I wish to suggest that the motor, sensory, and vasomotor disorders of the extremities to which I have alluded are symptom-groups, which clinically overlap, and etiologically more than overlap, one another; that possibly the causes (as yet very imperfectly known) of these different symptom-groups are similar in kind, the difference in the manifestations being due to age, sex, individual peculiarities, and intensity of exciting action. The motor phenomena occur especially in early childhood and in females of the child-bearing period, the sensory phenomena in middle and old age, and the vasomotor phenomena in later childhood and the first half of adult life.

The Lettsomian Lectures

ON

A REVIEW OF THE OPERATIONS FOR STONE IN THE MALE BLADDER.

DELIVERED BEFORE THE MEDICAL SOCIETY OF LONDON.

BY

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LECTURE II.

MR. PRESIDENT AND GENTLEMEN,—From Frère Jaques we now turn to Joannes Jacobus Raw, who became the most famous lithotomist in his day. He was born in 1668, and at the age of 14 was apprenticed to a surgeon in Strassburg, where he lived three years. At the end of that time he appears to have been cast off by his parents, and to have in consequence known the pinch of poverty. For some years he travelled about Germany, Norway, Holland, and Spain. Unlike most men of those times, he hoarded what wages he earned, and after a time went to Leyden and commenced the study of medicine in the medical school. Then he visited Paris, and studied anatomy and surgery under the best masters, coming under the influence of Du Verney, Méry, Petit, and Maréchal. He next returned to Amsterdam, where he taught anatomy and practised surgery. It was at this time that Frère Jaques appeared in the city and performed his new operation, which Raw saw and strongly condemned. Soon after this he was appointed lithotomist to the city of Leyden, where he made a great reputation. He was invited to teach anatomy in the public theatre at Leyden, and, on the death of Bidloo, was elected to his chair, and finally became Regent in the university in the year 1713. He died in 1719. When he first began to cut for stone, he performed the Marian operation. When, however, Frère Jaques appeared in Holland, Raw was allowed to examine the bodies of those who died after being operated on by him, and from Jaques he learnt the operation he was then performing. This he practised, though he was probably well aware, both from the opportunities he had of examining such cases as died, and from his knowledge of anatomy, of its dangers and defects. After a time Jaques appeared again, and performed his second and improved operation—that which he had formulated as the result of much dissection and observation under the hands of Fagon and Du Verney, and this operation Raw learned and adopted with great success. At the death of Jaques it was believed that Raw was the only surgeon in Europe who knew his true method. This was generally believed to be the cutting into the bladder behind the prostate, which was, however, his first and imperfect operation. Raw, from motives of his own, was mean enough to delude the profession into the idea that he continued to make that incision, while all the time he was incising the prostate according to the method adopted by Jaques in his improved operation. Nothing would induce him to impart to his greatest friends or pupils the way in which he made his deep incision. He told his pupils that he had to gain his bread by the operation, and would never say one word about it as long as he lived. He forgot that he was bound, by the position he held, to make known for the good of suffering humanity the nature of the operation he performed; and we can only look with contempt on a man who, for personal gain, kept to himself a knowledge of the steps necessary to ensure success in an operation for the relief of such a terrible condition, and who allowed surgeons to blunder on in the dark and patients to suffer as the result of his meanness.

That such an example should be followed was but natural, and Dennis, a surgeon in Holland, let it be understood that Raw had told him on his death-bed the full and true account of his operation, and that he was therefore competent to perform it. Considering the care with which Raw kept his secret, and the fact that for the last few years of his life he was in a state of melancholy and finally died delirious and insane, there was little to support this claim of Dennis, and we may fairly hope that he did not benefit by exploiting this fabrication. Even Albinus, the favourite pupil and assistant of Raw, who had had far more opportunities of watching him than had Dennis, was quite ignorant of the nature of his deep incision. It is difficult to understand how he could have been deceived, but that he was is evident; for he not only believed he knew the exact method, but published an account of the operation he supposed his master performed, in which he said the bladder was opened behind the prostate. This of course was his first operation, which he gave up when Jaques showed him his improved method.

