Eminent venereologists 2. Benjamin Bell

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The late 18th century was a time of sexual latitude, and genital discharge and ulceration following "impure coition" were common. *Gonorrhoea virulenta* and *Lues venerea* (syphilis) were recognised clinically, but they were thought to be the same disease. The natural history of syphilis itself was poorly understood, and little was known about other causes of genital ulceration. Surgeons, physicians and apothecaries undertook the care of people with venereal diseases, with a good deal of squabbling about who was best qualified for the work. Mercury had been used for the cure of syphilis for two centuries, but it was also inappropriately used for the treatment of other genital infections. Many doctors were not clear what they were doing or why they were doing it, and there was a flourishing quackery.¹

This confused situation could not continue, and during the next century the natural history of the venereal diseases was gradually clarified by surgeons and physicians through meticulous clinical observations of patients and their consorts, supplemented by inoculation experiments. Their achievements were remarkable. *Gonorrhoea* was distinguished from syphilis, the genital ulceration/lymphadenopathy complex was unravelled and the stages of syphilis were classified, all without the aid of laboratory tests. Benjamin Bell was the first of these pioneers.

Bell was a Scot, his family having been landowners in the southern part of the country since the 15th century. His father George had as a young man traded in the Near East, but in this he was unsuccessful, as in a later attempt to found a business in Dumfries. After this failure he spent the rest of his long life as a farmer. He was described as "genial, light-hearted and waggish", and given to playing complicated practical jokes. His wife was evidently placid and pious, and they had 15 children, of whom Benjamin was the second. He was born in Dumfries in 1749. He received a classical education at the local grammar school. He had always been interested in surgery, so after leaving school he became apprenticed to a well-known local surgeon. He was able and industrious, and in 1766, at

the age of 17, he joined the Medical School in Edinburgh. The School was prestigious, the teaching staff having men of the calibre of the Monros, Black and Cullen. Benefiting from his earlier apprenticeship Bell did well, and was appointed Surgical Dresser, then Surgeon's Clerk, and in 1771 he became a Fellow of the Royal College of Surgeons. At about this time he inherited from his grandfather a large estate which included his father's farm. George Bell was hurt at having been passed over and for a time left his son to manage the estate as best he could from 100 miles away. However, they were soon reconciled and for the rest of his life Benjamin kept in close touch with his family.²

Bell wanted to increase his surgical experience by visiting centres away from Edinburgh, and in 1772 he spent several months in Paris and London. In Paris he

Fig. Benjamin Bell.

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studied under the surgeon Antoine Portal, and in London he met the Hunter brothers, who were becoming important figures in English medicine. He describes the meeting in a letter to Cullen³: "I have had the pleasure of a most agreeable, and at the same time the most useful acquaintance I ever met with, for there is scarce an article, either in physic or surgery, that Mr [John] Hunter has not something new upon and there is none more ready of communication than he is . . . I am likewise just now attending Dr [William] Hunter's anatomical course which is indeed extremely ingenious and satisfactory, but the Doctor is by no means so free or so ready of access as his brother."

He returned to Edinburgh in May 1772 and started a surgical practice in a house which he shared with one of his sisters. In August he was appointed Surgeon to the Royal Infirmary. After a slow start his practice began to prosper, and in 1775 he married Grizel Hamilton, the daughter of the Professor of Theology in the University, whose brother had accompanied him on his visit to Paris. Unfortunately, just as things were beginning to go well he sustained a serious injury through falling off a horse and was incapacitated for nearly two years. The nature of his injury is unknown, but evidently it was so severe that he contemplated abandoning surgery altogether. He leased a farm at Liberton, outside Edinburgh, with the idea that if the worst came to the worst this could become his livelihood. However, he eventually recovered, although for some time he was unable to climb stairs. The farm became his family's summer residence for many years, although Bell himself rarely spent a night away from the city.

