

## Section of the History of Medicine

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[October 1, 1958]

### A Manuscript of Benjamin Collins Brodie's Surgical Lectures, 1822; with Some Notes on the History of Stricture and Stone<sup>1</sup>

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THERE has come into my possession a manuscript copy of the surgical lectures given by Benjamin Collins Brodie in the season 1822–23, one hundred and thirty-six years ago. They were given at his theatre in Great Windmill Street; this was Hunter's School of Anatomy, now the site of the dressing rooms of the Lyric Theatre. The notes were taken by James Taylor of Todmorden Hall. They are beautifully written, quite legible and form the first volume of a complete textbook, having apparently been taken down verbatim. There may be other copies in existence, and there is at least one two-volume set of notes in the library of the Royal College of Surgeons taken by William Hutchinson, a pupil of Everard Home, in 1810, and presented by Charles Hawkins. Comparison of the two sets shows evidence of the correction and revision which Brodie constantly carried out in his lectures and they form the basis of the surgical part of the edition of Brodie's works collected by the same Charles Hawkins and published in 1865, three years after his death. Brodie entered the Great Windmill Street School as a pupil in 1803 at the age of 20, having attended Abernethy's lectures on anatomy two years earlier. In 1808 he became lecturer in surgery, a post which he held for twenty years.

#### JAMES TAYLOR

James Taylor was 20 at the time he made these notes; whether they are a fair copy made at the end of the day's work, or whether they were borrowed or bought from another student and recopied is unknown, but they stood him in good stead for he qualified by the L.S.A. in 1824 and became M.R.C.S. in 1825. He lived and practised as a surgeon at Todmorden Hall, at first with his younger brother Joseph Crossley Taylor who died in 1836. They came of a family known as "The Whitworth Doctors". The first of these, John Taylor of Whitworth, had two sons, George and James, and a brother George, who was the father of James Joseph Hague Taylor. James Joseph married the only daughter of Anthony Crossley of Todmorden Hall in 1801 and came to live there until his death in 1810. He had four sons all of whom became doctors. James was the eldest and lived the longest; his brothers John and George each died at the age of 24. James continued to practise at Todmorden Hall until 1853 when he moved to Culverlands, Berkshire, for health reasons. He died there on November 25, 1872, at the age of 70 and was buried in Burghfield Churchyard, near Reading. He was married twice and had ten children one of whom became a doctor and who lived and practised at Todmorden Hall for some years. He was perhaps the most distinguished member of the family gaining the M.D. of Edinburgh with commendation and becoming a J.P. for Lancashire and the West Riding of Yorkshire; he died at Torquay in 1891.

The town of Todmorden lies on the borders of Lancashire and Yorkshire in the centre of the textile industry. Todmorden Hall, the oldest and most interesting building in the

<sup>1</sup>At the end of the meeting Sir Eric Riches presented the manuscript book of lectures to the Library of the Royal Society of Medicine.

town, is typical of the many fine old halls of the West Riding. It was built early in the seventeenth century by Saville Radcliffe on the site of the older mansion of that family and still contains oak timbers from the earlier building. The hall is built of stone in the style of the period, with shapely gables and mullioned windows. During 1925 this fine old mansion became the Head Post Office, the public part of which is a room panelled in oak, with a finely-carved oak mantelpiece, dated 1603, contemporary with the house.

#### BENJAMIN COLLINS BRODIE

Benjamin Collins Brodie, born in 1783, was one of the six children of the Rector of Winterslow, in Wiltshire. He received his early classical education from his father and never went to a public school. He entered St. George's Hospital as a pupil of Everard Home in 1803, the same year as at Great Windmill Street. He was a diligent student who kept written notes of his cases. He became house surgeon in 1804, assistant surgeon in 1808 and full surgeon in 1822, the year of these lectures. He occupied in turn all the highest positions surgery could offer. He was President of this Society, then the Royal Medical and Chirurgical Society, in 1839 and it is said that he was never absent from a single meeting. In 1844 he was President of the Royal College of Surgeons and in 1858 President of the Royal Society. He reigned supreme in the world of surgery for a quarter of a century. It is of his ideas as expressed in the lectures of 1822 that I wish to speak, and in particular of his teaching on some of the diseases of the urinary tract. He says: "Of all the diseases which come under the care of the Surgeon there are none which demand his attention more than those of the urinary organs, for they are productive of great distress to the patient, they often put his life in danger, and if left alone they go on to a fatal termination, but under judicious treatment they may be relieved by art."