Surgeons all over Europe, on reading this description by Albinus, who had had such opportunities of seeing what was really done, followed it, but with results equally disastrous to their patients and to their reputations. Men like Morand followed in every detail the description of Albinus, and also experimented on the dead body, but in spite of every care they found that the deep incisions varied in almost every case. In some the prostate was divided for the greater part of its length, in others the neck of the bladder, and in others the body of the bladder. Cheselden, also following the description of Albinus, met with disastrous results; and finally Morand came to the conclusion that Raw did not cut behind the prostate, but had cut the neck of the bladder only, and he accused Albinus of having misled the profession by describing, with so much confidence, an operation that he did not really understand. This seems to have opened the eyes of Albinus to the fact that he had been deceived by Raw, and that his description of the operation was not in accord with the practice of Raw; and he then became conscious that he had unwittingly been the cause of surgeons attempting a procedure that must have submitted their patients to grave risks and much distress. There can be no doubt whatever that the mean, selfish, and grasping nature of Raw, in prompting him to keep his true operation a secret, was the cause of many deaths. When surgeons had by experience found out that in spite of the account given by Albinus of Raw's operation the secret of it had died with him, they had to discover a safer method than that attributed to him.

Cheselden's Lateral Operation.

We in this country may feel proud that English surgeons not only rose to the occasion, but that one of their number, Cheselden, worked out and successfully practised an operation which became associated with his name; and that he freely imparted a knowledge of its principles and details to all anxious to learn. The report of his operation rapidly spread, and Morand, then the most celebrated surgeon in France, came over to England as a delegate from the Royal Academy of France, and at the public expense, for the express purpose of acquiring a knowledge of this operation, and in 1729 he saw the operation performed in St. Thomas's Hospital by Cheselden and learnt its details. He appears at first to have regarded its performance as more difficult than the Marian, but in actual practice he found, to his surprise, that it was infinitely easier, and his praise of Cheselden and his operation was very high. He often saw him extract the stone in twenty-four seconds, and when there was a single stone he seldom took more than one minute. During the time he was attending his practice Cheselden cut twenty-seven patients without losing one. On his return to Paris Morand presented a most favourable report to the Academy, and taught Cheselden's operation to all his pupils; and so great was his reputation that almost all the younger surgeons in the cities of France had been his pupils. Thus before long the operation of Cheselden was widely known and practised on the Continent of Europe.

It may be well here briefly to recapitulate the various steps by which his operation was evolved. Frère Jaques in his first operation aimed boldly at the body of the bladder with his dagger-shaped knife, leaving the prostate untouched, and, though successful in extracting the stone, his patients died in large numbers. He demonstrated, however, that a wound of the bladder in this situation was not necessarily fatal. In his second and improved operation he gave up the use of his dagger-shaped knife, and dissected carefully on to a grooved staff, and made the deeper incision by cutting the prostate and neck of the bladder upon the groove of the staff. A feature of both these operations was that the incision was not limited to the perineum, but passed backwards into the ischio-rectal fossa, thus greatly facilitating the extraction of the stone. Then Raw followed in detail the two operations of Jaques, but refused to divulge the mode of performance of the second, and at his death, which occurred in 1719, the knowledge of this was lost. Cheselden, following the description by Albinus of Raw's operation, failed, as he was only likely to do, to attain his success, and finally systematized the lateral operation. This he performed by a lateral incision between the accelerator urinae and the erector penis, passing backwards into the ischio-rectal fossa and dividing the transversus perinei; the knife was then introduced into the membranous urethra, and, passing along the groove in the staff, divided the prostate. This was the operation he taught Morand, and, though then quite satisfied with it, he had the misfortune later on to wound the rectum in two cases and to experience a difficulty in extracting a large stone. In 1731, therefore, the year after Morand had returned to Paris with full details of the operation, he altered the mode of the deep incisions. The description of these two last operations is given by Cheselden in the appendix to his *Anatomy*. In the fifth edition, published in 1730, he says, after describing the first stage of the operation:

> I then feel for the staff and cut upon it the length of the prostate gland straight on to the bladder, holding down the gut all the while.

In this operation he divided the prostate from before backwards. In the sixth edition, published in 1741, he has altered the description of the incision in the deep parts, and says:

> I then feel for the staff, holding down the gut all the while with one or two fingers of my left hand, and cut upon it in that part of the urethra which lies beyond the corpora cavernosa urethrae and in the prostate gland, cutting from below upwards to avoid wounding the gut.

