS OF ANAESTHESIA IN ENGLAND

Anaesthesia was first used in Britain on Saturday, 19 December 1846 by a dentist named James Robinson (1813–1862).⁵³ Within a few days, John Snow had heard of the subject and was sufficiently interested by it to make arrangements to see the process at first hand.⁵⁴ He visited Robinson's central London home and saw what, in those earliest days, passed for insensibility induced by inhalation.

What he saw, though effective, worked as well as it did principally by luck rather than anything else. Right from the beginning Snow appreciated that anaesthesia would not be consistently successful and safe (and therefore generally acceptable) unless its use was based on the scientific principles sub-serving its administration. Snow was well aware of these, and in this he was probably no different from the majority of his medical colleagues. He distinguished himself from them, however, by refusing to be blinded by the new-fangled method's initial and occasionally spectacular successes in the hands of the early etherists. Snow clearly reasoned that without a proper scientific foundation, the early practice of anaesthesia (based, as it was, entirely on empiricism) would fail. A study of the earliest weeks of British anaesthesia shows that there were many failures, and that surgeons, especially the leading London surgeons, soon began to believe that anaesthesia was not the great boon it was first thought to be.⁵⁵ Indeed Robert Liston (1794–1847), who then dominated the London surgical scene, is on record as having all but abandoned its use; he certainly reverted to operating on fully awake patients early in January 1847.⁵⁶

That anaesthesia progressed in its earliest days in Britain was due to the work of James Robinson (who is, without doubt, the true pioneer of British anaesthesia and its most

⁵¹ *University of London: the historical record 1836-1926*, London University Press, 1926, p. 556.

⁵² *Annals of the Royal College of Physicians of London, 1845-1851*, 24: pp. 262-3.

⁵³ F. Boott, 'Surgical operations performed during insensibility produced by the inhalation of sulphuric ether', *Lancet*, 1847, i: 5-8.

⁵⁴ J. Robinson, correspondence, *Med. Times*, 1847, 15: 273-4.

⁵⁵ Editorial, *Lancet*, 1847, i: 392-3.

⁵⁶ Editorial, *Med. Times*, 1847, 15: 289-90.

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overlooked historical figure).⁵⁷ He was lucky to have pieced together a reasonably reliable inhaler which, in his hands, performed well enough to demonstrate the credibility of ether anaesthesia at a time when many others were unable to make it work at all.⁵⁸ Robinson's approach was empirical, but his luck held and he occupied the centre of the stage for some weeks. Although Robinson had first shown anaesthesia to Snow—and later Snow occasionally gave anaesthesia to Robinson's patients (see Index 1)—there is no evidence to suggest that the two men exchanged ideas on the subject during anaesthesia's first few weeks in Britain. In that interval, however, Snow pondered the scientific principles of vaporization, the ways in which ether was inhaled and affected sensibility, and the effects which such inhalation had on the body.⁵⁹

Within four weeks he had established most of the principles on which inhalation anaesthesia is, even nowadays, based. He designed the prototype of his own inhaler for ether,⁶⁰ and began to use it successfully in hospital practice in London. Snow took over Robinson's pioneering rôle and was soon acknowledged to be the most scientific and effective proponent of anaesthesia.⁶¹ He continued to work as a family doctor but, increasingly it would seem, his time was occupied with anaesthesia.

From the outset Snow pursued his interests in the subject in two different, but complementary ways. Firstly, he studied the methods by which anaesthetic vapours could most efficiently be inhaled.⁶² Secondly, he observed his own patients closely before, during, and after the inhalation of his anaesthetics. As a result, in late 1847, he published his small but classic textbook on ether anaesthesia in which he reported the cases to whom he had given ether during the first nine months of its use in Britain.⁶³

SNOW'S CLINICAL AND EXPERIMENTAL RECORDS

It can be inferred from this sequence of events that, almost from the beginning, Snow began to make careful clinical records of his observations but, unfortunately, no original case notes from the first eighteen months of his anaesthetic practice have survived. That Snow made such records can be deduced from the quality and content of his textbook on ether, and of his several anaesthetic contributions to journals. It would have been impossible for him to have written in such detail of his early experiences of anaesthesia at the end of its first eighteen months without them.

In addition to his work on anaesthesia Snow also wrote a pamphlet and a book on the mode of spread of cholera.⁶⁴ These were based on his own clinical and epidemiological observations, which were extensive and, again, he must have made careful records as he

⁵⁷ R. H. Ellis, 'James Robinson, England's true pioneer of anaesthesia', *Proceedings of the Third International Symposium on the History of Anaesthesia* (Atlanta, 1992), Park Ridge, Wood Library-Museum of Anesthesiology, 1992, pp. 152–64.

⁵⁸ J. Robinson, *A treatise on the inhalation of the vapour of ether*, London, Webster, 1847.

⁵⁹ 'Inhalation of ether', *Lancet*, 1847, i: 99–100.

⁶⁰ 'Apparatus for inhaling the vapour of ether', *Lancet*, 1847, i: 120–1.

⁶¹ 'Operations without pain', *Lancet*, 1847, i: 546.

⁶² J. Snow, *On narcotism by the inhalation of vapours*, facsimile edition (with an introductory essay by Richard H. Ellis), London, Royal Society of Medicine Services, 1991.

⁶³ J. Snow, *On the inhalation of the vapour of ether in surgical operations*, London, Churchill, 1847.

⁶⁴ J. Snow, *On the mode of communication of cholera*, London, Churchill, 1849 (2nd ed., 1855).

conducted these studies. Similarly, for a period of some twenty months during 1849 and 1850 at London's Brompton Hospital he pioneered the use of inhalational remedies for a variety of chest diseases. Later he gave a very full account of this work and, once more, must have been able to refer to his own clinical records as he wrote.⁶⁵

Unfortunately, few of these original notes or any other similar material (such as practice ledgers and/or financial records) now exist: all that seems to have survived are his manuscript case notes. These records, the Case Books of Dr. John Snow, have been housed in the Library at the Royal College of Physicians of London since 1938.⁶⁶

THE HISTORY OF THE CASE BOOKS

The Case Books have been studied and referred to by others since Snow's death, and their history is important.

Snow suffered chronic ill-health and renal disease, and he was suddenly incapacitated by a stroke six days before his death on 16 June 1858. He had made a will, and one of his brothers (a hotel keeper in York, who was also one of the executors) came to London to prove the will and to attend to Snow's affairs.⁶⁷ It would seem that Benjamin Ward Richardson, was asked (or offered) at this time to deal with his medical papers.

Soon after Snow's death his brothers and sisters invited Richardson to take over Snow's well-established anaesthetic practice in London, but this offer was declined on the grounds that he wished to remain a general physician rather than become a specialist anaesthetist.⁶⁸ None the less, in later life Richardson did devote no small part of his energy to the administration of anaesthesia and the introduction of new agents for the purpose.⁶⁹ Almost certainly, at the time of Snow's death, Richardson took possession of the three manuscript volumes of the Case Books, and probably of some (or all) of Snow's other medical papers, notebooks, and similar material. Without these he would not readily have been able to write about Snow in such detail as he did in the *Memoir*.

Richardson had shared Snow's medical interests, and may have found Snow's anaesthetic notes and records of value in his own later work on anaesthesia. It would seem that he kept the three volumes of his late friend's Case Books for, according to the accession details at the Royal College of Physicians of London, when Richardson died (in 1896) the books were found amongst his papers.⁷⁰ For the next forty-two years they were kept safely by members of Richardson's family and then, in February 1938, they were presented to the College, of which Richardson had been a distinguished Fellow, by his daughter Mrs. George Martin (who also styled herself elsewhere as M. S. Richardson Martin⁷¹). In passing, Mrs. Martin had, in 1900, written an affectionate biographical account of her late father: she referred to his involvement in the development of

⁶⁵ J. Snow, 'On the inhalation of various medicinal substances', *Lond. J. Med.*, 1851, 3: 122–9.

⁶⁶ Snow, *op. cit.*, note 1 above.

⁶⁷ The last Will and Testament of Dr. John Snow, 20 August 1857, Somerset House, London.

⁶⁸ A. S. McNalty, *Sir Benjamin Ward Richardson*, London, Harvey and Blythe, 1950, p. 40.

⁶⁹ W. S. Sykes, *Essays on the first hundred years of anaesthesia*, vol. 3 ed. Richard H. Ellis, London, Churchill Livingstone, 1982, pp. 153–67.

⁷⁰ 'Accessions' Register', Royal College of Physicians of London, 8 February 1938, accession no. 5212–5214.

⁷¹ B. W. Richardson, *Disciples of Aesculapius* (with a life of the author written by his daughter), London, Hutchinson, 1900, vol. 1, pp. 1–12.

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anaesthetics, but did not mention his friendship with John Snow at all.⁷² This is surprising given the effusive nature of Richardson's *Memoir* in which he described Snow as "my beloved friend".