When he resumed practice he had for a time a partnership with another surgeon, James Gibson, a man engagingly described as having "high principles combined with a retiring modesty which perhaps rendered him less successful in life than he might have been."⁴ In 1778 Bell obtained an additional appointment as Surgeon to Watson's Hospital. He was deeply involved in the education and welfare of his brothers and sisters, which seems to have been too much for his father, and he helped them generously from his own resources. His own first child was born in 1777; he had seven children in all, two of whom became surgeons. Bell, his wife and the baby moved into Edinburgh at the end of the year. As his practice grew his reputation grew with it, and he was widely known as a shrewd diagnostician and a careful and skilful surgeon; there was a saying that nobody should think of dying before Mr Bell had visited him. Demands for his opinion necessitated many journeys in Scotland and the north of England, and according to his grandson he had an oil lamp fitted inside his carriage so that he could read and write as he travelled.⁵

During his enforced retirement at Liberton, Bell had

planned major works on surgery. *Theory and management of ulcers* was published in 1777. It sold well, was translated into French and German, and had reached a seventh edition by 1801. A much longer work followed, *A System of Surgery* in six volumes between 1778 and 1788; despite its title this was not a systematic text book in the modern sense, rather a series of essays on various aspects of surgical management and technique, somewhat in the style of *Pye's Surgical Handicraft* of a later generation. Although the work was criticised by some of his contemporaries, and Benjamin Brodie later found it "an unreadable production"⁶ it was successful: it went through seven editions in 13 years, and was also translated into French and German. But Bell's greatest work, and the one which secured his place in the history of venereology, was his *Treatise on Gonorrhoea Virulenta and Lues Venerea* which was published in two volumes in 1793.⁷

The work provides a masterly description of venereal diseases in the eighteenth century, which may still be read with profit, but its historical importance lies in the opening chapter "Consideration of the question, whether Gonorrhoea and Lues venerea originate from the same contagion?" This questioned an established doctrine. Although the early syphilographers had separated syphilis entirely from previously known venereal disorders, by the 16th century this had been forgotten. Current opinion was summarised by Bell himself: "Both diseases are contracted in a similar way, both in the first instance affect the genital organs, and they occasionally appear at the same time in the same patient; hence it has been concluded that they have a common origin and one method of cure [mercury] has been supposed applicable to either." Although some doubts had been voiced by Boerhaave (1668–1738) in Holland and by Balfour (fl 1760) in Scotland,^{8,9} the concept had received the emphatic support of John Hunter. He stated that there was one venereal disease, caused by a single "venereal poison". Applied to a mucosal surface such as the male urethra this would provoke a urethral discharge, applied to skin it would cause a syphilitic chancre.¹⁰ The occasional concurrence of gonorrhoea and syphilis could thus be easily explained. He had convinced himself that nobody could have two diseases at the same time: "It appears to me beyond a doubt that no two actions can take place in the same constitution, nor in the same part, at one and the same time."¹¹ To confirm his beliefs, Hunter performed in 1767 a famous and disastrous experiment in which pus from a patient with gonorrhoea was inoculated into the scarified penile skin of another subject—by tradition, this subject was Hunter himself,¹² but it is more likely that it was someone else.¹³ At all events, the recipient developed a chancre ten days later, followed by

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inguinal adenopathy, tonsillar ulceration and a generalised skin eruption. Today it seems probable that the donor patient had a double infection, but Hunter believed that he had induced syphilis by the inoculation of gonorrhoeal pus, thus confirming his view of the unity of the two diseases. Such was his authority that this was accepted without question.

Bell would have none of this. He dismisses the hypothesis that two diseases cannot coexist as "ill founded", and then proceeds to marshal his arguments for the duality of gonorrhoea and syphilis: (1) Their symptoms and signs are quite different; gonorrhoea is a local disease, but syphilis is essentially a systemic disorder.

(2) Gonorrhoea does not progress to syphilis. "Even the most extensive affections proceeding from gonorrhoea seldom injure the constitution." Cases in which gonorrhoea and syphilis have occurred together can be explained either by the two diseases having been contracted at the same time, or by one having been caught before the other had resolved.

(3) His studies of consorts had convinced him that "a person affected with gonorrhoea has received it from another labouring under that disease and that chancres have been communicated by such as were distressed by chancres only".