Such are the descriptions given by Cheselden himself; but in 1808 Allan published an account, based on a description given by Dr. James Douglas in 1731, of Cheselden's third operation which it is difficult to reconcile with his own. In this he is credited with making the same external incision, but instead of entering the urethra just before the prostate, to have turned the back of his knife to the rectum, stuck its point into the groove of the staff through the coats of the bladder immediately behind the prostate, and, drawing it towards him, to have divided laterally the neck of the bladder and the membranous urethra. This operation he is said to have practised until his death in 1752; and the statement seems to have been accepted, in spite of the fact that nowhere in Cheselden's writing does he mention in such terms any such procedure, nor did he communicate any description of this method to the great French surgeon, Morand, who came over to learn his operation, and with whom he was in correspondence after his return to France. It is difficult to trace this last operation of Cheselden's, for his second operation, being the one he taught the French surgeons, was widely practised, and must have been well established, both in this country and abroad, before he gave it up in favour of his third.

Before long, however, we enter a period when the straightforward operation of Cheselden, which required a knowledge of anatomy and a careful dissection, was replaced by one that was performed largely by the aid of mechanical contrivances, such as grooved lithotomes, concealed knives, and cutting directors. We find that Le Cat, Frère Côme, Foubert, and Hawkins were pioneers in this direction, and that the simpler operations were suspended for a time to make way for others done with the assistance of these inventions. Le Cat, of Rouen, not satisfied with dividing the prostate in the way taught by Cheselden in his second operation, invented a complicated set of instruments, which, however, he could not induce any one else to use. The name of one, the *gorgeret cystotome dilatoire composé*, gives some idea of the scope and nature of his inventions. His operation was so complicated that it did not receive much support. Another man who for some time occupied the attention of the public was a priest named Frère Côme, who, like Le Cat, had an inventive faculty, but was ignorant of anatomy or surgery. He made the usual external incision and then introduced into the urethra a concealed bistoury, which was drawn out with the blade so raised as to cut through the prostate and open the neck of the bladder. This was displeasing to Le Cat, who regarded the infringement of his own particular field with much annoyance, and he and Frère Côme engaged in a long and angry correspondence. So much did this agitate the profession that an inquiry was held to decide the respective merits of the two operations. Martiniere, first surgeon to the King, presided, and the King himself took an interest in the debates. A number of experiments were made on dead bodies in five of the principal hospitals in Paris. The debates, however, were conducted with such heat and temper that, after ten sittings of the committee, they were abandoned by common consent, without any decision having been arrived at. The results of Frère Côme's operation seem to have been very bad, many of his patients dying from haemorrhage, wound of the rectum, or from damage resulting from attempting to drag a large stone through a small opening. Another surgeon who was responsible for the introduction of a complicated operation was Foubert, who, like others, was misled by the account by Albinus of Raw's operation, and believed that his incision was made into the body of the bladder behind the prostate, and that it was necessary to save the urethra and neck of the bladder from injury. His method was to puncture the bladder from the perineum, between the anus and the tuber ischii, with a trocar and cannula, to then introduce through the latter a knife, and to enlarge the wound by cutting from below upwards.

Surgeons had long been familiar with the gorget; it was, indeed, the lineal descendant of the conductor of Hildamus, and acted as a dilator and a conductor. An English surgeon, Sir Caesar Hawkins, conceived the idea of converting its right edge into a cutting edge, so that it might be pushed along the groove in the staff and thus divide the prostate more easily, and, it was thought, with less danger, than by using the knife in Cheselden's operation; and for a time this instrument was generally used. It did not, however, meet with universal approval, for Allan, writing in 1808, considered it "the most dangerous innovation in the whole mechanical department of surgery"; in fact, none of the numerous contrivances which were then so largely used received his support, for he writes:

> I am decidedly of opinion that the introduction of complicated machinery into surgery, and the invention of a multiplicity of instruments, has tended rather to retard than to advance the progress of the art. The man who is a good anatomist can accomplish everything with the knife; and when operating feels resources within himself, which an exact knowledge of his subject can only supply.

The chief dangers of the gorget were its slipping from the groove in the staff and passing into the tissue around the bladder. It has even perforated the fundus of the bladder and opened the peritoneal cavity. It failed in cases where the stone was large to make a sufficient opening, so that this had to be considerably dilated, while if the instrument was of a large size the pudic artery was in danger of being wounded.