In 1870, whilst the Case Books were still in Richardson's possession, Dr. George Charles Coles studied them in some detail. Coles produced two incomplete manuscript ledgers in which he attempted to analyse Snow's chloroform administrations.⁷³ This was a lengthy and time-consuming study, and clearly involved Coles in a great deal of work, but it is now not possible to know what purpose he had in mind when he performed his analysis. The handwriting in the analysis is of two different styles: the detailed entries were, presumably, written in Coles's own hand whilst the repetitive headings of the analysis columns were probably inscribed by a secretarial assistant. During his work on the Case Books, Coles added a small number of handwritten comments and annotations to Snow's manuscripts. It is possible that he performed the analysis together with (or at the request of) Richardson, but this is entirely speculative. Neither of the two different styles of handwriting in Coles's ledgers matches known examples of Richardson's script.⁷⁴

No publication on the subject by Coles or Richardson has been found. The two ledgers were, like Snow's Case Books themselves, found amongst Richardson's papers after his death and were given to the Royal College of Physicians by Mrs. Martin together with the Case Books. Coles qualified from St. George's Hospital in 1866, which was eight years after Snow's death.⁷⁵ He held several medical posts (including one in China) before settling down to practise in London. He occupied a variety of surgical appointments at London hospitals and dispensaries, and was involved in the care of cholera patients in east London during the epidemic of 1866. He also held an appointment as chloroformist to London's Great Northern Hospital. Thus he shared, to some extent, Snow's interests in both anaesthesia and cholera: perhaps this common ground was enough to stimulate his albeit inconclusive work on Snow's Case Books. The work must have been done with the permission and, arguably, the encouragement of Richardson who then had custody of them but—again—it is not clear if there was any substantial link between the two men to explain Coles's endeavour. The only thing common to both seems to have been their membership (in 1870) of the Medical Society of London. Coles died in 1888. No obituaries of him appeared in the principal medical journals of the day.

Little if any notice was taken of the Case Books for almost a century after Coles's work. This may be a reflection of the lack of importance which the still emerging speciality of anaesthesia rated in the minds of physicians and of those interested in epidemiology, coupled with the lack of any real or sustained interest amongst anaesthetists themselves in the history of their subject in the first century or so after its introduction.

The Case Books have been referred to fleetingly in the literature of anaesthesia and, leaving aside Coles's enigmatic work, have been brought to wider notice on only three occasions. They were referred to in some detail by the distinguished Belfast surgeon Sir

⁷² *Ibid.*

⁷³ G. C. Coles, 'Analysis of the chloroform administrations of Dr. John Snow', Royal College of Physicians of London, 1870, accession no. 559; *idem*, 'Results of the chloroform administrations of the late Dr. John Snow', Royal College of Physicians of London, 1879, accession no. 560.

⁷⁴ B. W. Richardson, draft (with manuscript annotations) of 'Vita Medica', London, Royal College of Physicians, accession no. MS519/1.

⁷⁵ *Medical directory*, 1878, p. 79.

Ian Fraser⁷⁶ during his researches into Snow's life prior to his (Sir Ian's) giving the Tenth Annual John Snow Lecture of the Association of Anaesthetists of Great Britain and Ireland.⁷⁷ This lecture, given in Belfast in 1967, first drew the attention of British anaesthetists to the existence of the Case Books. Undoubtedly, Sir Ian deserves the credit for bringing them to light. It would seem that some epidemiologists knew of their existence, but did not publicise them—possibly because their contents do not bear on Snow's renowned epidemiological studies of 1849 and 1854 into the mode of spread of cholera.⁷⁸

In 1968 during the Fourth World Congress of Anaesthesia (which was held in London) and at the instigation of the late Dr. Bryn Thomas, then the leading historian of anaesthesia,⁷⁹ the Case Books were displayed at the Wellcome Institute for the History of Medicine in London. During that congress Dr. Richard Atkinson, a distinguished British anaesthetist,⁸⁰ set out a general description of the Case Books and highlighted a number of Snow's entries.⁸¹ He also presented similar papers in London in 1987 and in Southend-on-Sea in 1988.⁸² Other authors, have, from time to time, dipped into the Case Books to present brief extracts from them—most commonly the entries relating to Snow's use of chloroform during the last two labours of Queen Victoria. In 1989 a detailed study was made of one of Snow's working weeks, and in 1993 an account was published of the historical events leading up to his giving anaesthesia to a soldier wounded in the opening battle of the Crimean War.⁸³

I began to take a particular interest in the Case Books in 1985. At that time it was clear that their condition had begun to deteriorate rapidly. My concern was to ensure that Snow's material would remain generally available for historical and academic study whilst the original volumes would be preserved from any further wear and tear caused by repeated handling. The result is this volume.

THE GROSS FEATURES OF THE CASE BOOKS

The Case Books consist of three similar manuscript books which are hard-backed, ledger-style volumes, with their boards covered in decorative paper, and half-bound in leather. The dimensions of the pages throughout the three volumes are 227mm by 185mm. The rigours of time's passing and of repeated opening and handling have resulted in the bindings, especially of the first volume, now being in poor condition. None the less, the original quality of the books themselves indicates that they were designed to endure, and

⁷⁶ *Who's Who*, London, Black, 1992, p. 653.

⁷⁷ I. Fraser, 'John Snow and his surgical friends', *Anaesthesia*, 1968, **23**: 501–14.

⁷⁸ Snow, *op. cit.* 1849, and 1855, note 64 above.

⁷⁹ *Obituary, Br. med. J.*, 1978, **ii**: 1078.

⁸⁰ *Medical directory*, Harlow, Churchill Livingstone, 1993, vol. 1, p. 132.

⁸¹ R. S. Atkinson, 'The lost diaries of John Snow', *Proceedings of the Fourth World Congress of Anaesthesiology* (London, 1968), Amsterdam, Excerpta Medica, 1970, pp. 197–9.

⁸² R. S. Atkinson, 'Some interesting patients of John Snow (1813–1858)', *Proceedings of the Second International Symposium on the History of Anaesthesia* (London, 1987), London, Royal Society of Medicine Services, 1989, pp. 500–2; R. S. Atkinson, 'John Snow—an early intensivist', *Proc. Hist. Anaesth. Soc.*, 1988, **3**: 31–5.

⁸³ R. H. Ellis, 'A busy week for John Snow', *Proc. Hist. Anaesth. Soc.*, 1989, **5**: 35–42; *idem*, 'A busy week for John Snow', *Anesth. Hist. Assoc. Newsletter*, 1991, **9**: 1–6; *idem*, 'John Snow's Alma Mater', *Proc. Hist. Anaesth. Soc.*, 1993, **12**: 36–44.

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to contain records which would survive for many years. Had Snow's intention been to produce records which he needed to keep only for a short period of time he could have used far less expensive notebooks for his purpose.

The endpapers (the pasted down board papers and the free endpapers or flyleaves) are somewhat decorative (marbled), as are the covers themselves and the free edges of each book. The particular decoration is known as "nonpareil", and it was popular from the 1840s onwards, being commonly used for stationery work.⁸⁴ There are no imprints, signature marks or other legends to indicate how, by whom, and for what purpose the books were produced. It is unlikely that they were specifically made for Snow's use, because the expense of such an undertaking would have been considerable, especially for someone, like Snow, who was far from wealthy at the time when the early entries in these case books were made. The books were, almost certainly, available from stationers for general use. At the end of the first volume, neatly pasted onto its free endpaper (recto), is an "obstetric calendar", which is a printed aid used in early pregnancy by doctors to predict the expected date of delivery of the child. Such a calendar was (and, indeed, still is) in common use by family doctors and obstetricians, and would be unlikely to have been prepared for any other group. It is not possible to know now whether this calendar was pasted in prior to the book's purchase or by John Snow himself afterwards. If it was in place when Snow bought the book this indicates that the first volume (at least) was produced specifically for the use of medical practitioners with particular relevance to those, like Snow, with obstetric practices. The second and third volumes do not have an obstetric calendar, and have fewer pages than the first. In every other respect, however, they are the same as the first volume and this suggests that the obstetric calendar was pasted in, probably by Snow himself, after that volume was purchased.

The first volume consists of 467 pages of manuscript, the second of 357 and the third of 98. The original pages were lightly ruled with feint horizontal lines, but were otherwise blank. It is important to note that the books have been produced in the conventional manner, each consisting of a number of folded sections which have been gathered and then sewn together with thread to form the book before it was bound.

Close examination of the first volume reveals that there are several missing pages before Snow's earliest surviving entry (which is dated 17 July 1848). The first folded section is incomplete and a number of its early pages seem either to have been deliberately removed or to have fallen out, the line of separation being virtually on the stitching fold. Fortunately the remainder of this section still survives—albeit precariously—stitched in with the rest of the book, and its centrefold is presently intact. There are seven leaves in this section after the centre stitching and, therefore, there must originally have been seven corresponding leaves before it. However, there are now only three, and it follows that four leaves (eight pages) have, at some stage, been detached from this sewn section and are lost.

These missing pages must have become separated from their fellows at an early stage of the book's history, and certainly before each folio was numbered, since the first surviving folio is assigned the number one. In 1870, when Coles began his analysis of Snow's case records he wrote, "Number one in this book is number 47 in the original notebook of Dr.

⁸⁴ B. C. Middleton, *A history of English craft bookbinding technique*, London, Hafner, 1963.

Snow, the first 46 cases having been lost". The evidence on which Coles based this confident assertion is not now available.

Two other notes refer to the missing pages and cases. They are anonymous and undated although both would appear to be several decades old. Firstly, a loose and handwritten scrap of paper in the front of the first volume states, "These are the 'lost' diaries of Dr. John Snow, and are entirely in his hand. They contain the records of all except the first forty anaesthetics administered by Snow". The handwriting is not that of Coles, Richardson or Sir Ian Fraser. Secondly, a typewritten note, pasted into the first volume's front cover states, "In these quarto volumes are recorded all but the first forty-seven cases in which he administered chloroform anaesthesia . . .".