(4) Many surgeons have contracted syphilis accidentally while attending patients with chancres and buboes, but there is no record of syphilis being contracted by surgeons attending to patients with gonorrhoea.

(5) Bell says that to prove the unity of syphilis and gonorrhoea experimentally would require a large number of inoculations of infected material. Unlike many of his contemporaries, he had doubts about the ethics of this. "Experiments on this subject are productive of such anxiety and distress that they never have been nor ever probably will be repeated so frequently as the nature of it would require." In an obvious reference to Hunter he rather unkindly adds: "We have heard of only a single experiment or two being made by any individual, and even these seem to have been made under the management of such as were strongly and obviously biased in favour of one side of the question." He adds that "two young gentlemen of this place [presumably his students] failed to induce gonorrhoea in themselves by inoculating material from a chancre, or syphilis by inoculating gonorrhoeal pus".

(6) In some parts of the world, for example China and Tahiti, syphilis had become established many years before the advent of gonorrhoea, which would not have happened were the two diseases identical.

(7) Under the name *sibbens* Lues venerea had been endemic in Scotland for many years, and Bell had treated many people with it. He had never seen a

patient with sibbens develop gonorrhoea: "These are poor country people whose manners do not expose them to the hazards of being infected with gonorrhoea."

(8) Medication which cures syphilis, notably mercury, is ineffective against gonorrhoea. Conversely, although gonorrhoea often terminates "merely by moderate living and keeping the parts clean", this never happens with syphilis.

These arguments, set out at length with many illustrative clinical histories, make Bell's case—a classic of inductive reasoning. Throughout, he insists that a doctor's belief about a disease must be consistent with his clinical experience, and he criticises those who "taking their information from books have not paid that attention to these affections which, in forming a judgment on them, is absolutely necessary."

We do not know the reception which *Gonorrhoea Virulanta and Lues Venerea* received from Bell's contemporaries, but it went through two editions. His last surgical work, *A Treatise on the hydrocele, or sarcocoele, or cancer and other diseases of the testes* was published 8 years later, in 1801. His written work added to his growing reputation, and honours began to come his way—Fellowship of the Royal Society of Edinburgh and of the College of Surgeons of Ireland. He never lost his interest in agriculture. In his correspondence with his parents he hardly mentioned his own career, but wrote about family matters and practical farming problems. He was an able business man. He had an estate of 500 acres near Melrose, and bought the greater part of a suburb of Edinburgh where his house stood. He even contemplated investing in property in Granada, where one of his brothers lived. His grandson describes Bell as "a great economist with time"; this enabled him to write a series of essays on agriculture and political economy, which were printed in a collected edition in 1802. These publications led to a correspondence with William Pitt, the British Prime Minister. Apparently Bell was offered a baronetcy, which he "respectfully declined".¹⁴

His health began to fail comparatively early in life. Long before he was 50 he found it necessary to take frequent prolonged holidays in the south of England. By 1804 he could manage only a few consultations a day and little surgery. The nature of his terminal illness is not known, but he became increasingly weak and anorectic. It is said that when Dr Gregory and a group of friends visited him one day he was asked what he was saying when they came into the room. "I was praying, Dr Gregory, that you might all be forgiven for pressing a poor man to eat when he is totally unable."¹⁵ He died at home on 5 April 1805 at the age of 57 years.

Bell was a clinician of immense experience. He kept

careful notes of his patients, some of whom are described in his book; the modern reader may reflect how little, in some ways, times have changed.