The operation as originally formulated by Cheselden, that which he taught Morand, does not seem to have found entire favour with surgeons at that time, probably from the fact that though safe and easy when performed by one thoroughly acquainted with the anatomy of the parts and the details of the operation, it was by no means free from difficulties and dangers when undertaken by those less competent. The dangers were principally incident to the deep incision through the prostate and the introduction of the forceps. These dangers were likely to deter the timid and to try the nerve of any one who without due consideration had embarked on this operation. Consequently gorgets almost without number were invented, each with some special feature which was

supposed to render it a safe instrument with which to enter the bladder. If failure occurred after using one of these it could be attributed to the instrument and not to the operator.

Writing in 1825, Mr. H. G. Belinaye says:

For after Cheselden had improved the operation of Frère Jaques, so that it merited the appellation of the glory of English surgery, his implements of success were abandoned for others infinitely more susceptible of erroneous management. Hawkins turned the secondary instrument—the conductor—of Cheselden into a primary engine in lithotomy by imparting an edge to one of its blunt sides.

And of the gorget he says:

Did time and space allow, by collecting all the anathemas which celebrated surgical writers have pronounced against each other's favourite form of gorget, whilst vaunting their own hobby, we might be saved the trouble of proving the many defects to which this much favoured instrument is liable. From the time when Hawkins first made a knife out of what was never intended but for a conductor, every leading surgeon in England, France, Italy, and Germany has unceasingly altered the form of the gorget.

We can, however, trace the decline of the gorget, for Sir Astley Cooper, in his *Surgery*, published in 1836, says:

The knife is now frequently substituted for the gorget, and that which I for some time employed in various cases was straight and narrow, with a probed end. In the young this answers very well, and also in a thin adult, but in a deep perineum or enlarged prostate I prefer the gorget as being more definitive in its cut.

Syme, in his *Principles of Surgery*, published in 1842, refers to the method of dividing the prostate as follows:

The simplest mode of effecting this is to use a scalpel, or other knife, that may be under the surgeon's command; but as it requires an accurate acquaintance with the relative situation of the parts concerned, and considerable manual dexterity to divide the prostate safely with such an instrument, various apparatus have been contrived for cutting in the requisite direction and to a sufficient extent merely in consequence of their form and construction, and without the necessity of precise guidance on the part of the surgeon. But after a hundred years' experience of such substitutes for operative skill, it is now almost universally admitted that the simple knife is by far the safest means for the purpose.

Thomas Gutteridge, referring to the use of the gorget, says:

For nearly a century the vices of the exploded method which existed antecedently to the appearance of the French Friar infected the performance of this operation, and not till Sir Astley Cooper devised the corrective did lithotomy emerge from the darkness in which it had been shrouded so long.

With the disappearance of the gorget a return was made to the simpler method as introduced by Cheselden, and the lateral operation in its original form held the field. As such it was known to those of us who commenced our professional studies before about the year 1885, when as yet it had not felt the full effect of the revival, under improved conditions, of the suprapubic operation, and of the great advance made in the crushing operation by Bigelow. From that time its decline was rapid, and there must be many in this room who not only have never practised it but have never seen it. Who can say that it may not at some future date be revived? Looking, however, to the excellent results of the suprapubic operation, and of crushing in the hands of those accustomed to do it, it seems more than probable that the lateral operation is extinct.

The Suprapubic Operation.

The first recorded case of the suprapubic, or high, operation is that by Pierre Franco of Lausanne in 1556. Franco was attempting to remove a large stone by the perineal route from a small boy aged 2 years. Failing in his attempts to get it away, the parents besought him to relieve the child by any means in his power. He therefore passed two fingers into the rectum and pushed the stone up to the lower abdomen, where it was steadied by an assistant. He then incised the abdominal wall over the stone and successfully removed it, and the child finally made a good recovery. In spite of this, however, Franco was not impressed with the possibilities of this method, and he concludes his account by saying that he "does not advise any man to do the like." No more was heard of this method until 1581, when Dr. F. Rosset of Montpelier was making dissections when advocating the Caesarean operation, and it then occurred to him that a stone in the bladder might be removed by opening that organ above the pubes, using a grooved catheter as a guide on which to cut. But, he adds, "the novelty of the operation and the licentious prating of some impudent fellows put a stop to my undertaking anything of that kind." We cannot wonder at men looking for some safer operation than those in use at that time—namely, the Celsian and the Marian—and Rosset says that:

Being moved then by so many and weighty reasons that I had, to dread both of these terrible methods of cutting for stone, and pitying on the one side the deadly tortures of those who were cut either way, and on the other side the perpetual anxieties of those persons who ought to be cut, but are deterred from trying the operation as the fox was from visiting the lion, by seeing the tracks of abundance of feet towards the lithotomists, but a few back again. I have very often thought of some other gentler method of cutting for the stone, for certainly it is lawful to make use of divers remedies against any distemper, provided it be in common attempted by the easiest and safest that can be. And if that old method of Celsus has been changed for that of Marianus why should not that method also be changed, as I hope, for the better?

Soon after expressing these opinions he came across the account of the successful case of Pierre Franco and this further strengthened him in his opinion. The next step was to make experiments on dead bodies, and he found that by distending the bladder with water it was quite possible to open it without wounding the peritoneum. Rosset gives detailed instructions as to the performance of the operation and how the bladder should be distended. The stone was forced upwards by pressure with two fingers in the rectum. He suggests that if the operator's fingers are too short to raise the stone upwards to the pubes, he may make use of artificial fingers made of prepared leather or of silver into which he can fit his own fingers. Though he often practised it on the dead body he never had an opportunity of doing so on the living. He was, however, an earnest believer in the method, and was actuated in his efforts by the desire of benefitting the public, for he concludes by saying:

Whoever can contrive a better, easier, shorter, and safer method than this, let him in God's name do it for the public's good, and may he meet with a good and favourable acceptance.

On Thursday, December 13th, 1635, Peter le Mercier proposed the following question for discussion in the physic schools in Paris, "Whether or no in cutting for the stone in the bladder the incision should be made at the pubes." He did not recommend filling the bladder with water, but used a curved catheter to force the bladder wall against the anterior abdominal wall, and considered that in cutting for stone the incision should be made at the pubes. Writing in 1682, Hildamus expresses the opinion that though the suprapubic operation was good for children, it was not suitable for adults, for the reason that the fingers were not long enough to raise the stone to the incision in the bladder. Operators by this method considered it essential to force the stone upwards by the fingers in the rectum; probably they were influenced by remembering that in the Celsian operation the stone was forced into the perineum by the fingers in the rectum. They apparently did not recognize with what ease a stone could be removed from the bladder, by a suitable pair of forceps, when it was opened above the pubes. Hildamus does not seem to have been in favour of this method, for he says:

I do therefore with Master Franco again and again dissuade every faithful and industrious Surgeon from making use of this dangerous operation of cutting for the stone. But if the stone be of that great bigness and the patient, and the by-standers, by reason of the great and extreme pains under which the patient labours, do very earnestly press and desire help from the physician, then indeed having first implored the divine assistance, and a prognostick being made of the doubtful and uncertain events, I should prefer that cutting in the groin, of which Master Franco writes.

The high operation was not, however, practised to any extent, for in 1718 Tolet in his *Traité de la lithotomie* says: "If one finds himself under a necessity of performing the high operation, it seems one might succeed," and then follows certain details as to its performance, but no mention is made of distending the bladder, though he remarks, "the fuller the bladder is with water or the stone, the more it will appear."

In 1719 John Douglas, F.R.S., surgeon to the Westminster Hospital, performed the high operation in this country, and in 1723 published the details of four cases occurring in boys under 16, all of which were successful.

Cheselden also, in the early part of his career, in 1723, published a treatise illustrating his method, which was similar to that employed by Douglas; but soon his attention was attracted by reports of the success of Raw's perineal operation in Holland, and, hearing that the bladder had by some English surgeons been burst by over-distending it with fluid, and that in other cases the peritoneal cavity had been opened, he set himself to do the lateral operation of Raw as described by Albinus. His description of the high operation leaves little to be desired, and we can only wonder why an operation so carefully planned was so quickly discarded. Previous to the operation he had the intestines emptied to prevent their pressing upon the bladder. This was secured by allowing the patient a slender diet for two days and having the lower bowel cleared out with clysters a little before the operation. The patient was placed upon a table in such a position as to relax his abdominal muscles, and was ordered to pass his urine. Having then passed a catheter, sufficient warm barley water was injected to fill the bladder to its utmost natural dimensions, "more being of little or no use to the operator, but very painful if not dangerous to the patient"; he considered that the proper quantity for every patient may be known from the swelling of the abdomen just above the pubes, if the integuments are thin, by the patients growing uneasy from the distension of the bladder, and from the resistance which the operator feels to his injection. The syringe and catheter were connected by the ureter of an ox. He gives a word of warning which may not be out of place even at the present day:

> I must recommend the passing the catheter deliberately and gently, choosing rather to seem less artful in doing it, than secretly to hurt the patient, for the reputation of doing it quick and dextrously, and indeed I judge this no unnecessary caution in every part of the operation.