The later workers, cited above, made similar suggestions which appear to have been based on one or other of these messages. A typewritten card (which was probably produced for the Wellcome exhibition of the Case Books in 1968) states that the books contain "all but the first forty-seven cases in which Snow administered chloroform anaesthesia". In the course of his 1967 John Snow Memorial Lecture, Sir Ian Fraser said, "The first 47 names are missing". In 1968 Richard Atkinson noted "All the chloroform anaesthetics are recorded here, apart from the first forty-six", and he repeated this in 1988

It is, therefore, uncertain just how many of Snow's early case notes are missing from these records, and whether or not these are an accurate indication of how many pages have been lost from the first volume. Snow's early entries in the Case Books relate more to his work as a family doctor than as an anaesthetist, and this transcription shows that he wrote thirty-one pages of the manuscript before reaching the forty-seventh surviving anaesthetic case note, and a further twenty-four pages before reaching the ninety-fourth. On this basis, it is unlikely that the missing forty-six anaesthetic records would have been dealt with in the eight pages detached from the first section of the first volume. Accordingly, it is possible that, say, at least one complete sewn section (of fourteen leaves or twenty-eight pages) is also missing. It is equally possible that one complete, earlier volume is missing, and that this would have included details of Snow's anaesthetic practice from the time when he first took an interest in the subject in late December 1846.

The manuscript entries begin, in each of the second and third volumes, without any introduction or generally informative heading whatsoever. They are merely continuations of the previously made entries. It is noticeable that the earliest entries in the first volume also begin abruptly, as if continued from the earlier, but now missing, pages. The first surviving entry refers to the patient's condition as being "about as yesterday" which may indicate that Snow was referring to the previous day's record, now lost from the Case Books.

The first two volumes are virtually entirely filled with Snow's handwritten records (although occasionally a page or a section of a page has been left blank). The third volume bears Snow's entries for the first 98 pages only: he suffered an incapacitating stroke four days after its last entry, and died seven days later.

The narrative case records begin on the first page of each volume and then continue, usually in date order, towards the last. However, Snow also made completely separate records, as appendices, which consist mostly of brief obstetric notes, occasionally interspersed with more detailed accounts of cases. For these he turned over and inverted each volume, began the entries on its last page and gradually worked his way

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conventionally towards the true front of the book. When, in volumes one and two, these two different types of entry met he moved on to the next book.

The three original volumes are in poor condition, especially the first which has suffered from repeated handling and opening. However, their fragile condition would be far worse had the Case Books been taken from place to place by Snow during the course of his, usually peripatetic, medical and anaesthetic practice. By inference, therefore, he did not do this. On two occasions in the Case Books {56 and 392} Snow has recorded that his patients came, or were brought “here”—by which he, presumably, meant his own home (then in Frith Street, Soho). These two entries imply most strongly that Snow’s usual custom was to write up his Case Books when he returned home at the end of his working day.

The manuscript entries are written in three, possibly four, different hands. John Snow’s own entries are the most numerous, and the script of these corresponds with other examples of his handwriting. These consist of the dedications which Snow wrote in copies of his book on ether which he presented to the United Services Institution, in London, and to the editor of the *Zeitschrift für die gesammte Medicin*.⁸⁵ The handwriting is the same as in a still-surviving autograph letter and a testimonial written by Snow.⁸⁶

Snow wrote in ink in his Case Books—almost certainly using some version of the simple steel-nibbed dip pen which had been first mass-produced, and therefore made generally available, a few years before in 1831.⁸⁷ Each of the case notes which refers to an anaesthetic has, year by year, been consecutively numbered in pencil, and in a hand which (according to a consensus of expert graphological opinion at the Department of Manuscripts of the British Library) is almost certainly Snow’s although it is not possible to be dogmatic about this. Snow did not refer to this numbering system in his Case Book entries, nor in any of his later presentations and publications which must have been more or less based on the Case Book material. The first case on the surviving pages is numbered forty-seven. If, as is likely, these pencilled entries are in Snow’s hand then the number of missing cases lost from the Case Books can be authoritatively stated as being forty-six.

Scattered through Snow’s own records are a few brief entries, in ink, in a handwriting which is almost certainly that of George Coles. Finally, every folio has been numbered, on its recto page, consecutively in pencil and in a hand which appears to be neither that of Snow nor Coles. This numbering (one twenty-page sequence of which in the first volume is incorrect) has continued throughout the 136 blank pages of volume three. It is almost certainly the work of an unknown librarian, curator or earlier student.

THE TRANSCRIPTION

For the statistically minded the three volumes comprise something over 200,000 words. I have transcribed the whole of Snow’s manuscript and have not, knowingly, omitted any part of it; nor have I attempted to re-phrase any of his entries. To the best of my knowledge the transcribed text which appears in this volume is an accurate copy of Snow’s own words.

⁸⁵ J. Snow, *On the inhalation of the vapour of ether in surgical operations*, London, Churchill, 1847; facsimile editions: (A. Matsuki), Tokyo, Iwanami Book Service Center, 1987; and another, undated, produced in Boston with the help of the Boston Medical Library.

⁸⁶ Snow, *op. cit.*, note 2 above.

⁸⁷ *Chambers’ encyclopaedia*, London, Chambers, 1901, vol. 8, pp. 20–2.

What had appeared, at first sight, to be no more than a laborious and painstaking task was revealed as a complex one soon after I had begun my work on the first volume and, in the interests of clarity, I have made a few minor alterations to Snow's original manuscript. I have excluded from my transcription the anonymously written folio numbers, the individual anaesthetic case numbers (which may or may not have been inserted by Snow), and the occasional annotations made by Coles. I felt confident that nothing would be gained by adding these uncertain, inconsequential, and occasionally confusing entries to this definitive record of Snow's own, day-by-day professional work.

It was relatively easy to get into Snow's hand, and thereafter transcribing his words has, on the whole, been a straightforward task. However, in some places his handwriting is difficult to read, either because the original quality of Snow's script leaves something to be desired or because the ink has faded in the 150 years or so which have elapsed since the original entries were penned. Many of these obscure words can be accurately deduced from their contexts, and fortunately it has been rare to come across a whole word which is indecipherable. Those words which I have been unable to recognise have been denoted in the text by enclosing them in square brackets, e.g. [Irvington], and are photographically reproduced in their original manuscript form in Appendix B so that others might identify them.

It has been difficult to identify several proper names with certainty. Most of these are the names and addresses of patients, doctors and dentists, and others encountered by Snow in the course of his practice. The majority have yielded to careful cross-checking in seemingly authoritative sources such as the mid-nineteenth century editions of various national and local gazeteers, *Kelly's Post Office directories*,⁸⁸ the *London and provincial medical directories*,⁸⁹ and local archive collections in various parts of England. Similarly, some difficulties have been encountered in deciphering medical and surgical terms, and eponyms which appear to have been commonly used in Snow's time but which are no longer part of our professional vocabulary. It has been possible to identify these by referring to medical and surgical textbooks and British medical journals and medical dictionaries of Snow's time.⁹⁰ A constant problem has been to identify, with certainty, some of Snow's lower case lettering. Usually, however, the obscure character has been identified from the context of either the letter itself within a word, or the word of which the letter forms a part.

Snow's lower case lettering presents particular problems in a number of surnames. By and large these fell into two groups. Those who had sufficient standing to be named in such publications as *Burke's peerage*, the *Dictionary of national biography*, the *Clergy lists*, the *Law lists*, the *Army lists*⁹¹ or the professional, general and local directories mentioned previously were the easier group with which to deal. The more difficult group consisted of people of insufficient social standing to be included in any of these sources,

⁸⁸ *The Post Office London directory*, London, Kelly, 1848–59.

⁸⁹ *Medical directory*, London, Churchill, 1848–59.

⁹⁰ R. Hooper, *Medical dictionary*, 8th ed., London, Longman Brown Green and Longman, 1848; W. Fergusson, *A system of practical surgery*, 4th ed., Philadelphia, Blanchard and Lea, 1853; R. Druitt, *The principles and practice of modern surgery*, new ed., Philadelphia, Blanchard and Lea, 1856.

⁹¹ B. Burke, *A genealogical and heraldic dictionary of the peerage and baronetage of the British empire*, London, Hurst and Blackett, 1848–59; *Dictionary of national biography*, 63 vols, London, Smith, Elder,

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and who were also not amongst those householders listed in the various local authority and Poor Law records which still survive from the time. The National Census records of 1851 have helped in only a few instances.⁹² Where the correct spelling could not be identified I have transcribed the names as Snow wrote them. It has not always been possible to distinguish surely between *Mr.* and *Mrs.*, and I am only glad that the modern *Ms.* did not then exist to compound this problem further. Eventually, and particularly whilst constructing, checking and reconciling the five indexes to this transcription, the majority of this second group of surnames has been identified: a few continue to be obscure and, are reproduced in Appendix B for others to elucidate.

It has to be borne in mind that even though Snow was a conscientious scientific observer he seems, on some occasions, to have been less meticulous about other topics. For example, in 1851/52, one of his patients named Caulfield is described by Snow as being a General on five occasions {242, 294, 295, 390, 399} but as an Admiral on a sixth {386}. The *Navy list* of the time does not record an Admiral Caulfield, but the relevant London street Directory recorded that a Major-General James Caulfield lived at the address which Snow gave.⁹³ The directory spells this surname as both *Caulfield* and *Caulfeild* but, none the less, indicates that Snow's patient was a General. Similarly, in 1852, when referring to a patient named Webster, Snow first described him as being from America {826}, then from New York {836} and finally from Philadelphia {851}. It is not possible now to know which, if any, of these descriptions is correct.

Snow's punctuation is in places inconsistent, and quite often incorrect, making it difficult to understand what, from its context, must have been his intended meaning. In dealing with the problems to which Snow's often idiosyncratic punctuation has led I have borne in mind Lord Macaulay's dictum that "the first law of writing, that law to which all others are subordinate is this: that the words employed should be such as to convey to the reader the meaning of the writer".⁹⁴ Sir Ernest Gowers was equally clear: "Taste and commonsense are more important than any rules; punctuate to help your reader understand you, not to please grammarians".⁹⁵

Snow shared his fellow Victorians' addiction to the comma, and used it liberally. A small number of his sentences do not begin with a capital letter, and frequently he used a comma, hyphen or semi-colon in place of a full stop. Occasionally, one sentence runs uninterruptedly into the next, and from time to time such punctuation (or lack of it) renders the text somewhat obscure. I have, in general, adopted modern conventions of punctuation for the transcription. I would add that only where Snow's intended meaning is unequivocal have I dared to change his punctuation in order to clarify the text without altering his words in any way. I have left it untouched in each of those few instances where ambiguity might arise if his construction was altered. Occasionally, unintended

1855–1900, hereafter *DNB*; *The clergy lists*, London, n.p., 1848–59; *The law lists*, London, Stevens and Naughton, 1848–59; *The army list: a list of the officers of the army, and of the officers of the Royal Corps of marines on full, retired and half pay*, London, Clowes, 1848–59.