#### *Strictures of the Urethra*

Strictures of the urethra were classified as spasmodic and permanent, the former being explained by spasm of the surrounding muscles and demonstrated by human experiment, but the explanation did not seem to be convincing either to Brodie or his student. He writes: "That spasmodick stricture will prevent the flow of urine is proved by many cases. A person has no disease of the urethra—apply a blister in the neighbourhood—the cantharides are absorbed—he cannot make water—you try to pass a catheter and find it stop at the membranous part of the urethra—when the action of the cantharides is over the urine again flows as usual. A person has a difficulty in making water, you pass a bougie and it will not go farther than the membranous part of the urethra—you touch it with caustick and the urine immediately flows in a full stream. That is simply spasmodick stricture which I now describe. If this occurs very frequently it will remain so, and the part will be permanently contracted. The urine, by the action of the bladder, will be driven with force against this contraction; the mucous membrane will be affected with slow inflammation; it then becomes thickened and this is what we call permanent stricture." He recognizes other causes of stricture such as a bad gonorrhœa, the use of too strong an injection, when used too frequently and when thrown up too far, and other diseases where there is a "morbid secretion of urine." The most frequent complications then as now were retention of urine and fistula in perineo, the latter being considered as in some respects a spontaneous cure, and at least a life-saving event. Extravasation of urine was the most feared: "the urine has generally been collected for a long time and is high coloured, putrid and more or less ammoniacal, this being propelled with force into the cellular texture acts like caustick and the parts are destroyed; all these parts, if the urine be allowed to remain, become black and slough. When a black spot appears on the end of the penis your patient will surely die." Brodie's treatment of stricture was by dilatation with a plaster bougie, or by lunar caustic applied through a silver cannula or on a bougie, the method introduced by Hunter; this was a common cause of false passages. Dilatation by metallic instruments was also used, and continuous dilatation by an indwelling gum catheter in cases in which a speedy cure was desired. For acute retention he favoured opium; he did not think much of the warm bath unless the patient remained in it until it produced some degree of syncope; puncture of the bladder from the rectum was the last resort, with a silver cannula left in for twenty-four hours so that the opening remained fistulous and acted as a safety valve when there was any subsequent difficulty.

These were the methods in common use at the time. Treatment of stricture by incision from the perineum was usually reserved for cases of extravasation, but in 1849 James Syme introduced his shouldered staff which was to be passed through the stricture so that an incision could be made on it from the perineum. He claimed that it gave a more permanent cure, but he was strongly criticized by his contemporaries for operating in cases where they thought dilatation would do as well. Syme's method, however, was most useful

in the badly infected cases of the time. There are still some indications for the use of his staff and many present-day hospitals still possess the instrument.

Injection of warm water into the urethra was also advocated, and a Mr. Machell invented an "Anti-Stricture Injector" whereby a stream of water at varying pressure could be forced against the stricture. Puncture of the bladder was usually done from the rectum, but at a meeting of the Westminster Medical Society in 1849 Mr. Benjamin Travers "related a case of prolonged retention of urine caused by permanent stricture in a young man who had not passed urine except by drops for some days. The patient was drawn to the foot of the bed and the skin incised in the mid-line immediately above the pubic symphysis. A straight dropsy trochar and cannula was pushed into and through the anterior wall of the bladder. On withdrawing the trochar the first jet of urine went half across the ward floor. The relief was very decisive, but so sudden as nearly to induce a fatal collapse. The patient was presently restored by a large dram of gin and subsequently recovered." Suprapubic puncture was not, however, generally accepted although in the examination for the F.R.C.S. in 1849 one of the questions was "In any case where puncture of the urinary bladder (male) is deemed expedient, state the grounds of preference to the operation above the pubes or from the rectum." There were seven candidates and all passed, but we do not know their answers.