The bladder being filled, the catheter was withdrawn, and the penis was grasped by an assistant to prevent the water coming out. The first incision was made with a round-edged knife; this passed through the skin and between the recti, and was about 4 in. in length in an adult. A finger was then placed in the wound, and a straight-edged knife was introduced, and the tissues in front of the bladder were divided. Finally a curved knife was passed into the bladder near the urachus, and that organ was opened down to the pubes. A finger was then passed into the bladder as a guide to the forceps by which the stone was removed. A very considerable controversy arose as to whether Douglas or Cheselden, who both wrote on the subject in 1723, should be considered as having established the high operation as a mode of practice. Deschamps considered that the credit was due to Douglas. There were isolated instances of the operation having been performed before that date, but it was not in general use until this time. Franco had done it in 1556; Bonnet in the Hôtel-Dieu in Paris and Proby of Dublin in 1700, and Greenfield in 1710; but after 1723 it was taken up by Continental as well as by English surgeons.

The high operation had to compete with the lateral operation which had been perfected by Cheselden, and was largely practised, at first in its original form and later on with the various modifications that came into vogue with the advent of the cutting gorget, and in 1750 Samuel Sharp of Guy's Hospital wrote of it as follows:

> Some of the difficulties which occurred in the execution of it appeared so frightful that it was suddenly disused, and at present there is no surgeon in Europe who continues to practise it, nevertheless I should not be surprised if it should be revived and practised with success.

This latter observation showed that Mr. Sharp foresaw that the method was capable of yielding good results when carefully performed. Since then various attempts have been made to reintroduce it on what were supposed to be improved lines. In 1758 Frère Côme directed his attention to this question, for he knew that there were certain conditions that rendered the lateral operation undesirable, such, for instance, as a very large stone. He also saw that one great objection to the high operation was the horrible pain produced by the distension of the bladder necessary to make it rise above the pubes, and to obviate this he greatly modified the operation. He first passed a grooved staff into the bladder, then he cut, as in the lateral operation, on to the groove and opened the membranous urethra; next, a grooved director was passed along the staff into the bladder, and the staff was withdrawn. By means of the director, a kind of catheter, open at the far end and provided with a stilette, was passed into the bladder through the perineal wound. An incision was then made, about 3 or 4 inches in length, above the pubes and in the direction of the linea alba. A trocar, in which there was a concealed bistoury, was next passed into the linea alba close above the pubes, and by projecting the blade from its sheath the lower part of the linea alba was cut from below upwards, and an opening was made which was enlarged with a probe-pointed knife, behind which a finger was kept so as to push the peritoneum out of the way. The fundus of the bladder was then elevated by depressing the handle of the catheter, and its point was felt for in the wound; the stilette was then pushed through the bladder. Along the groove in the stilette a curved bistoury was introduced and the bladder opened from above downwards. The bladder was drained by a gum-elastic catheter through the perineal wound. Deschamps, in 1790, perforated the bladder through the rectum, and through the cannula passed an instrument to make the bladder prominent in the same way as Frère Côme did through the perineal wound. Allan, in his *Treatise on Lithotomy* expresses a poor opinion of the operation; he says:

> It frequently happens from the continued irritation to which the bladder is kept by the stone that its coat becomes too much thickened and contracted to allow it to be sufficiently distended to rise above the pubes, and if this is the case the incision for the high operation will not reach the bladder, but pass through the peritoneum into the cavity of the abdomen. If the operator should chance to break the stone in its extracting—though of this it may be acknowledged there is less danger—the bladder cannot be so easily washed out, nor the small fragments carried away by the urine, as in the lateral method, some of them may remain and form a nucleus for a future stone. The urine sometimes does not pass very freely to the wound, but by insinuating itself into the cellular substance excites inflammation and forms sinuses. The peritoneum, like other membranes which line the great cavities, is very susceptible of inflammation, and from its vicinity to the wound, or from being roughly handled, is liable to become inflamed and produce general inflammation of the abdomen. If the bladder is to be filled by injection much cunning is required in accomplishing it. If too much fluid be thrown in it excites great pain, relaxes its fibres, and destroys its tone; if not sufficiently distended the incision will not reach it. And lastly it is observed that the wound does not heal so readily in the high operation as in the lateral operation. These are weighty objections, and must for ever preclude the general use of the high operation.