⁹² *The national census of 1851*, London, Public Record Office.

⁹³ *The navy list*, London, Murray, 1851, p. 28; *The Post Office London directory*, London, Kelly, 1851, p. 445.

⁹⁴ E. Gowers, *The complete plain words*, London, Penguin, 1973, p. 16.

⁹⁵ *Ibid.*, p. 238.

ambiguities have been encountered in Snow's text: these have not been altered if the true meaning can be reliably inferred.

Simple slips of the pen are quite common throughout the manuscript, and I have corrected the majority of those which I have recognised. These include the occasional misspelling of a word written correctly elsewhere, the addition of an extra and unnecessary word or the omission of one which is required, and the use of an incorrect word or participle. These have been readily differentiated from the appreciable number of true spelling mistakes because of the consistency with which the latter appear throughout Snow's original text.

Some of the spelling mistakes are surprising in that they relate to medical names with which it might be expected that Snow would have been sufficiently familiar not to have made such errors. He consistently mis-spelled or confused some similarly sounding words. He used *ileum* (which is part of the small intestine) where he should have written *ilium* to denote part of the pelvic bone. Other examples include *harelip* instead of *hare-lip*, and *witlow* in place of *whitlow*. Similarly he spelled the surname of one of his colleagues, a physician, as *Fergusson* although this man was, without doubt, Dr. Robert *Ferguson*.⁹⁶ (Snow spelled the name of his close surgical colleague, Mr. William *Ferguson*,⁹⁷ correctly and it appears on most pages of the transcript.) He also regularly mis-spelled the name of another surgical colleague with whom he worked on many occasions (both at St. George's Hospital and in private practice) as Mr. Prescott *Hewitt*, instead of *Hewett*,⁹⁸ and of Mr. *Haines* Walton instead of *Haynes* Walton.⁹⁹ These, and other similar errors, have been transcribed in their correct form.

It is possible that Snow mis-spelled the surname of one of his patients as Mrs. *Duhy*. This was, and still is, a rare name and its true form might have been the far commoner but similarly sounding *Dewey*. This is, however, speculation and therefore no change has been made to Snow's version of this name, and an example of his manuscript version is reproduced in Appendix B. He spelt other proper names (which are arguably the same but which he had probably only heard spoken rather than seen written down) in two or more ways. Examples include Humby/Humble, Desmajeux/Desmajieu/Desmajure, Westcott/Westgate and Esler/Elster. The correct versions cannot be ascertained from other records and, again, no changes have been made.

At times Snow spelled words in either of the two, then acceptable, ways; examples are *showed* and *shewed*, *pallor* and *palor*. In these, and other similar instances I have used only the more modern form. I have deliberately omitted to use diphthongs where Snow commonly employed them in such words as *anaemia*, *caecum*, *sequelae*, *aet.*, *Caesar* and the like; I have transcribed the word *perinaeum* into its modern form.

In keeping with one of the declining customs of his times Snow usually wrote *fs* where nowadays *ss* would be written in such words as *Fergufson* for *Fergusson*, and the *Mifses* for the *Misses*. Again, I have opted for the modern usage.

⁹⁶ *Medical directory*, 1853, p. 77.

⁹⁷ *Ibid.*

⁹⁸ *Ibid.*, p. 94.

⁹⁹ *Ibid.*, p. 158.

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On occasions Snow left gaps which, presumably, he intended to fill in later. Some are only large enough for the insertion of a single word; others would have allowed several lines of text to be added, and on one or two occasions a whole page has been left blank. Blank pages and lines are described as such in the transcription, and gaps left for single words are indicated by the symbol ==.

As already explained, the folios were numbered, though probably not by Snow. For the transcription I have re-drafted the original manuscript's folio numbers to fall in with conventional practice. The page numbers of the original manuscript are printed in the margins, and the beginning of each page is shown in the text by its page number enclosed in curly brackets, e.g. {841}. The indexes refer to these numbers and not to the actual pagination of this volume.

There is an enormous amount of detailed material contained in the Case Books. Some form of indexing is essential in order to appreciate the full text, to move around it purposefully, and to collate the huge number of people, places, and events to which Snow has referred. Accordingly, I set about producing five separate but simple indexes to the work. I took the view that with so much data a single omnibus index would offer little help to future researchers wishing to use this transcription as a historical source.

The first and second indexes list the names of all dentists, medical men, and other related professional people referred to by Snow. The third gives the names or descriptions of all the patients recorded by Snow. The fourth lists the medical conditions he encountered or mentioned, the various surgical procedures performed on the patients, and any other medical terms or details which emerge from his text; and the fifth lists all the place names and addresses.

Each of the three original manuscript volumes ends with Snow's own appendices—a number of pages written more or less as a ledger of his obstetric patients' names, addresses, dates and outcomes of their deliveries. These, essentially discontinuous notes were made by Snow for some different purpose than were his main entries in the Case Books. Accordingly, and in order to avoid the smooth, almost day by day flow of Snow's principal narrative, I have included these three sets of ledger entries together as a separate section (Appendix A) at the end of the more detailed, and case by case, main transcription.

I have sought to keep editorial notes to a minimum so that Snow's original text can be read as a continuum, and uninterrupted by other material. A small number of notes, printed in italics, have, however, been included in those instances where, without them, confusion might arise if reference is made only to the transcribed material.

THE PURPOSE OF SNOW'S CASE BOOKS

At this point we should ask what was Snow's purpose in recording the material contained in the Case Books. By coincidence (I am sure) a few weeks before Snow's first surviving entry the following exhortation appeared in the *Medical Times* (one of the three principal medical journals of his day):

Accumulated experience has had no small share in enabling medical practitioners of the present day to treat diseases more successfully than they were in bygone times. . . . as we have derived benefit from those who were once engaged in the same vineyard that we now occupy, it is our duty to bequeath to those who shall succeed us some additional advantages. Every medical practitioner may do something to advance the progress of

medical science by carefully noting the cases which come under his observation, and the remedies he has found most successful in treating them. It is to be lamented that so many lose the advantages even of their own experience by neglecting to record medical facts; and, while they are unjust to themselves, they cannot possibly bequeath anything to posterity.¹⁰⁰

It may be that it was with such principles in mind that Snow embarked on these Case Books. However, it is likely that he began to keep his careful records some time before this exhortation appeared in print.

The Case Books make no mention of the few memorable social activities in which Snow took part (such as his being introduced to Queen Victoria at one of her levées, given in the summer of 1857 for the leading men of the day),¹⁰¹ details of which he might have wished to record in a personal diary. Similarly, they could not possibly have been a financial ledger for they do not record any details of fees, payments or receipts save for a handful of inconsistent entries in the short obstetric list at the end of each volume. Virtually all of the entries were written in the past tense, and were therefore made retrospectively: this precludes the use of the Case Books as an appointments' diary.

However, as far as anaesthesia is concerned, Snow's notes usually recorded the dates of his patients' anaesthetics, the patients' names or descriptions (if they were private, but less often if they were in hospital), the type of operations performed or conditions encountered, where the procedure was carried out, the agent he used (and occasionally the way he gave it), the operator, the immediate outcome, and any other surgical and anaesthetic details which he thought relevant. The construction of the entries would have enabled him, if necessary, to refer in retrospect to the operator and his clinical notes, and any hospital records as well.

I have no doubt that Snow would be pleased to know that his case notes are still being studied almost 150 years after he wrote them—but whether he was writing them for himself or for posterity (or for both) is not at all clear. I hope others who study the transcriptions will be able to fathom this point. At their simplest, the Case Books provided Snow with a straightforward, clinical record which enabled him to recall and assess his own anaesthetic practice. This done, he was able to write or speak, accurately and authoritatively, of his anaesthetic experiences. For Snow was a meticulous, if not pedantic, author and speaker and almost certainly this was the main purpose which he had in mind for his Case Books. Leaving aside the surprising omissions referred to later, it is, by and large, possible to reconcile the Case Books' records with those articles which, from time to time, Snow wrote in the journals, and also with the book on chloroform which he had all but completed at the time of his untimely death. Without such records to refer to he would not, later, have been able to publish such detailed accounts of his practice.

SNOW'S CLINICAL ANAESTHETIC PRACTICE

The bulk of Snow's clinical anaesthetic work, as recorded in these transcriptions, can be divided into five major groups. Firstly, he attended the main operating sessions at a

¹⁰⁰ Review, 'The medical practitioner's private register of cases professionally attended (London, Smith)', *Med. Times*, 1848, 18: 159.

¹⁰¹ *The Court circular*, Saturday, 20 June 1857.

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number of London hospitals. At these he gave anaesthesia for operations performed by many of London's leading surgeons of the time. Secondly, he had a private anaesthetic practice which was related principally, but not exclusively, to the surgeons with whom he worked in those hospitals. Thirdly, he had a substantial private anaesthetic practice for dentistry, at a time when very few dentists held hospital appointments. Fourthly, he had a private obstetric anaesthetic practice related partly to the hospitals in which he worked but also, it seems, independent of these and generated by his own endeavours and reputation. Fifthly, a small part of his time was involved in administering anaesthesia for the treatment of medical conditions.