Other methods for the treatment of stricture were invented in France where first Civiale and later Maisonneuve introduced an instrument for internal urethrotomy. Maisonneuve's urethrotome as modified some years later by Teevan, and again by Thomson-Walker, is still in use to this day. Mechanical dilators of various patterns had a transient life; Barnard Holt of the Westminster Hospital invented a dilator resembling a pointed metal catheter split into two halves except at the point; it was passed into the stricture and a wedge was then driven between the two halves to produce forcible and rapid dilatation. I had a patient in whom this instrument had been used; he came to me in 1938 at the age of 94 having had a stricture since the age of 30; Barnard Holt had stood him against a wall and passed the dilator; after a warning that it would hurt he had cracked home the wedge. My patient admitted that it did hurt, but avowed that his stream was much better afterwards. His stricture, however, recurred and he passed successively into the hands of Sir William Fergusson, Sir Henry Thompson and Sir George Buckston Browne. The last named taught him how to pass his own catheter whereas formerly he used to go to St. George's Hospital in the night where the porter catheterized him. I did an internal urethrotomy and he came regularly for dilatation for the next three years until his death at the age of 97 from cerebral thrombosis; he always appreciated being given a local anæsthetic for the dilatation, which was new to him, but he had the estimable quality of putting complete trust in the doctor of his choice.

### *Stone*

In order to appreciate Brodie's views on calculous disease we must look back much farther than the time of these notes, for this complaint is as ancient as any other to which the human body has ever been subject. Cutting for stone was practised by the Egyptians and Hindus in very early times; the operation was known to Hippocrates (460-355 B.C.) for this clause appears in the Hippocratic oath: "I will not use the knife either on sufferers from stone, but I will give place to such as are craftsmen therein." Stones were removed from the bladder by a perineal operation, and for fourteen centuries the procedure known as the Lesser Operation was employed, so named because it only required two instruments, a knife and a hook. About the year 1520 an improved method was introduced in which the bulb of the urethra was opened on a grooved staff along which a gorget or a pair of strong iron conductors could be passed. This became known as the Marian or Greater Operation from the large number of instruments required. It usually involved forcible tearing of the bladder neck and the mortality was high. It was done by travelling lithotomists who were held responsible for their bad results and fined or executed accordingly.

The next advance was the introduction of lateral lithotomy in which the incision was made by the side of the left ischium. Frère Jacques, its originator, was at one time a trooper in a French cavalry regiment. He subsequently acted as a servant to Pauloni, an Italian lithotomist, and in 1688 adopted a semi-religious habit and the title of Frère. He cut for stone in many parts of France, his custom being that as soon as he had performed an operation he would get the spectators to sign a certificate in his favour without waiting to see if the patient recovered; when he had cut all that came his way in one place he hastened to another. He would not concern himself with the after-treatment, saying "I have extracted the stone, I leave God to cure the patient." The bladder was often cut in several places, and the rectum was not infrequently injured. After an unsuccessful year in Paris he lost his reputation and was forced to wander again. In Holland he was instructed in anatomy and as a result his operation was improved to the extent that only the prostate and bladder

neck were cut, with a corresponding improvement in results. He was presented by the magistrates at Amsterdam with his portrait and a set of gold sounds which he is said to have melted down and distributed to the poor.

It was left to Cheselden, who was lithotomist to St. Thomas' Hospital from 1723 to 1727 to improve the technique; he opened the prostatic urethra and operated with gentleness albeit with rapidity and seldom took more than a minute; his record was 45 seconds, and his mortality in 213 cases was 9.3%. The improved operation of lateral lithotomy held first place for over one hundred years and was in vogue at the time of Brodie. It had been used for many famous men and some have left records of their own experiences of it. Samuel Pepys was cut for stone on March 26, 1658, at the age of 26; as the present year marks the tercentenary of his operation perhaps I may be allowed to mention it briefly. It was done at Salisbury Court by Thomas Hollier or Hollyard who had been appointed surgeon for scald heads at St. Thomas' Hospital in 1638, and who in 1643 was chosen as surgeon for the cutting of the stone. It was stated that he cut thirty for the stone in one year, who all lived. This was vouched for by the porter at St. Thomas's, another indication of the important role played by these officials who until recently had the responsibility of deciding whether a night emergency was medical or surgical. Pepys kept the anniversary as a festival afterwards and referred to it nearly every year. Thus on March 26, 1662, he wrote "Up early. This being, by God's great blessing, the fourth solemn day of my cutting for the stone this day four years, and am by God's mercy in very good health, and like to do well, the Lord's name be praised for it . . . . At noon come my good guests. I had a pretty dinner for them, viz., a brace of stewed carps, six roasted chickens, and a jowl of salmon, hot, for the first course; a tanzey and two neat's tongues, and cheese the second; and were very merry all the afternoon, talking and singing and piping upon the flageolette. In the evening they went with great pleasure away, and I with great content and my wife walked half an hour in the garden, and so home to supper and to bed. We had a man-cook to dress dinner to-day, and sent for Jane to help us, and my wife and she agreed at £3 a year (she would not serve under) till both could be better provided, and so she stays with us, and I hope we shall do well if poor Sarah were but rid of her ague." The stone is said by Evelyn to have been as big as a tennis ball, probably corresponding to the modern squash ball. Pepys had a case made for it which cost him 24 shillings which he thought a great deal of money, but it pleased him. He died at the age of 70 and his left kidney was found to contain a nest of seven stones.