In 1820 Sir Everard Home, of St. George's Hospital, performed his modification of the high operation. He passed a catheter with an open end and containing a stillette along the urethra, and, having exposed the bladder by a suprapubic incision, pushed the stilette through the bladder and enlarged the opening with a bistoury. In spite of these and other attempts to improve the operation, it did not commend itself to surgeons as a routine method of treatment, and it was left for such cases as were considered unsuitable for the lateral operation. These were often badly suited for any operative procedure by reason of the length of time they had been suffering from stone and from its consequent size. The high operation done under such circumstances was naturally followed by a heavy death-rate, which, taken by itself and without considering the attendant circumstances, was not likely to encourage surgeons to adopt this method. Even Cheselden himself, who practised the operation in a small number of cases with considerable success, gave it up and devoted his energies to the elaboration of the lateral operation, not because he met with complications in his own cases, but because other surgeons, probably less able than himself, were unsuccessful in their cases.

It is interesting to speculate on the position the high operation might have been placed in had Cheselden devoted the same energy and thought to this operation that he did to the lateral. Had he done so it is probable that operations by the perineal route would have been abandoned, and that the high operation would have attained a position as the routine method of treatment, and the mortality following removal of stone from the bladder would have been diminished to an appreciable extent. For there can be no doubt that, while in the hands of surgeons having frequent opportunities of dealing with cases of stone the lateral operation yielded

good results, it was not so with those who were less familiar with its performance and with its possible difficulties. To such an extent had prejudice and other circumstances militated against the high operation that an American writer, Dr. John Shaw, of Albany, in an article in the *Journal of Foreign Medicine* for April, 1823, made the following remarkable statement:

> We may sum up by saying that all the accidents which are generally assigned as the reason why patients die after the lateral operation are more apt to take place after the high operation.

In 1868 Mr. Holmes Coote, in an article in the *St. Bartholomew's Hospital Reports* upon lithotomy and lithotrity, says:

> I have not in these remarks adverted to the high operation. In many cases it is impossible of performance, and in none offers advantages such as I should have ever liked to avail myself of.

Why it should in many cases be impossible of performance is not, however, stated. Bearing out these statements as to the position of the high operation, there is a remark by Dr. C. W. Dules, in an admirable paper on the subject in the *American Journal of the Medical Sciences* for 1875, which is of interest. He says:

> Suprapubic lithotomy, or the high operation, is assigned a very low place in most works upon surgery, and is now so rarely practised that there are comparatively few medical men who have ever seen it done; indeed, it has surprised me, in my investigations, to find how little is known of it by men of no inconsiderable eminence in the profession.

This condition of affairs must be well within the memory of many Fellows of this society, for those of us who were students in the Seventies hardly ever saw any other operation for stone than lateral lithotomy, crushing at several sittings, and perhaps a median operation. At that time the lateral operation was so firmly established as the routine cutting operation that he would have been a bold man who would have suggested that in the course of a few years its position of supremacy would be disputed, and that in a few more it would be rarely practised, and that it would so soon be regarded as a surgical curiosity belonging to a past age. It had always been associated with so much discussion, and had occupied the attention of surgeons and the public to such an extent, that it seemed to stand by itself. It was, indeed, regarded as a privileged operation, and, on the day fixed for operating by the surgeons, it was the custom for any one having a lithotomy to take precedence of his colleagues, and to operate first. In an annotation in the *Lancet* for April 5th, 1825, it is stated that all cases of stone admitted to St. Bartholomew's Hospital for a period of six months were placed under the care of one surgeon, and that the surgeons took it in rotation to act as lithotomists. From a remark of Cheselden in the appendix to his *Anatomy of the Human Body*, published in 1741, the same arrangement evidently existed at St. Thomas's Hospital, and Cheselden, in addition to being surgeon to that hospital, was lithotomist to the Westminster Hospital, where there were wards for the reception of cases of stone. Though, as already mentioned, the high operation was hardly ever performed thirty years ago, its revival was close at hand. In the *Edinburgh Medical Journal* for October, 1878, Dr. Garson published a paper on displacement of the bladder and peritoneum in the male by distension of the rectum. As the result of experiments on the dead body he showed the influence of distension of the rectum, or of the bladder, or of both, on the relation of the peritoneum to the anterior surface, and he considered that