It is difficult to determine how Snow made up his appointments' diary for this busy anaesthetic practice. However, it is likely that many of the surgeons and dentists with whom he regularly worked would have informed him, each time they met, of the cases which they planned to operate upon in the near future, and for which they then requested his help. On other occasions he would probably have been summoned to attend by messengers or letters sent by the surgeons and dentists, or possibly by the patients themselves. Only one document is now thought to exist which relates to this aspect of Snow's professional work. The library at St. George's Hospital Medical School possesses a manuscript letter written by Snow to the eminent chemist, Professor William Brande, on 22 December 1852.¹⁰² The letter is reproduced on page 257. Snow wrote, "Dear Sir, I am sorry that you are an invalid and require to undergo an operation, but I shall have much pleasure in calling on you at two o'clock on Friday next in order to administer Chloroform and prevent you from having the pain of the operation. Yours very truly, John Snow". The Case Books record, on the 24 December 1852 {425}, Snow's giving the anaesthetic for Professor Brande's operation (the removal of diseased bone from the tibia, presumably due to chronic osteomyelitis). Some of Snow's patients were of such eminence that their correspondence is still preserved in various archives, and it is possible that some collections may contain similar letters written by Snow to give notice of his attendance.

That part of Snow's clinical anaesthetic practice which occurred in various London hospitals mainly involved his giving anaesthesia at King's College Hospital where the surgeons congregated once a week to operate on their patients. At other times, he regularly gave anaesthetics at St. George's Hospital, St. Mary's Hospital, and University College Hospital. Few, if any, of the renowned London hospitals appointed specialist anaesthetists at this time and Snow, although a regular practitioner, was not formally appointed to the staff of any of these institutions. He also worked very occasionally at other major hospitals and, in addition, was involved with a number of smaller central London institutions, most of which no longer exist. These included the Hospital for Decayed Gentlewomen, the Hospital for Children, the Hospital for Consumption (now the Brompton Hospital), the Ophthalmic Hospital, the Orthopaedic Hospital, the Metropolitan Free Hospital and the Hospital of the Scots Fusilier Guards. He also gave anaesthesia from time to time at Poor Law institutions, mostly at the Workhouse Infirmary of St. James's Church, Piccadilly, which was in Poland Street in Soho close to his own home in Frith Street. Interestingly enough, even though Snow moved from Frith Street to the more fashionable Sackville Street some time around 1853 he continued to attend cases in Soho's workhouse infirmary.

¹⁰² *DNB*, London, Smith, Elder, 1886, vol. 6, pp. 216-18; Snow, *op. cit.*, note 2 above.

This may indicate an altruistic approach to his practice, an attitude he apparently shared with Mr. French, the surgeon to the workhouse, who is mentioned in the Case Books, and whose private patients Snow also attended.

Snow gave anaesthesia to an extraordinary variety of patients who ranged between the extremes of age on the one hand and the extremes of social position on the other. His youngest patient was just 8 days old {835}. The operation was for hare-lip and was performed by Mr. William Fergusson who believed (at the time) that early operations for this condition produced better cosmetic results in later life.¹⁰³ Snow records that his anaesthesia was unsatisfactory on this occasion as the face-piece he used was too large for the infant's features. One of the oldest patients to whom Snow gave anaesthesia was the 82-year-old Marquis of Anglesey {195–197, 204–405}. The Marquis inhaled chloroform several times for the symptomatic treatment of severe facial pain, but did not undergo definitive surgery for this. Snow's oldest patient was aged 87 {404}.

Snow's patients spanned the marked social divide which typified the early to mid-Victorian population of Britain, and which Disraeli, in 1845, was to characterise as consisting of "two nations".¹⁰⁴ Within a short while of giving anaesthesia to Queen Victoria, to members of the aristocracy or to prominent members of the Government, Snow could be found working amongst some of the poorest patients living in the most deprived areas of London.

The surgeons with whom Snow worked most closely are to be found amongst the staffs of the London hospitals at which he gave anaesthesia. At King's were James Arnott, William Bowman, William (later Sir William) Fergusson, and Richard Partridge.¹⁰⁵ At St. George's were Bernard Brodhurst, Sir Benjamin Brodie, Edward Cutler, Caesar Hawkins, Prescott Hewett, Henry Charles Johnson, James Johnstone, Henry Lee, George Pollock and Thomas Tatum.¹⁰⁶ At University College Hospital were Robert Liston (who died before these Case Books' records began), James Arnott (again), John (later Sir John) Erichsen, John Marshall, Richard Quain and Edward Murphy (who was the hospital's obstetric physician).¹⁰⁷ At the Westminster were Charles Guthrie, Barnard Holt and Benjamin Phillips.¹⁰⁸ In addition Snow worked with William Coulson from St. Mary's,¹⁰⁹ John Avery, Edwin Canton, Henry Hancock and Francis Hird from the Charing Cross,¹¹⁰ William Lawrence, James (later Sir James) Paget and Edward Stanley from Bart's,¹¹¹ Edward Cock, Bransby Cooper, John Hilton and Charles Aston Key from Guy's,¹¹² and

¹⁰³ Fergusson, op. cit., note 90 above, p. 441.

¹⁰⁴ B. Disraeli, *Sybil, or the two nations*, Oxford University Press, 1981.

¹⁰⁵ H. W. Lyle, *An addendum to King's and some King's men*, London, Oxford University Press, 1950, p. i.

¹⁰⁶ J. Blomfield, *St. George's 1733–1933*, London, Medici, 1933, p. 112.

¹⁰⁷ W. R. Merrington, *University College Hospital and its medical school: a history*, London, Heinemann, 1976, pp. 275–6.

¹⁰⁸ J. Langdon-Davies, *Westminster Hospital. Two centuries of voluntary service, 1719–1948*, London, Murray, 1952, p. 263.

¹⁰⁹ *Medical directory*, 1857, p. 184.

¹¹⁰ W. Hunter, *A historical account of Charing Cross Hospital and medical school*, London, Murray, 1914, pp. 167–8.

¹¹¹ V. C. Medvei and J. L. Thornton, *The Royal Hospital of Saint Bartholomew 1123–1973*, London, St. Bartholomew's Hospital, 1974, p. 389.

¹¹² H. C. Cameron, *Mr. Guy's hospital, 1726–1948*, London, Longman Green, 1954, p. 498.

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Frederick Salmon from St. Mark's.¹¹³ As such, Snow's regular surgeons were amongst the leaders of the profession at the time. Several became Presidents of the Royal College of Surgeons. He also worked with a variety of established but less well-known surgeons in London.

The surgical operations for which Snow gave anaesthesia were varied. The majority were performed on account of severe and long-standing disease, especially chronic sepsis and its complications. Examples include amputations of limbs and removal of dead bone—commonly from the tibia, but also from other parts of the limbs and virtually any part of the skeleton. Bladder stones were common, as were urethral strictures which were treated by bouginage or by section through a perineal incision.

Women with breast tumours formed a significant part of Snow's practice, and (according to Snow) were treated much more frequently by removal of the tumour alone than by mastectomy. However, William Fergusson's own contemporary textbook suggests that this was not his usual practice: he preferred mastectomy.¹¹⁴ The possibility must be borne in mind that, from time to time, Snow's record may not give an entirely accurate account of the surgery performed. Rectal conditions such as haemorrhoids, fissure, fistulae and prolapse were commonly operated on, and Snow gave a surprisingly large number of anaesthetics for eye surgery, especially for the removal of cataracts, correction of squints and excision of the eyeball for tumours, trauma or sepsis. It may be significant that ophthalmology was one of the earliest specialties to emerge from the general medical and surgical practice of the early 1800s.¹¹⁵

A large group of patients with unspecified tumours were anaesthetised by Snow. Some of the tumours were malignant although a seemingly larger number were not. It would appear that a considerable number of these were removed for little more than cosmetic reasons—which presumably is a reflection of the changes in surgical practice which anaesthesia was beginning to bring about. In the days before anaesthesia few, if any, patients would have been persuaded to undergo surgery whilst fully conscious for any condition which was not immediately life-threatening.

From time to time Snow, as part of his general practice, acted as an obstetrician. He also gave chloroform at confinements supervised by other doctors. Induction of labour was not much practised in Snow's time and so his obstetric calls would have been unpredicted. Indeed, Snow's obstetric records suggest that, quite often, the accoucheur was summoned by the patient only in the last few days of pregnancy or when labour had actually begun. Antenatal care was rudimentary and as a result there was a high incidence of abnormal labours, and Snow also encountered a number of neonatal deaths.

It is, perhaps, surprising to note that Snow had administered chloroform to relatively few patients in childbirth before he was invited (or cajoled) into undertaking the enormously onerous, and extremely controversial task of giving chloroform to Queen Victoria during her last two labours.¹¹⁶ Similarly, it would seem that Snow and Dr. Charles

¹¹³ L. Granshaw, *St. Mark's Hospital, London: a social history of a specialist hospital*, London, King Edward's Hospital Fund, 1985, p. 490.

¹¹⁴ Fergusson, *op. cit.*, note 90 above, pp. 222–4.

¹¹⁵ B. Abel-Smith, *The hospitals, 1800–1948*, London, Heinemann, 1964, pp. 16–33.

¹¹⁶ W. S. Sykes, *Essays on the first hundred years of anaesthesia*, London, Livingstone, 1960, vol. 1, pp. 77–85.

Locock (the Queen's accoucheur) had encountered each other professionally only once before they both attended the Queen's confinement on 7 April 1853, and only once more in the interval before they, again, assisted with the her last labour on 14 April 1857.

In children, of which there were many in Snow's practice, the most common procedures encountered were for the surgical correction of hare-lip, for the relief of club foot, and for the excision of naevi or other birthmarks. By present-day standards a large number of children suffered from chronic infections of bone and from bladder stones.