"She had perused a modern treatise on the Lues Venerea—by which she had become acquainted with the symptoms of that disease, almost all of which she now imagined she laboured under."¹⁶

His greatest achievement was to separate gonorrhoea from syphilis, but he was ahead of his time in other respects. For example, he believed that condylomata acuminata were not related to either gonorrhoea or syphilis, although they might occur concurrently. Most of his contemporaries thought that congenital syphilis was contracted either during passage through the birth canal or from the father's semen, but Bell was sure that intrauterine infection could occur: "Children may receive, and frequently do receive, the venereal disease from their parents labouring under it in a constitutional form."¹⁷ He recognised a type of male urethritis which was milder than Gonorrhoea virulanta, *Gonorrhoea simplex*. He thought that this was particularly common in men who had had gonorrhoea, drank excessively, or had renal calculosis or urethral stricture.¹⁸ Writing in 1839, Parker said: "The late Mr B Bell was of opinion that discharges from the male urethra . . . may succeed to connections with women suffering from fluor albus [leucorrhoea]. He remarks that such discharge generally subsides much more quickly than an ordinary gonorrhoea. He mentions its continuance from this cause eight or ten days, and cautions young practitioners against giving precipitate opinions on such cases."¹⁹ This disease sounds very like non-gonococcal urethritis, and it is intriguing to hear that Bell thought that such a discharge could occur in rheumatic conditions, particularly of the hips and knees: "Of this I have met with different well-marked instances."¹⁹ It is possible that this is the first record of sexually acquired reactive arthritis.

Bell probably confused syphilitic chancres with other types of genital ulceration, particularly chancreoid, because he states that the incubation period may be as short as 24 hours. Similarly, buboes were accepted as satellites of genital ulcers, but the development of suppuration and sinus formation in some cases suggests non-syphilitic disease such as chancroid or lymphogranuloma venereum. Although he cautions doctors against assuming that every sore on the genitals is syphilitic, Bell was not able to separate syphilis from the genital ulceration/lymphadenopathy complex, and indeed this was not achieved for more than half a century. In describing syphilis he includes features of both early disease (chancres, buboes, mouth ulcers, skin rashes) and late disease (deep cutaneous ulcers, painless swelling of the testicle),²⁰ although he saw syphilis as progressive, the orderly

arrangement of symptoms and signs in relation to time had to await the work of Ricord. Bell believed that in women gonorrhoea affected the urethra and vagina.²¹ He does not mention cervicitis. Although vaginal speculae were often mentioned in the 18th century, few doctors used them and we have no evidence that Bell did. Although he says that "the inflammation spreads to the bladder, kidneys, uterus and ovaria", gonorrhoea was not clearly identified as a cause of pelvic infection until the 1870s.

Bell and John Hunter make an interesting contrast. Hunter's book *A Treatise on the Venereal Disease* (the single tense is intentional) appeared in 1786, seven years before Bell's work. Hunter was a practical man and a gifted experimenter, but in some respects his medical thinking was rooted in the past. Bell was better educated, he was a fluent writer, and he had a wide experience outside medicine. Hunter was wrong about many aspects of venereal disease; for example, his belief that the blood of a person with syphilis was not infectious led him to deny that intrauterine foetal infection occurred (Bell comments that he had "unguardedly fallen into this error" over this).¹⁶ He did not clearly differentiate condylomata acuminata from condylomata lata—he thought that both were due to the "venereal poison". But Hunter's worst mistake was to give his support to the unity of syphilis and gonorrhoea. He had based his conclusion in part on a deduction from an erroneous concept, that two different diseases cannot occur simultaneously in one person; characteristically, he had also devised an experiment—inoculation—to settle the matter, but its design was faulty. The result was that he confused and impeded the subject for a generation. On these matters Bell, the careful clinician, was right. It is hard to resist the conclusion that Bell, despite his earlier admiration, had a poor opinion of Hunter as a venereologist. He criticises his opinions several times in his book, and at one point even refers to "Mr John Hunter, whose ingenuity and abilities are only to be equalled by his singular opinions".²⁷

Although it was Hunter, not Bell, who achieved an immediate posthumous reputation, Bell's work was not forgotten. In 1794 a copy of his book, found on board a captured English ship, reached a French naval surgeon called Hernandez in Toulon. Hernandez was impressed by Bell's arguments and implemented an inoculation programme, using the convicts under his care as subjects for the experiments. Ten years after Bell's death he reported that he had been unable to induce syphilis by the inoculation of gonorrhoea pus, thereby further weakening the unitary hypothesis.²³ The hypothesis was finally destroyed by Ricord, who in turn quoted Bell extensively in his own writings.²⁴