> in performing the suprapubic operation for lithotomy or puncture of the bladder that viscus can be as easily raised above the symphysis by distending the rectum as by injecting the bladder, and that in every case where it is not advisable to distend the bladder to a large size, distension of the rectum is all that is required to make the parts suitable for operation.

In 1880 Dr. Pietersen, of Kiel, who was present at the reading of Dr. Garson's paper at the Congress of German Surgeons, published an account of experiments made to ascertain the relative position of the anterior fold of the peritoneum and of the upper border of the pubes. As the result of these papers the high operation was again taken up and gradually came into favour. The danger of wounding the peritoneum was minimized by distension of the bladder with fluid and by distension of the rectum by the use of Pietersen's bag. Mr. Richard Barwell, of Charing Cross Hospital, also made experiments on the lines of Garson and Pietersen, and brought the matter before the Royal Medical and Chirurgical Society on March 30th, 1886, when an important discussion took place on the merits of the high operation as then performed. The opinions expressed by most of the speakers were favourable to its superiority over the lateral operation, though some few were not yet convinced. As the result of further experience it was found that the anterior fold of peritoneum could be sufficiently raised by distension of the bladder alone; and the rectal bag, which had many disadvantages and some dangers, was abandoned, and the operation was widely practised.

It is now, with hardly any exception, the only cutting operation resorted to. The choice of method may lie between cutting and crushing, but, if the former is decided on, the suprapubic operation is performed as a matter of course.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

REMOVAL OF A SEBACEOUS CYST DURING HYPNOSIS.

THE subject of the following note is a young male hysteric who has been in this asylum for nearly two years, and who, during that period, has been frequently under the hypnotic influence. Some months ago he developed a small sebaceous cyst at the back of the ear, which suppurated, and which was opened and scraped during hypnosis. As the condition has recurred recently, it was decided to deal with it more radically. On this occasion, too, the cyst had suppurated, and had burst before it could be dealt with otherwise. It was proposed to put the patient to sleep hypnotically, and then, if possible, to excise the cyst as a whole. The following is a brief description of what occurred.

About 4.15 p.m. the patient, J. R., was put in a side room off the ward. Preparations had been made as if for an operation, and these he could see as he entered the room. He was asked to sit on the bed, and was soon put to sleep, and placed flat on the bed so that he lay on the left side. When he was fast asleep he was given the following instructions. He was told to remain asleep whatever was done to him, also that he would not feel anything at all whilst asleep, that he would not have any recollection of what had occurred when he awoke, and, finally, that he would not waken until I told him. There was some difficulty in directing his attention to these orders, as he was in a very deep sleep. The cyst was then opened, the suppurating contents were removed, and an attempt was made to secure the wall of the cyst. It was found very difficult to separate this from the surrounding tissues, especially as there was free bleeding, and I had no adequate assistance. I managed, however, to remove part of the wall of the cyst, and then dressed the wound, and bandaged up the head.

The charge-nurse of the ward was present during the whole of the time, and my colleague, Dr. W. Gilmour, was present part of the time. It was observed that the patient never once winced or moved during the operation. At times he mumbled something, like a person talking in his sleep, but I could not make out distinctly what he said. Once or twice he took long sighing inspirations, so that I thought he was on the point of waking, but he did not do so. I stopped and stroked his forehead a little at this point, and he continued to sleep. At this particular time I had been occupied in separating the cyst wall and was pulling on it a good deal, which process, if any, would be likely to cause pain. When the small operation was completed and the bandage in its place, I asked Dr. Gilmour to waken the patient. He took no notice of the doctor for some time—in fact, not until the latter had given him several hard smacks on the face. He then began to stir, to open his eyes, and to gradually waken up, although still apparently very loth to do so. When he was thoroughly awake and sitting up he was questioned by both Dr. Gilmour and myself as to what had occurred. He still appeared to be a little dazed, put up his hand to his