Some of the operations would have posed Snow with enormous technical problems, particularly relating to his control and safeguarding of the patient's airway. From an anaesthetist's point of view, the most challenging procedures must have been those large and bloody operations performed on the face, mouth and jaw—such as excision of the upper jaw bone, excision of the lower jaw, partial removal of the tongue and excision of gross scarring following severe burns. These operations were accompanied by a great deal of haemorrhage, and controlling the airway (and avoiding asphyxia from its being swamped with blood) must have been extremely difficult—as would have been trying to continue smooth anaesthesia by the intermittent application of a face-mask or a chloroform-soaked sponge amidst the operative field. (Nowadays, the anaesthetist maintains satisfactory anaesthesia and safeguards the airway by allowing the patient to breathe through a tube passed through the mouth and into the trachea. This technique was introduced in 1880, but not regularly practised by anaesthetists until the First World War.¹¹⁷) Snow was reticent about these problems in his case notes, although in his books and articles he did explain, in some measure, how he managed them. Surprisingly, the nowadays enormously complex and lengthy operation of removal of the upper jaw bone usually took Snow's surgeons less than three minutes.¹¹⁸

Today, anaesthetists would not willingly embark on any anaesthetic, let alone a complicated one, outside a familiar hospital (or similar) environment. Snow was clearly made of sterner stuff, for—in addition to his dental anaesthetic practice, which was conducted almost exclusively in the dentists' own consulting rooms—he readily gave anaesthesia for his private surgical practice in the patients' own homes or lodgings, at the rooms of the surgeons themselves or, surprisingly, in various London hotels. These records show that Snow, and his surgeons, were to some extent involved in the carriage trade.

The majority of patients noted by Snow as coming to London from the provinces were operated on at the surgeons' own premises. Others, far fewer, were operated on in a small number of hotels, virtually all of which were in the fashionable West End of London. The spectrum of operations performed at the hotels was much the same as those done elsewhere, and would have occasioned a great deal of disruption to the hotels' premises and routines, and, presumably, would have discomforted the other guests. How it was decided to use the hotels rather than the surgeons' rooms is not at all clear. Occasionally it may have been at the surgeon's insistence, although some patients may have preferred this option. Generally, the well-to-do were not eligible (or may not have wished) to be cared for as in-patients at the capital's hospitals: opting to have their operations at hotels would

¹¹⁷ T. E. Keys, *The history of surgical anaesthesia*, New York, Dover, 1963, pp. 65–9.

¹¹⁸ Snow, *op. cit.*, note 62 above, p. 50.

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have enabled their relatives to look after them in the post-operative period. Similar considerations would have applied to those patients who were given anaesthetics by Snow for operations performed in various lodging-houses in London.

The Case Books were written at a time when communication and travel throughout Britain were being revolutionised by the developing network of steam railways.¹¹⁹ Thus it was relatively easy for many of Snow's patients to come from afar to receive their treatment at the hands of London's renowned physicians, surgeons and dentists. In addition, the railway network may have established, and certainly facilitated, the domiciliary consultation. Previously, even the swiftest of horse-drawn post coach services connecting London with the larger provincial towns would have been too slow to permit the capital's eminent practitioners to visit, advise and treat a patient who lived at a distance. The railway network enabled Snow occasionally to leave the capital for short periods, with several of the surgeons with whom he regularly worked, to give anaesthesia in places as far afield as Cornwall, Manchester, Norfolk and Weston-super-Mare which are between 100 and 300 miles from London.

Snow had a considerable dental anaesthetic practice: indeed dental extraction was the commonest procedure for which he gave anaesthesia. Almost all of the twenty-five or so dentists with whom Snow regularly worked had their practices within an area of one square mile in London's West End, and this—in turn—was within a mile or so of John Snow's own home. However, it would be far too simple to suggest that Snow's dental practice came about merely because of this accident of geography.

It is important to view Snow's dental anaesthetic practice against the, then, state of British dentistry. At the time of Snow's work the cause of dental caries was not at all understood, and dental extraction was the most commonly performed painful and invasive procedure. It carried few, if any, of the dreaded complications of general surgery such as haemorrhage, sepsis and gangrene, and would have served as a useful opportunity for Snow to develop both the clinical and scientific aspects of his anaesthetic practice.

As far as his choice of dentists is concerned, it is important to note that dentistry, in the late 1840s and early 1850s, was not at all the profession which we know today. Dentists were not obliged to undergo any formal training whatsoever and were entirely unregulated, with nothing to stop all manner of charlatans dignifying themselves with the title of "dentist" and foisting themselves on an unprotected public. By far the greater part of dentistry throughout the country was performed by people of this poor calibre. But, based in London, there was a leavening of ethical and entirely professional dental practitioners. Some were surgeons with qualifications from their Royal College; others, who had served apprenticeships, were without formal qualifications but possessed every other professional attribute of excellence. In various ways these two groups, in the mid-nineteenth century, attempted to establish a proper and professional structure for dentistry, and to raise the standards of its practice. They initiated what came to be known as the Reform Movement of British dentistry, and this led eventually to the profession we know today.¹²⁰ Many of the dentists with whom Snow worked were prominent in the Reform Movement, or subscribed to its principles.

¹¹⁹ A. Bryant, *English saga (1840–1940)*, London, Collins, 1940, pp. 79–84.

¹²⁰ A. Hill, *The history of the reform movement in the dental profession in England*, London, Trübner, 1877.

Snow, I think, must have been asked by other, less worthy dentists to use his considerable anaesthetic skills in their practices. If so, he declined to do so. As was the case with his surgeons, Snow's standing as an anaesthetist was such that he could pick and chose those with whom he worked. He did so and confined his practice to professional colleagues who were men of high repute.

Quite often Snow recorded that his patients suffered from other illnesses in addition to that for which their surgery was intended. Bearing in mind the relatively unsophisticated state of clinical method in the 1850s this coincident disease must have been well established and quite severe to have been noticed at all. Many such patients suffered from heart conditions including heart failure (the cause of which was not precisely diagnosed) and, more often, what was referred to simply as a feeble or irregular heart. Lung diseases such as tuberculosis, asthma, bronchitis and emphysema, or merely a non-specific shortness of breath, were also common. Obesity was a problem as was anaemia, malnutrition and emaciation, epilepsy, renal disease, and spinal deformity. From time to time Snow records that this coincident disease, especially heart disease, led the patient's own doctor to advise against the use of chloroform. In every such case recorded by Snow his immediate surgical or dental colleagues deferred to his own opinion that anaesthesia could be safely used.

The medical diseases for which Snow was asked to give chloroform included trigeminal neuralgia, other neuralgias and chronic severe pains, status epilepticus, mania, tetanus, meningitis, hysteria and laryngeal stridor or croup. On occasions (unrelated to the cholera epidemics of 1849 and 1854, which he studied in detail) Snow tried the effect of chloroform inhalations for sporadic cases of cholera—sometimes, it seems, with success. His reason for using anaesthesia in cholera cases was to provide rest for the patient and a period of freedom from the sickness and expulsive spasms, after which it was hoped recovery might occur. His reported cure of some cases in this way probably reflects the inaccuracy of his diagnosis of this disease rather than the efficacy of chloroform.

There is little detail to be gathered from the Case Books about Snow's work as a general physician or family doctor. The essential picture to emerge, if Snow's entries are a true indication of the extent of his general practice, is that he had a relatively small number of patients, whose names and families tend to appear over and over again during the ten-year period. He prescribed for their illnesses, vaccinated them and delivered their babies. The majority seem to have lived within a short distance of Snow's home in Soho. I doubt that his work as a family doctor would, by itself, have given him a good living.

Several of the entries which describe his general medical cases confirm that Snow was a careful observer of physical signs, especially those of chest disease. In the 1850s many doctors did not examine their patients closely and preferred instead to rely for a diagnosis on the history of the complaint, and their own preconceived notions. Snow, however, made careful clinical examinations when he thought these were required.

He had a special interest in lung disease, and spent some eighteen months in 1849 and 1850, at the request of physicians at the Brompton Hospital, attempting to treat respiratory conditions by inhalational means.¹²¹ When he diagnosed lung disease, Snow (usually

¹²¹ J. Snow, 'On the inhalation of various medicinal substances', *Lond. J. Med.*, 1851, 3: 122–9.

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ahead of his time) was able to inspect, palpate, percuss and auscultate the patient's chest. He did this on several occasions {42, 359, 450}, and gave a particularly detailed account of a young man's respiratory illness {171, *et seq.*}. He found the signs of a large right sided pleural effusion and noted its, and the patient's progress over a period of a month. He described how, on two occasions, some of the fluid was removed from the chest cavity (paracentesis thoracis), and he would have been familiar with this procedure because he had invented his own apparatus for performing it eight years previously.¹²² Snow described this patient's breathing as being "pleurile" which word was not in current medical use at the time.¹²³ Almost certainly Snow should have written "puerile", a term used to describe the adult breathing pattern when it was, abnormally, like that of a child: at the time this was taken to indicate lung disease.