Brodie taught that stones could be formed in the kidneys or in the bladder and that sand deposited in the urine was of two kinds, one of a brick-dust red colour consisting of uric acid, the other of a white colour consisting of triple phosphates. He gave alkaline medicines for the red sand and acids for the white, but recognized that overdosage with alkalis would produce the white sand. Stones were more frequent in children than in adults. He knew that foreign bodies in the bladder could form the nucleus of a stone and described the case of a man from the country, a gardener, who relieved the retention of his stricture by passing a flower stalk. One day it broke off and after a time he went to St. George's Hospital where Sir Everard Home cut him for the stone and it was found that about 3 in. of the flower-stalk formed its nucleus. Obstruction from a stricture was a common cause of stone, and he stated that there is no person with a diseased prostate who sooner or later will not have stone in the bladder if he neglects to use the catheter. The symptoms of bladder stone were described in great detail and with great accuracy and this was necessary because the diagnosis was made on the symptoms, especially the pain in the glans penis, and by sounding the bladder with a metallic sound or a gum catheter. Sounding might be necessary four or five times before the stone was found. Rectal examination was useful if the stone was large.

Treatment was medical and surgical. He realized the limitations of medical treatment saying it had been proposed to give medicines by which the stone may be dissolved: "they will dissolve a stone *out* of the bladder but that is no reason why they should do it in the bladder. I have not the smallest conviction of a calculus ever having been dissolved—the symptoms sometimes go off spontaneously." He then quotes cases of the failure of medical treatment including that of a medical gentleman whose symptoms disappeared with alkaline medicine and who published a pamphlet stating that he had been cured of the stone. He died, and on examining his body a large calculus was found. Brodie used the appropriate medicine after operation, however, and claimed that it prevented recurrence of calculi.

Regarding surgical treatment, he gave no details in these lectures of the operative technique of lithotomy but stated that the operation, though generally proper, must not be performed indiscriminately. The contra-indications included a bad state of general health, symptoms of other diseases, a cough, a sallow countenance, disease of the lungs, the liver or any other internal complaint, an abscess in the pelvis or disease in the kidneys

or diseased prostate. "In serious disease of the prostate you should not operate except by the high operation" and he mentioned two persons who died, one immediately and one a few weeks after lateral lithotomy in the presence of prostatic enlargement.

The prognosis was good in children but bad in old people. In the female the urethra was dilated by a sponge tent until the stone could be extracted and operation was avoided if possible. He described how Mr. Thomas took a tooth-pick out of the female bladder by dilating the urethra with a sponge tent.

In writing his autobiography in later years he said that the only operation which gave him any real concern was that of lithotomy, and that from 1835, except in the hospital, he scarcely ever had recourse to it, substituting for it that of lithotripsy.

The high operation mentioned by Brodie for use when the prostate was enlarged was suprapubic lithotomy. It was done only sporadically until 1723 when John Douglas published an account of it. Hippocrates had laid it down that wounds of the bladder were mortal, and there was the constant fear of peritonitis. Syme considered that the danger of cutting into the bladder from above the pubis was so great as to render the operation applicable in but very few cases. That it did not find a permanent place in the early nineteenth century was due partly to the development of lithotripsy which promised relief from the dread of a cutting operation without anæsthesia.