Bell has been described as the first of the Edinburgh scientific surgeons, and he made many contributions

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to the practice of surgery.^{25 26} He had a countryman's ability to observe natural processes, and the training and experience to interpret them: when applied to venereology, these qualities enabled him to make the crucial discovery for which he is best remembered. Personally, he seems to have been modest, generous and sympathetic. His contemporary James Wardrop wrote:²⁷

"His manner was devoid of every kind of affection—simple and unostentatious. He was of a kindly disposition, and in stating his opinions made use of plain but very accurate language. He had an impressive mode of expressing himself, giving great assurance and confidence to the sick. In all the excitement of surgical operations he displayed the greatest composure."

Bell's grandson, drawing on the recollections of his family and contemporaries, concluded:²⁸

"With great store of information on most subjects, he had the art of always appearing to derive instruction rather than give it . . . He never seemed to be in a hurry, but bestowed as much attention upon each of his patients as if he had no other to occupy his thoughts."

References

- 1 Bynum WF. Treating the wages of sin. Venereal disease and specialism in 18th century Britain. In: Bynum WF, Porter R eds. *Medical fringe and medical orthodoxy 1750–1850*. London: Croom Helm, 1987:1.
- 2 Richardson BW. Benjamin Bell FRSE and systematic surgery. *Asclepiad* 1890;7:336–60.
- 3 Bell B (jnr). *The life, character and writings of Benjamin Bell FRCSE, FRSE*. Edinburgh: Edmonston and Douglas, 1868: 31–32.
- 4 *ibid*: 44.
- 5 *ibid*: 106.
- 6 Richardson BW. *op cit* (2):352.
- 7 Bell B (snr). *A treatise on gonorrhoea virulenta and lues venerea, 2 vols*. Edinburgh: James Watson & Co, 1793.
- 8 Boerhaave H. *Praelectiones academicae de lue venerea*. Leyden: 1751. Cited by Mettler CC. *History of Medicine*. Philadelphia: Blakiston & Co, 1947:641.
- 9 Balfour F. *De gonorrhoea virulenta*. Edinburgh: 1767. Cited by Mettler CC. *History of Medicine*. Philadelphia: Blakiston & Co, 1947:634.
- 10 Hunter J. *A Treatise on the Venereal Disease*, 3rd ed. London, 1810:17.
- 11 *ibid*: 4.
- 12 Power, d'Arcy. Hunterian Oration, 1925. John Hunter: a martyr to science. In: *Selected writings 1877–1930*. Oxford: Clarendon Press, 1931:1–28.
- 13 Qvist G. *John Hunter 1728–1793*. London: Heinemann, 1981: 44–50.
- 14 Bell B (jnr). *op cit* (3): 104.
- 15 Richardson BW. *op cit* (2):360.
- 16 Bell B (snr). *op cit* (7) vol 1:420.
- 17 Bell B (snr). *op cit* (7) vol 2:416.
- 18 Bell B (snr). *op cit* (7) vol 1:416–431.
- 19 Parker L. The modern treatment of syphilitic diseases. London, 1839. Cited Harkness AH. *Nongonococcal urethritis*. Edinburgh: E & S Livingstone, 1950:3.
- 20 Bell B (snr). *op cit* (7) vol 2:11–12.
- 21 Bell B (snr). *op cit* (7) vol 1:157–67.
- 22 Bell B (snr). *op cit* (7) vol 2:300.
- 23 Hernandez JF. *Essai analytique sur la non-identité des virus gonorrhoeique et syphilitique*. Paris: JJ Paschoud, 1812.
- 24 Ricord P. *Traité pratique des maladies veneriennes ou recherches critiques et experimentales sur l'inoculation appliquée a l'étude de ces maladies*. Paris: Rouvier et le Bouvriér 1838:5–198.
- 25 Richardson BW. *op cit* (2):354–56.
- 26 Leonardo RA. *Lives of master surgeons*. New York: Froben Press, 1948:38–40.
- 27 Bell B (jnr). *op cit* (3):112.
- 28 *ibid*, 114–15.