On one occasion when Snow auscultated the heart {851} he stated that he applied his ear directly to the chest wall. At other times he probably used a monaural wooden stethoscope instead. This, "mediate" auscultation, had been first used by L aennec in 1816: the more modern, binaural device came decades later, in 1855. The stethoscope was the first major diagnostic tool to be introduced into clinical practice, but its use had been generally disdained in Britain until, in the 1820s and 1830s, it was promoted by Sir James Clark, and later by Drs. Ward Richardson, Charles J. B. Williams, Richard Quain, and Archibald Billing—all of whom are mentioned by Snow in the Case Books.¹²⁴ He may well have been encouraged to use the stethoscope by one or more of these men. One of the principal British manufacturers of the stethoscope, Grumbridge, had premises close to Snow's home in Soho, and almost next door to the Poland Street (St. James's) Workhouse where Snow occasionally gave anaesthetics.¹²⁵

Snow's interest in the stethoscope is highlighted by his attendance at a private meeting at the London home of Dr. Richard Quain on the evening before he suffered the stroke which was to kill him.¹²⁶ Those present discussed the cause of the first heart sound, which was a controversial topic at the time: Snow agreed to join a committee being set up to investigate the subject. There were then at least thirty different explanations for the sound, and the matter had been discussed in the *Medical Times and Gazette* some weeks earlier.¹²⁷

When Snow moved away from Soho to his more congenial and prestigious address in Sackville Street, Piccadilly, he seems to have maintained contact with the Soho patients whom he had served as a family doctor, and did not become involved with a significant number of others around his new home. It may have been that this well-to-do part of London's West End was already served by established and fashionable practices and that Snow, who was modest, unassuming and increasingly occupied with anaesthesia, neither sought nor attracted the notice of would-be patients. Whatever the reason, as a family

¹²² Snow, *op. cit.*, note 50 above.

¹²³ *The New Sydenham Society's lexicon of medicine and the allied sciences*, London, New Sydenham Society, 1849, vol. 5, not paginated.

¹²⁴ P. Bishop, 'Evolution of the stethoscope', *J. R. Soc. Med.*, 1980, 73: 448–56.

¹²⁵ *Post Office London directory*, London, Kelly, 1849, p. 449.

¹²⁶ Snow, *op. cit.*, note 7 above, *Memoir* by Richardson, p. 42.

¹²⁷ G. B. Halford, 'Experiments and observations on the action and sounds of the heart', *Med. Times Gaz.*, 1858, n.s. 16: 191–3.

doctor he did not renege on the disadvantaged population of Soho amongst whom he had lived for seventeen years. As a result of this attention, he was exceptionally well-placed to study the minutiae of the devastating epidemic of cholera which, in the summer of 1854, ravaged the courts, rookeries and slums of Soho, an area which he had come to know very well.

The details of Snow's epidemiological work during the cholera epidemics of 1849 and 1854 are outside the scope of this discussion but, interestingly enough, there are no entries for 1854 in the Case Books which indicate that Snow, himself, actually treated patients with cholera, the epidemiology of which he observed so closely. During the epidemics, and in the period following them when he was collating the information he had gathered about cholera's spread for publication, Snow's anaesthetic practice continued with its usual intensity.

THE CASE BOOKS AND OTHER SNOW MATERIAL

The 1854 cholera epidemic was at its height during the first ten days of September, and consistently over the years September was Snow's least busy month. I know nothing of the attitudes which well-to-do Victorians had to holidays in the 1850s, but it is possible that September was the month during which the majority of Snow's professional colleagues took their leisure. The Case Books, however, show that Snow did not usually take long holidays and, again, this meant that in the summer of 1854 he was in precisely the right place to study the epidemiology of the Soho cholera outbreak.

The seemingly unimportant topic of Snow's holidays demonstrates how the Case Books can be used to amplify other material concerning Snow's life and work. The most consulted and often quoted source is Richardson's *Memoir*, and the Case Books can be used to question, supplement, or embellish that account. For example, he wrote that at some time in 1856 Snow visited Paris with his uncle, Charles Empson, who was well-known to the then Emperor Napoleon. Accordingly, the Emperor made some provisions in order to ensure that their stay was enjoyable. The Case Books might possibly indicate when this visit took place for, during that year, there are only two intervals between Snow's cases which lasted more than three days. Bearing in mind the then slowness of travel by train and cross-channel steam packet, a visit to Paris during any of the three day intervals would have resulted in scarcely one whole day being actually spent in Paris.¹²⁸ I doubt that day trips were in vogue in the 1850s, especially if one's visit was the subject of an Emperor's attention. The timing can be deduced more precisely from Snow's entries in his Case Books. In September 1856 there were two opportunities (the only ones in that year)—one of six, and the other of seven days—during which Snow and his uncle would have had time to travel to and from Paris, and briefly to enjoy imperial favours whilst there.

Despite the immediacy of Richardson's biography there are serious criticisms which can be levelled against his account of Snow's life. As a friend and colleague, Richardson, understandably, had enormous respect for Snow, but from time to time his admiration for his subject blurred into hero-worship. This tends to diminish the reliability of some parts of his narrative. However, I do not wish to demean the value of Richardson's *Memoir*.

¹²⁸ F. Burt, *Cross-channel and coastal paddle steamers*, London, Tilling, 1937, pp. 33–4; L. T. C. Rolt, *Victorian engineering*, Harmondsworth, Penguin, 1970, pp. 17–55.

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Nor would I wish to argue that the Case Book material is an infallible primary source for studies on Snow's life and work: there are some surprising omissions which must lead us to ponder their seemingly impeccable authority. For example, a case report in the *London medical Gazette* of 1851 tells of the operation of tracheostomy performed on a patient with diphtheria who was in severe respiratory obstruction and on the point of dying from asphyxia.¹²⁹ Snow gave chloroform during the procedure, and the surgeon reported the case as being the first such operation performed under anaesthesia. Hitherto, successful anaesthesia had been thought to be impossible in a patient with such a life-threatening condition. Snow believed otherwise, and added his own comments to the surgeon's case report: he stressed the advantages of anaesthesia in these circumstances. Inexplicably, Snow did not record any details of this apparently pioneering procedure in his Case Books.

Similarly, the details of Snow's first use of amylene as an alternative to chloroform, are recorded in a series of four lengthy papers in the *Medical Times and Gazette*.¹³⁰ It would appear that this was the very first use of amylene for inhalational anaesthesia.¹³¹ Surprisingly, Snow's account in the journals cannot be reconciled with the entries in his Case Books. There are several discrepancies. For example, in January 1857 Snow stated unequivocally in the *Medical Times and Gazette* that "I first administered [amylene] in King's College Hospital, on the 10th. of November last, to two boys about 14 years old, previous to Mr. Samuel Cartwright extracting some teeth. . . . a further trial was made in the same institution on December 4. . . . On December 11, I exhibited the amylene again in five more cases of tooth-drawing in King's College Hospital . . . and on December 13, I administered it in some more important operations." However, in the Case Books he made no mention whatsoever of any of his amylene cases prior to those of the 13 December. His entry records only one such case, a tenotomy performed by Mr. Fergusson on a child with a club foot {736}, but this note is followed by a gap, half a page long, which was presumably left for notes about the other amylene cases of that day to be recorded later. The *Medical Times and Gazette* reveals that these other operations (of which there were three) were for "fungus disease of the testicle", for excision of diseased glands of the groin, and for tenotomy together with forcible extension of the knee. (When in 1858, Snow came to write up his experiences of amylene in *On chloroform and other anaesthetics* he reproduced his account from the medical journal and not from the Case Books.)

Snow had written enthusiastically in his early papers on amylene. Within a few months, however, two patients died unexpectedly whilst he was administering it to them: conscientiously and without delay he wrote to the journal to publicise these cases.¹³² He stated that his first amylene death was his one hundred and forty-fourth amylene patient, and that the second death occurred after he had given amylene to a further ninety patients.

¹²⁹ H. Smith, 'A case report in which the operation of tracheotomy was performed under the influence of chloroform', *Lond. med. Gaz.*, 1851, 13: 368–70.

¹³⁰ J. Snow, 'On the vapour of amylene', *Med. Times Gaz.*, 1857, n.s. 14: 60–2; *idem*, 'On the vapour of amylene', *Med. Times Gaz.*, 1857, n.s. 14: 82–4; *idem*, 'Further remarks on amylene', *Med. Times Gaz.*, 1857, n.s. 14: 332–4; *idem*, 'Further remarks on amylene', *Med. Times Gaz.*, 1857, n.s. 14: 357–9.

¹³¹ *Med. Times Gaz.*, 1856, n.s. 13: 624.

¹³² J. Snow, 'Further remarks on amylene: instance of death from that agent.', *Med. Times Gaz.*, 1857, n.s. 14: 379–82; *idem*, 'Case of death from amylene', *Med. Times Gaz.*, 1857, n.s. 15: 133–4.

However, he recorded only one hundred and twenty-five amylene anaesthetics in the Case Books prior to the first such death, on 7 April 1857 {782–784}, and the details of the missing nineteen cases must have been kept elsewhere by Snow. The ninety cases between that and the second amylene death, on 30 July 1857 {845}, are all recorded in the Case Books. It is difficult to decide on the significance of the omissions from the Case Books but, arguably, more may be found when attempts are made to reconcile this material with Snow's other writings.

In all, Snow encountered three deaths during the course of his anaesthetic practice. Apart from the two in 1857 mentioned above, one occurred during a chloroform anaesthetic on 15 September 1852.¹³³ In the Case Books Snow dealt with these unfortunate episodes in two completely different ways.

His entry for the chloroform death of 1852 occupies just a few lines in this transcription {408–409}. It is brief to the point of being uninformative, but ends with the words, "For the remainder of the case see *Medical Times and Gazette*". In that journal Snow, who was then uncertain of the part played by chloroform in causing the death, gave a full account of the episode which occupied almost two columns of small print. Whilst writing this version he must have referred to more complete records than those which he had made in the Case Books. His case notes of the first amylene death {782–784} are long and detailed, and correspond to the account which was published in the journal a few weeks later. His manuscript records of the second amylene death revert to being brief and uninformative {845–846}. They contain Snow's instruction "See *Med. Times*", in which journal he, again, gave a detailed account of the case drawn from sources other than his Case Book records.