#### *Lithotripsy*

The earliest systematic attempts to crush a stone in the unopened bladder were made by Jean Civiale in Paris in 1817. In 1820 John Weiss, whose firm still make good lithotrites, produced a stone extractor for Sir Astley Cooper which was successfully used by Brodie and four years later a curved screw lithotrite for Brodie. He used it on a very hard calculus but the stone broke and the pieces separated with so much violence that he thought they would injure the bladder and he decided not to use the instrument in its present form. Civiale's instruments and those of his French competitors showed a gradual development towards the type which is now used, and it evolved by 1833. At the time of these lectures there was considerable controversy on the relative merits of lithotomy and lithotripsy, and this continues in some quarters to-day.

In these notes there is no mention of lithotripsy, which was then in its teething stages, but Brodie was one of the pioneers and his "Notes on Lithotripsy" appeared in 1853. That lithotripsy did not find more favour was due, not entirely to its mortality, 1 in 4, or to the difficulty in removing all the fragments, but to the development of anæsthetics.

#### *Renal Calculus*

Brodie recognized stone in the kidney from the symptoms and gave a graphic description of renal colic. The pain of the passage of the stone was to be relieved by the patient sitting for hours together in a warm hip bath and taking large doses of opium; generally this treatment was sufficient. For stone in the kidney itself he said "there is no cure, at least there is only one case, i.e. where an abscess forms and where it bursts into the loins: this rarely happens, but it occasionally does."

In Brodie's day surgery of the kidney was practically non-existent except for the opening of peri-renal abscesses or large pyonephroses. The first nephrectomy was done in 1869, seven years after Brodie's death, by Simon of Heidelberg. The year 1880 witnessed the first deliberate nephrolithotomy; it was done by Henry Morris, surgeon to the Middlesex Hospital. Such a proposed operation had been previously condemned owing to the risk of hæmorrhage and fistula, and in 1832 Brodie wrote: "Some of the old surgeons have spoken of an operation for the extraction of calculi from the kidney. The proposal is absurd and dangerous if made with reference to ordinary cases of renal calculi where no abscess exists." In the absence of X-rays the diagnosis in Morris's case rested entirely on the history and physical signs. The patient, Maria Mount, aged 19, a domestic servant, was admitted twice and treated medically; after a third attack she was readmitted under Dr. S. Coupland on December 29, 1879. On February 2, 1880, she was anæsthetized with chloroform and Dr. Coupland endeavoured to examine the kidney with his hand passed along the rectum, but in spite of steady and prolonged pressure found it impossible to insert his hand beyond its widest part. She was taken to the theatre at 1.30 on February 11, 1880, for an exploratory operation under chloroform; Mr. Morris opened the right loin and exposed the kidney. With his right forefinger he detected something rounded, the size of the uncut end of a pencil in the kidney. He passed a straight probe-pointed bistoury along his finger, incised the substance of the kidney at its projecting part and removed the stone with his finger. It was a mulberry calculus weighing 31 grams and is preserved at the Middlesex Hospital. The wound healed slowly and after two months there was still a small fistula. She wore an apparatus to collect the urine, made by Mr. Hawksley, but a month later the wound was dry and she made a complete recovery.

*The Prostate*

Brodie described the symptoms of prostatic obstruction and gave a full description of the pathology, particularly of the late cases, but his treatment was confined to the relief of retention. He did, however, recognize the greater risk to life of chronic retention than acute although his reason was perhaps not correct. He said: "When the symptoms come on slowly they are more dangerous than when more urgent and intense at first, because the patient in this case immediately applies to his surgeon for relief."

I have picked out for comment the sections dealing with disorders of the urinary tract, but they occupy only one-fifth of the volume; the rest contains much of great interest in general surgery. Although the description of symptoms is often lengthy it produces a vivid clinical picture of the condition, enlivened by many case histories, and anecdotes. The impression left by the lectures is that Brodie was an accurate observer, a truthful recorder and a first-class teacher. I at least am grateful to his faithful scribe James Taylor of Todmorden Hall for his excellent notes. I am indebted to Mr. J. D. Moys, Town Clerk of Todmorden, for the details of the genealogy of James Taylor.

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