Disconcertingly for Snow his first amylene death occurred exactly one week before he went to Buckingham Palace to give chloroform for the second time to Queen Victoria. When Benjamin Ward Richardson wrote his own book of reminiscences in 1897 he mentioned Snow's use of amylene, forty years earlier, and the deaths which occurred.¹³⁴ He wrote, "After this, Snow could never be induced to leave chloroform. . . . These deaths affected him very seriously, and his sudden and early demise may, in some measure, be attributed to their effects upon him. . . . He had not, in amylene, accounted sufficiently for its insolubility, and it was not until I ventured to show him separation of amylene in the blood, a separation which looked like the formation of minute plugs, that he fully realised the danger." Snow, it should be pointed out, never dwelt on this particular attribute of amylene, and he was well aware of its insolubility. There is no record of his giving amylene after the second death, but at no time did he condemn it even though others, mindful of his two fatalities, abandoned the agent.

All of these cases—Snow's pioneering use of chloroform for tracheostomy, his attempted introduction to Britain of amylene for inhalational anaesthesia, and two of the three deaths which occurred during his anaesthetic practice—would have been most important to him. His meticulous nature would have obliged him to chronicle them in great detail, but it appears that he used other manuscript records on these particular occasions.

¹³³ J. Snow, 'Death from chloroform in a case of fatty degeneration of the heart', *Med. Times Gaz.*, 1852, n.s. 5: pp. 361–2.

¹³⁴ B. W. Richardson, *Vita Medica: chapters of medical life and work*, London, Longmans Green, 1897, p. 284.

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That the Case Books cannot stand alone as an unimpeachable source regarding Snow's clinical anaesthetic activities is both surprising and, to some extent, disappointing. However, it is not an impediment to research. Bearing in mind the several complementary facets of Snow's work, it is prudent to combine any careful study of this unique and essentially unexplored material with the wealth of other reliable information relating to Snow which is still available. Such an exercise will, I am sure, produce a more acceptable and accurate picture of the man and his achievements than has so far been possible. In this way the rush to judgement, and unthinking repetition, which has bedevilled so many previous accounts of his life and work will be avoided. Even at this late stage a more rounded picture will emerge.

The Case Books of Dr. John Snow are a mine of fascinating and detailed information about the life and practice of a most remarkable Victorian doctor who was the most influential of Britain's, indeed the world's, earliest anaesthetists. No other similar material seems to exist either about Snow or his anaesthetic contemporaries. I hope that these transcriptions will provide a stimulus to the further and detailed study of Snow's life and work. The recent re-publication of his series of eighteen papers dealing with the scientific basis of inhalational anaesthesia tells us much about his work as an academic anaesthetist.¹³⁵ The material in his Case Books complements that work perfectly and will, I hope, be used to enhance our knowledge of Snow both as a clinical anaesthetist and as a family doctor.

Many fascinating individuals, events, conditions, and procedures—some well known, others obscure—are referred to in the Case Books, and I am confident that both the dedicated and the casual researcher will find this work stimulating and of interest. In introducing them, in this transcribed form, to a wider readership I have scarcely scratched the surface.

* * *

Having worked on the papers for no less than nine years I hope that I may be allowed to draw attention to my two favourite characters (other than Snow, himself) who emerge from these pages. One is a patient, the other a doctor.

The patient {513–514}, was a Miss Hardy. She was well-to-do, and clearly an admirable lady. Despite being kept waiting, unnecessarily, for her daunting, and less than straightforward operation to begin Snow records, "She showed no external signs of fear; being the daughter of a great General she had expressed the sentiment that she ought to act in a way becoming her family". Here, Snow's uncomplicated words have left us with much more than just a simple description of his patient and her surgical encounter. It has not been possible to identify which particular General Hardy was the patient's father, and this entry may be another example of Snow's occasional lack of precision when setting down a patient's name or military rank.

The doctor was Mr. John George French (1804–1887).¹³⁶ Snow first mentioned him early in September 1849 {138} when the two men met to manage an abnormal labour in

¹³⁵ Snow, *op. cit.*, note 62 above.

¹³⁶ D'A. Power, *Plarr's lives of the Fellows of the Royal College of Surgeons of England*, Bristol, Wright, 1930, pp. 423–4.

the Poland Street Workhouse. French, who qualified as a doctor in 1826, served as its medical officer from 1830 until 1872. This was a poorly paid appointment made by Soho's local parish authority under the provisions of the Poor Law. Numerous attempts were made to improve the circumstances of the Poor Law doctors,¹³⁷ but French appears to have accepted his lot without complaint.¹³⁸ He was a cultured man and a respected surgeon; he was granted the Royal College of Surgeons' highest qualification—its Fellowship, or FRCS—in 1853.

John French had many things in common with John Snow. Both took a close interest in the mode of spread of cholera, the outbreaks of which they witnessed at first hand in 1849 and 1854. French initially disagreed with Snow's theory that it was a waterborne disease, but later enthused about Snow and his ideas. Snow's theory was generally accepted as being correct only after the 1854 outbreak. The accounts of French's life state that the two men first met during this cholera epidemic, but these Case Books reveal that they had worked together on several occasions from 1849 onwards. Both men were bachelors and, it would seem, shared an affection for Soho. Over the years both conscientiously tended the sick poor in that district for little financial reward. Each could have turned his back on this poverty and sought for riches elsewhere: neither chose this option. When, after Snow's death in mid-1858, the *Lancet* published its brief (if not derisory) note about Snow's achievements,¹³⁹ French was moved to write a forceful letter praising Snow's qualities, and amplifying the value of his work on cholera.¹⁴⁰

Two other entries may be of particular interest to the present generation of British anaesthetists. The Case Books show that Snow was, to some extent at least, familiar with the buildings which are now occupied by the Royal College of Anaesthetists (at 48 and 49 Russell Square, London) and by the Association of Anaesthetists of Great Britain and Ireland (nearby at 9 Bedford Square).

On 15 July 1857 {840} Snow gave chloroform at 51 Russell Square, two doors away from the present-day Royal College of Anaesthetists. The building which Snow visited has since been demolished and replaced by a more modern one. On 13 March 1853 Snow went to 6 Bedford Square, to give an anaesthetic for an examination, and four days later he returned for the patient to have a minor rectal operation {443, 444}. The patient's house still stands three doors away from the premises of the Association of Anaesthetists of Great Britain and Ireland. A further tenuous link with the immediate area arises from Snow's having given chloroform to Lord Eldon's daughter {691–692, 707, 858}. Lord Eldon was Lord Chancellor during the years which led up to the great Reform Act of 1832. He firmly repressed attempts to foment public disorder and violent agitation for parliamentary reform to which policy he was vehemently opposed. For this he was vilified by the population at large, and in 1815 was attacked by a mob, some of whom forced an entry into his house.¹⁴¹ At the time Eldon lived at 6 Bedford Square, and his residence there is marked by a plaque on the front of the building. Lord Eldon resisted the

¹³⁷ Reader, *op. cit.*, note 28 above, pp. 64–5.

¹³⁸ 'Report of H. B. Farnall, esq., Poor Law Inspector, on the infirmary wards of several metropolitan workhouses and their existing arrangements', House of Commons Sessional Paper, 387, 1866, BPP, 51: 141–3.

¹³⁹ *Lancet*, *op. cit.*, note 16 above.

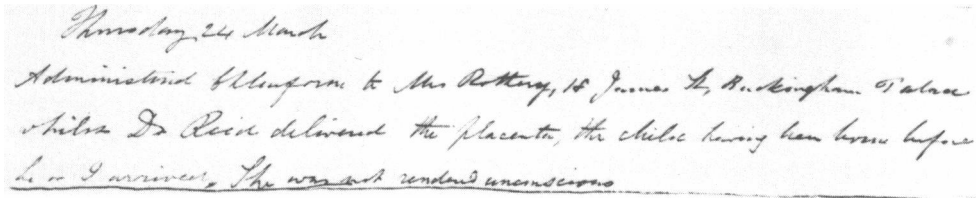
¹⁴⁰ J. G. French, 'The late Dr. Snow', *Lancet*, 1858, ii: p. 103.

¹⁴¹ D. Thomson, *England in the nineteenth century*, London, Penguin, 1950, pp. 63–4.

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intrusion for a while but was eventually forced to flee from the rear of his house and take shelter in the nearby grounds of the British Museum.

Snow's entries relating to his giving chloroform to Queen Victoria during her last two confinements have been, and probably will continue to be, the most quoted extracts from the Case Books. Surprisingly, Snow made a slip of the pen in each of these historic entries {448–449, 785–786}. However, one of the most intriguing or enigmatic entries must be that which he made on Thursday 24 March, 1853 {445}. This was just two weeks before he first gave chloroform to Queen Victoria, at the birth of Prince Leopold on the 7 April {448}. His patient on the 24 March was a Mrs. Rothery, to whom he gave chloroform following the birth of her baby for the manual removal of the placenta. When writing of this case Snow made a slip of the pen, which may or may not be significant. He described his patient's address as "18 St. James' St., Buckingham Palace": the correct address (according to Kelly's *London Post Office directory*) should have been 18 St. James' Street, Buckingham Gate.¹⁴² It is possible that this entry was written shortly after Snow had been notified that he might be called to the Queen's confinement and, in his excitement, he may have made what was a very simple but very human and understandable mistake. After all, his summons to attend the Queen placed him at the peak of his profession. He had travelled a long way from the humblest of origins, as the son of a wharfside labourer in York, to reach that pinnacle: a slight nervous inattention before the great day would have been in order.



Thursday 24 March
Administered Chloroform to Mrs Rothery, 18 James St, Buckingham Palace
whilst Dr Reid delivered the placenta, the child having been born before
he or I arrived. She was not rendered unconscious

Figure 1: The entry with the mistake in Mrs. Rothery's address.

¹⁴² *The Post Office directory for London*, London, Kelly, 1853.